FEBRUARY 1957 / 35c

AIR FORCE

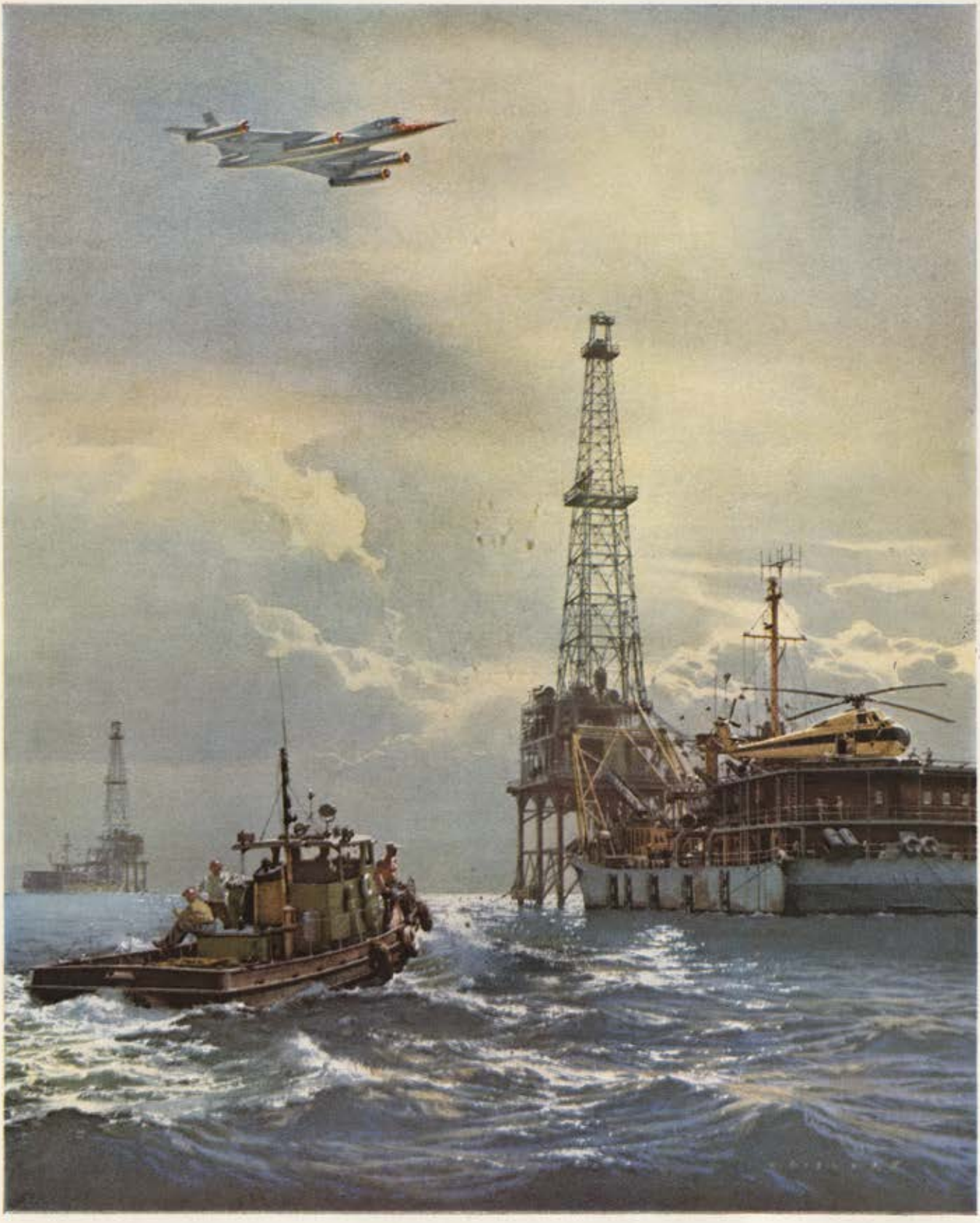
• THE MAGAZINE OF AMERICAN AIRPOWER

The Symington Subcommittee's Airpower Findings

ALSO IN THIS ISSUE:

The Captain Who Gave Ivan the Bird

Militia—Old Cloak, New Buttons



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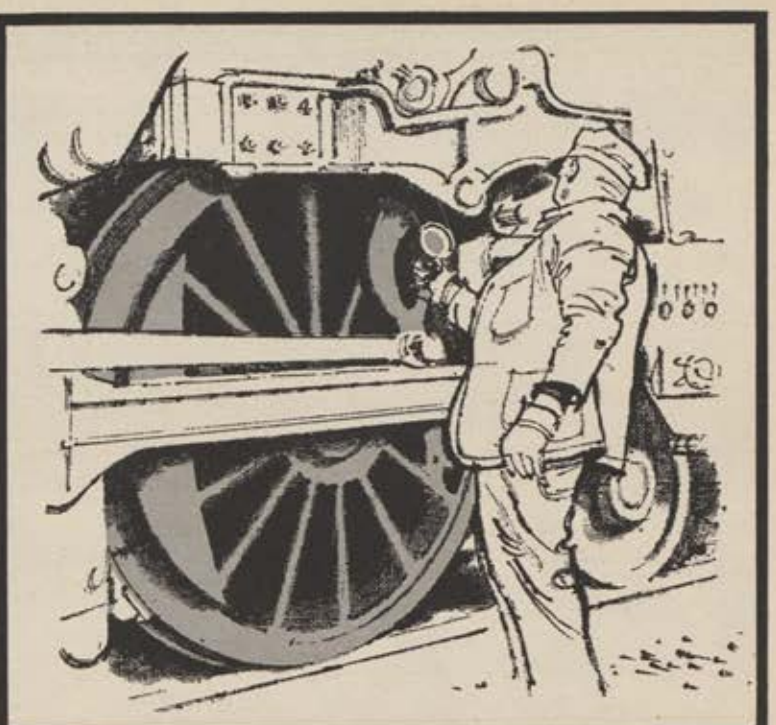
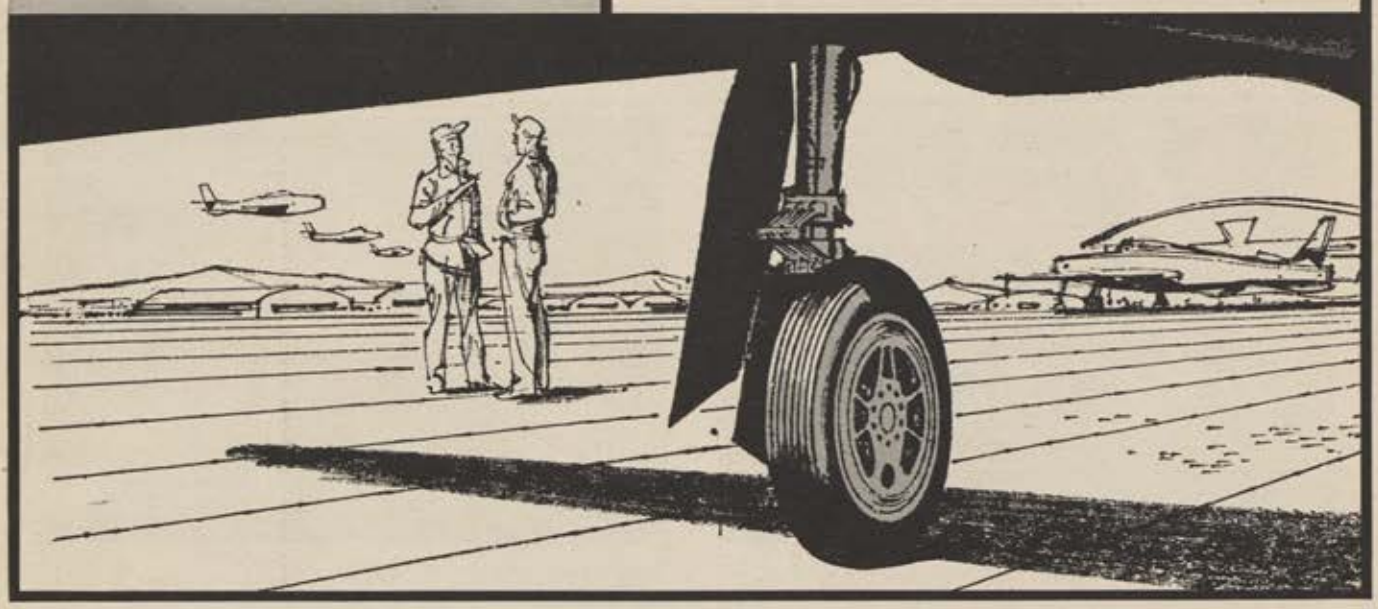
Which wheel is the strongest?





Above is the drive wheel of a giant locomotive.

The other is an airplane wheel of a modern-day jet fighter.

Which wheel is the strongest?

You air-minded ones are right.

It's the forged light-alloy wheel designed and produced by Goodyear Aviation Products: *pound for pound it can roll a record capacity.*

Forged wheels of magnesium or aluminum typify weight-saving developments—without sacrifice of performance—made by Goodyear Aviation Products for the aeronautics industry.

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In the case of aluminum or magnesium wheels, it called for detailed study which produced forgings of uniform quality and grain flow—and the elimination of "gingerbread" castings.

Goodyear forged light-alloy wheels are operational on more aircraft of more types, both military and commercial, and in more sizes and types, than any other kind.

In the case of a ship you now have upon the boards—this strength-to-weight engineering may well extend the range, the altitude, the firepower of your project. Call in a Goodyear man—get the facts, and the help of this kind of thinking! Write: Goodyear, Aviation Products Division, Akron 16, Ohio, or Los Angeles 54, California.

GOODYEAR
AVIATION
PRODUCTS

Where Research and Development *Work* to Advance America's Global Position in the Race for Air Power

BULLETIN FROM BOEING

AMERICA'S NUCLEAR COUNTER-PUNCH has far longer reach and greater power now that the Boeing KC-135 Tanker-Transport has been developed. It's a jet-powered aerial refueling station that extends the striking range of our first-line intercontinental bomber—the Boeing B-52 Stratofortress—by thousands of miles.

PIPELINE IN THE SKY. Boeing solved the problem of refueling America's long-range jet bombers with this retractable, winged boom. In operation, the boom is extended 47 feet. As the bomber nuzzles up to the tanker, one of the crewmen actually "flies" the boom into its final contact.

BIG WIND FROM THE NORTHWEST. In Seattle, Boeing has added to its already extensive wind tunnel facilities a supersonic tunnel capable of velocities four times the speed of sound. No other airplane company owns so advanced and versatile a proving ground for its future jet aircraft designs.

AMERICA'S FIRST JET AIRLINER— The Boeing 707 is now in production. With over two years of experimental and demonstration flights completed, the 707 is the only American jet transport now in the air—the result of Boeing's unparalleled experience as builder of the nation's long-range jets. Eleven major airlines have already chosen the Boeing 707 for service on world-wide routes.

BOEING

AIR FORCE

THE MAGAZINE OF AMERICAN AIRPOWER

Volume 40, No. 2 • February 1957

STAFF

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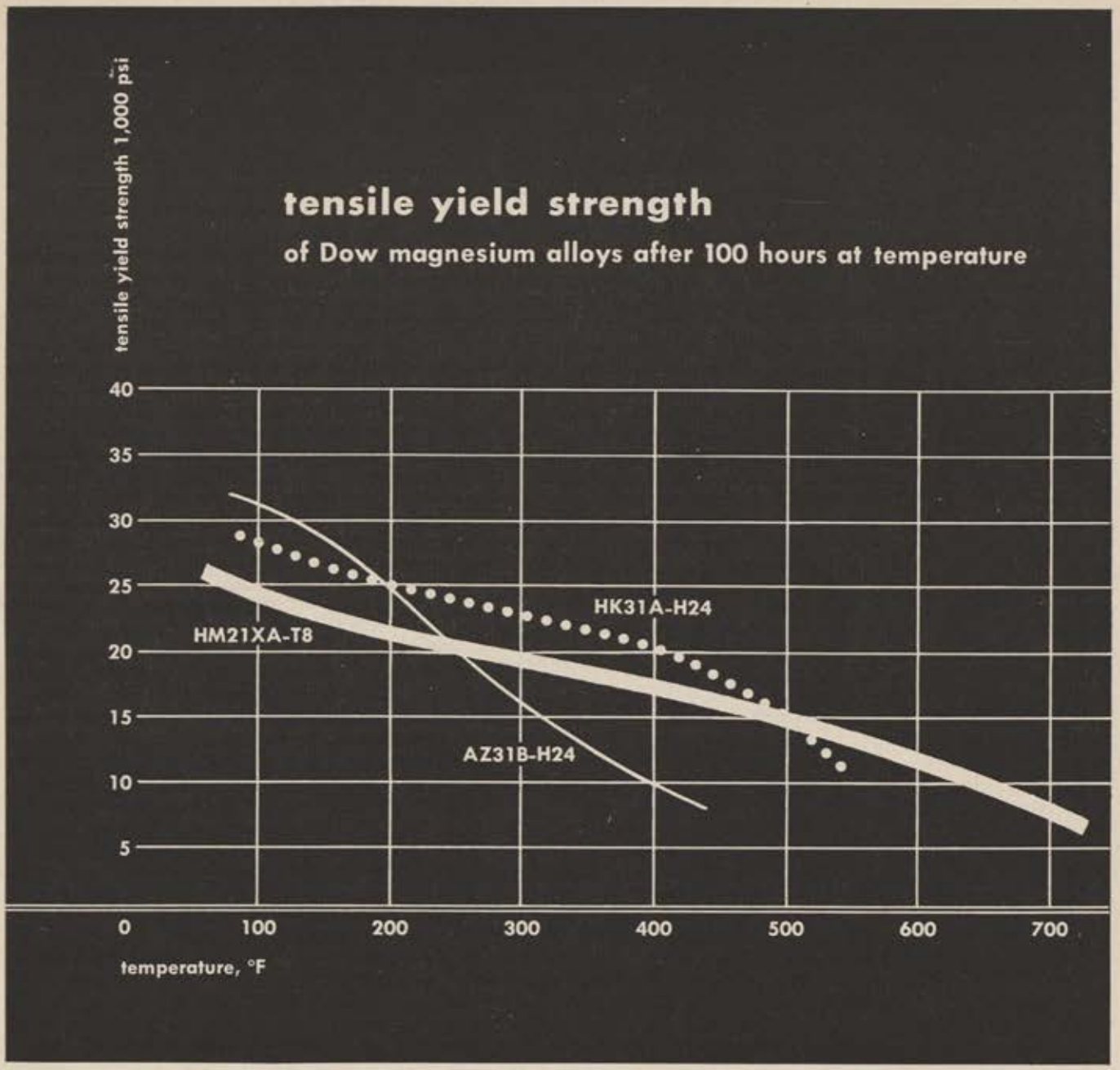

New magnesium alloy holds properties for 100 hours up to 700°F.

Dow Magnesium HM21XA-T8 alloy extends further the range of conditions under which light metals can be used in aircraft design. Second in the series of sheet alloys designed specifically for elevated temperature applications, it supplements the excellent characteristics of HK31A alloy.

HM21XA-T8 retains its properties at temperature during long periods of time. Even one hundred hours at 700°F. results in relatively little change in tensile yield, creep and elastic modulus.

Magnesium lightness is combined with strength at elevated temperature in HM21XA-T8, offering new ways to save weight or gain increased rigidity in the design of missiles and aircraft. This alloy is supplied in the -T8 temper and can be formed in this temper without the need for further heat treatment after fabricating. Samples of HM21XA-T8 along with detailed information are available. Contact your nearest Dow Sales Office or write to THE DOW CHEMICAL COMPANY, Midland, Michigan, Department MA 1400E.

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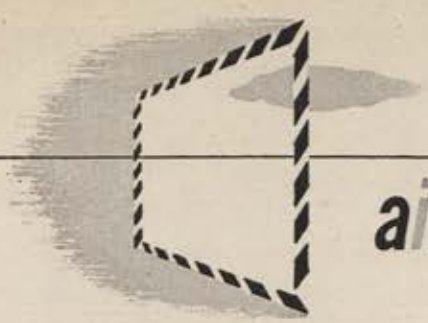

air mail

Not All the Time

Gentlemen: In your November '56 issue, the first (but I hope not the last) copy of your magazine to come into my possession, I noticed that none of the letters in "Air Mail" were critical. Do all your readers always agree with all of the articles?

Reference is made to the article by William V. Kennedy in that issue of your magazine, in which Mr. Kennedy proposes the creation of an armored cavalry squadron for air base defense.

Although I agree with Mr. Kennedy that air base defense is a headache, I do not agree with the sedative he proposes. He argues from the following premises:

- In the USA, there are 20,000 "hard-core" Communists, representing a potential guerrilla force of at least twenty men per base.
- Overseas, bases are in danger of attack by native Communists and by regular Soviet forces. In Alaska and in the Northeast Air Command, there is danger from Soviet paratroopers and from Soviet troops.
- These forces can be expected to attack at night, probably under cover of a nuclear attack, providing the Soviets with a means of knocking out those bases not destroyed from the air.

Accepting these premises, I conclude that:

- There are 1,000 air bases in the USA. An armored cavalry squadron is needed to defend against a guerrilla force of twenty men.
- Where there is danger from Soviet paratroopers and regular Soviet forces, one armored cavalry squadron is sufficient defense.
- In the event of a nuclear attack, an armored cavalry squadron is necessary to combat the native Communists because:

(1) Native Communists are immune to Soviet nuclear weapons.

(2) Our planes remain undestroyed on the ground during and after a nuclear attack.

(3) There is a complete lack of cooperation from the local authorities.

Mr. Kennedy states that Air Force basic training is far below the minimum required to train an effective ground combat soldier, and further, that the use of mechanics, air crews, etc., for ground defense is not recommended.

Inasmuch as the number of administrative personnel on a base is at the very minimum equal to the number of mechanics, air crews, etc., may I recommend a review of the basic training policies as a partial solution to air base defense, and the possible adoption of the Army's attitude of every man (officer or enlisted) a combat soldier first, a specialist, administrator, or technician, second.

Sgt. Cruz A. Mates, Arty., USAR
University of Oxford, England

Career Series

Gentlemen: I should like to congratulate AIR FORCE Magazine on the fine article "Rockets Are Their Racket," by Flint DuPre, which appeared in the November issue.

Having served in the Air Force during World War II, I am very much interested in its fast-expanding program and the many new careers, which are known to most of us only vaguely. I dare say that many others, both in and out of service, will share my feeling about this series of articles dealing with Air Force careers. The one I have just read is most enlightening, as well as entertaining reading.

Lyle Brown
San Francisco, Calif.

You're Still OK

Gentlemen: Maybe I'm losing my ability to identify airplanes; but, in my opinion, the mother plane in the picture on page 46 of the December '56 issue of AIR FORCE is a B-50, not a B-29.

Harry V. Cogburn, Jr.
Charleston, S. C.

- *You're right—it's a B-50.*

—The Editors

Glad to be of Service

Gentlemen: This tardy word of thanks from me is certainly not indicative of a lack of gratitude for the generosity of the Air Force Association in providing us with sufficient reprints of the Guide to Air Force Bases from the August AIR FORCE Magazine. I have been out of the office since the shipment arrived, and now hasten to express our thanks.

Making these articles available to our lads will certainly increase the interest in the instruction we are now giving on the composition of the major commands. Needless to say, it will also provide them a valuable and essential bit of professional knowledge.

Again our very sincere thanks to you and to the Air Force Association for your assist.

Col. H. L. Hogan, III
Director of Military Training
USAF Academy
Denver, Colo.

Nice to Hear from You Again

Gentlemen: Please forgive my writing to you again, but I felt I must, as I just want to say: Your magazine is one of the finest aviation magazines published today. Your December '56 issue, containing the article on the late Col. William A. Bishop, VC, by William Walker, was just superb.

And the January issue, containing two of the most wonderful articles I've ever read, "The Man Who Gave Us a SAC-ful of Fighters," by Lt. Col. Clarke Newlon, and "Raoul Lufbery, Man of Mystery," by Ed Mack Miller, proves that as each month goes by you are surpassing yourself and bringing to the public eye stories of some of the finest men who ever lived.

I trust you will continue to give us an occasional article on the same lines.

Patrick J. Cassidy, Jr.
Upper Darby, Penna.

New Reader

Gentlemen: Having just finished my first issue of AIR FORCE, I am very much impressed to say the least. You, or can I now say we, seem to have a magazine that does some justice to the new Air Age and the Air Force. It has just a little of the past to renew memories for the old-timers, some of the present we are all interested in, and a lot of the future which will have most of its effect on our younger birdmen such as I. If you can supply me with some more application blanks, I'll see if we can get some more young blood on the band wagon. The two I

(Continued on page 9)

TEAMWORK IN TELEMETRY!

USAF—WADC—TDI

AN/AKT-7 and AN/UKR-2
Miniature Telemetering System

TDI designed and developed under contract with the Air Force Wright Air Development Center, the unique 12-Channel FM/FM telemetering system officially designated as AN/AKT-7 and AN/UKR-2. Close cooperation and guidance by Air Force personnel coordinated with a modern systems design approach by TDI engineers, resulted in this extremely versatile miniature system. Featuring inherent reliability and accuracy, simplicity, mobility and economy with provisions for automatic checkout and calibration, it is typical of the high standards set by TDI in all phases of telemetry. Let us show you how the AN/AKT-7 and AN/UKR-2, 12-Channel FM/FM telemetering system can be adapted to meet your requirements—write for free technical bulletins.

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TO ENGINEERS AND SCIENTISTS

The rapid growth and expansion of Hayes creates a continuing need for aeronautical scientists, aircraft design engineers and graduate engineering students, for which new opportunities open up almost daily. Hayes now has over 8,000 employees and is a competitive industrial facility for modification and maintenance of aircraft, including guided missile work. Write Personnel Department, P. O. Box 2287.

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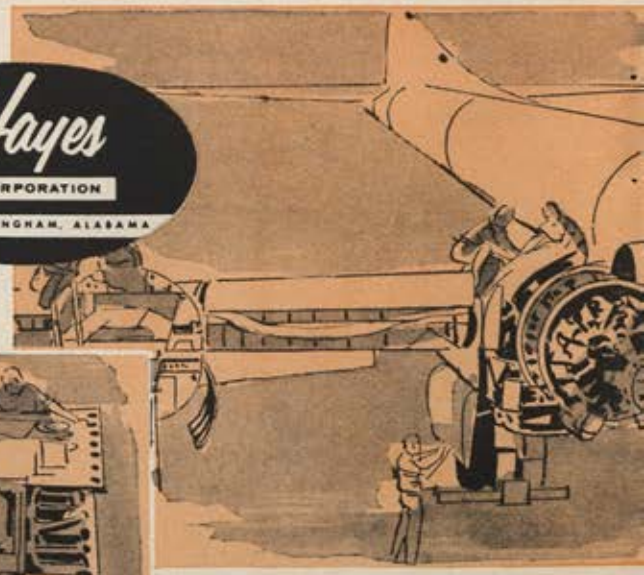


received with my membership card have already taken wings toward your office.

1st Lt. Donald A. Byrne
Otis AFB, Mass.

Don't Be "George"

Gentlemen: I am a Charter member of AFA and quite proud of it. Our magazine reaches many people and instructs and informs us on airpower and the defense of our country.

I am also a member of the Ground Observer Corps and am trying to think of ways to alert civic-minded people into joining this vital work. True, the Air Force is doing plenty of advertising, but thus far the results in our post have not been satisfactory.

I was wondering if now and then our magazine could give some mention of the GOC. Who knows, perhaps reading of the GOC in AIR FORCE Magazine may be the spark to enlighten some of the "Let-George-Do-It" people.

James J. Phair
Elmont, N. Y.

Another Plea for GOC

Gentlemen: As a member of the AFA and a reader of AIR FORCE Magazine, I wish to say a few words in support of the Ground Observer Corps, of which I am also a member.

Low-flying enemy aircraft would be a problem for our Air Force because of the limitations of radar in spotting planes. This is where the GOC renders valuable assistance by observing and reporting aircraft.

There are about 400,000 members of the GOC throughout the United States who volunteer their services day and night and are well thought of by our air defense system.

Frederick S. Lee
Merrick, N. Y.

That Would Be Fine

Gentlemen: I am writing to congratulate you on your wonderful AIR FORCE Magazine. I don't know of any magazine in the world that could best it. Of course, I have always been interested in aircraft and was in the Air Force during World War II. At present I am a civil service employee here in the Ogden area working at an Air Force installation. For the past ten years or more I have worked around aircraft and hope to continue. The USAF is the greatest and best organization in the world, and I hope and pray that my three sons will feel the same way.

There are lots of nice things I could say about the Air Force, and your magazine, but I'm afraid before I got through I'd have a book written.

D. A. Easling
Ogden, Utah

● *Sounds like a potential best-seller.*
—The Editors

We'll Mention It to Him

Gentlemen: Just finished reading your wonderful December '56 issue. The magazine gets better with each issue.

I am especially enjoying the articles on Air Force careers by Flint O. DuPre. I would like to see him do a feature on the firefighting-crash rescue section. As a member of this section in the 106th Bomb Wing, New York Air National Guard, I would be very happy to furnish him with any photos or information he may want.

Gerald Engel
Far Rockaway, N. Y.

Indeed They Do

Gentlemen: I have enjoyed reading AIR FORCE Magazine during this past year and am sure I will enjoy it even more in the future. I have especially enjoyed the few stories you have printed concerning the Air National

(Continued on following page)

AIR MAIL — CONTINUED

Guard. How about doing stories on individual units of the ANG? Many of the units have quite a history behind them.

Jimmie W. Abbott
Oklahoma City, Okla.

Placed Fourth

Gentlemen: We wish to invite your attention to an article in your December issue under "Airpower in the News," page 21, concerning the USAF Fighter Weapons Meet.

While the Colorado ANG Team is a fine gunnery team, the surprising team that finished fourth in this meet was from the 132d Fighter-Interceptor Wing, Iowa-Nebraska Air National Guard.

CWO Donald J. Boo, Iowa ANG
Des Moines, Iowa

The Manly Art?

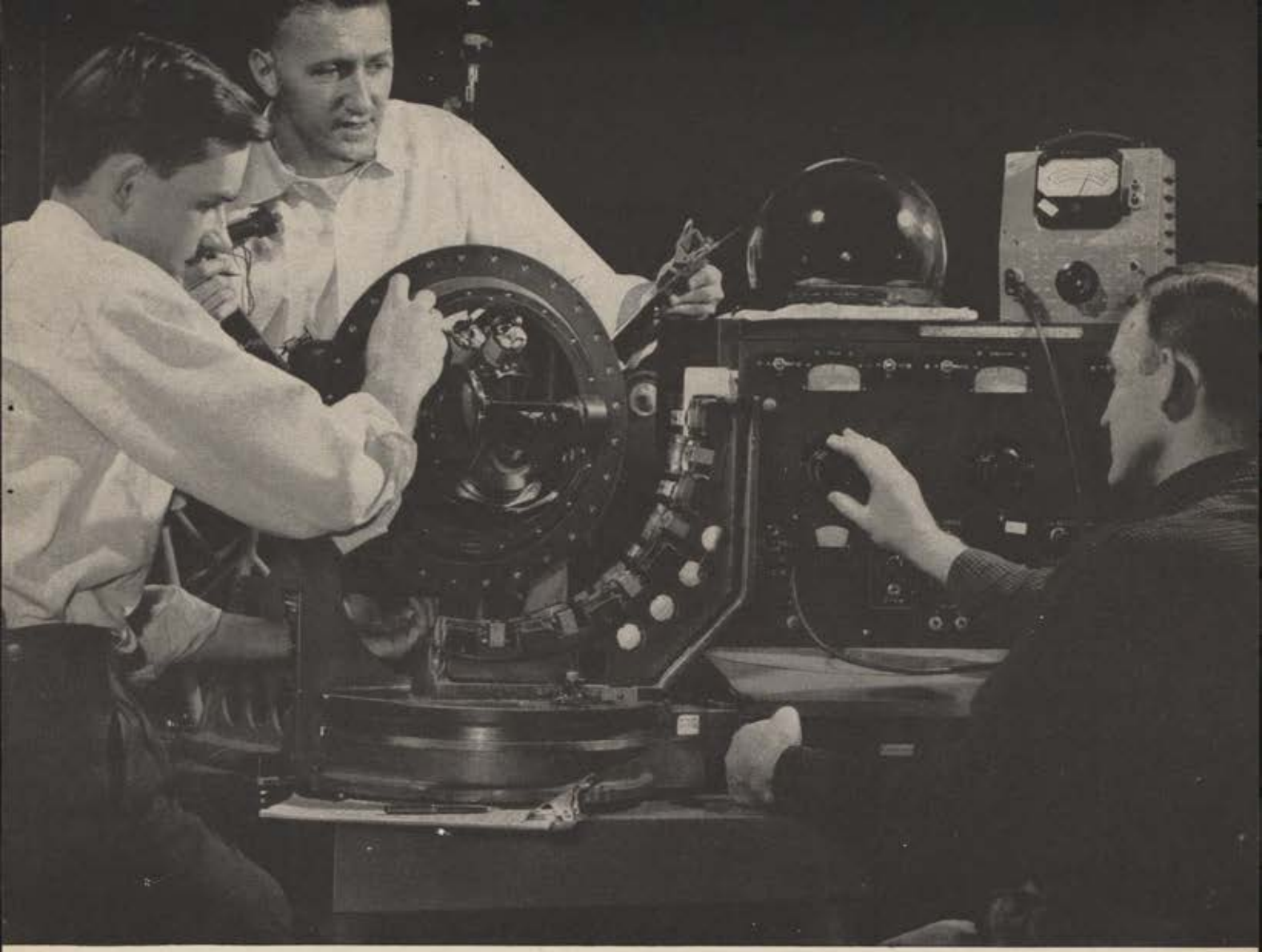
Gentlemen: Going through the January copy of AIR FORCE, I came upon the "Air Mail" section in which you ran the letter "Personnel Training." Since I am in the Air Force, I'd like to comment on this subject.

First, I'd like to say I agree one hundred percent with Mr. Albert H. Wetzel of Norfolk, Va. I came into the Air Force on July 10 of last year. I received four weeks of "basic training" at Lackland AFB, Tex. This so-called basic training was nothing. About five years ago, as a Boy Scout, I spent two weeks at a Scout camp. In those two weeks I received more military training and learned more about how to take care of myself than I did in the four weeks at Lackland.

It is my opinion, gentlemen, that the Air Force should crack down on its training. Especially that of *defense*. I believe every new man coming into the Air Force should have at least one good hard month of defense training. This month of training should include, as Mr. Wetzel said, all types of weapons, hand-to-hand fighting, grenade throwing, commando tactics, and all other training that would count toward a man saving his own life and others some day. After he has this month of training, he should have about two days a month training to keep him familiar with these defense tactics.

The Air Force, as far as defense training is concerned, is very poor. Unless it does something about this, when the time comes for an airman to defend himself and others on the ground—well, it would probably be like Custer's Last Stand.

A/3C James M. Shriver, Jr.
Lockbourne AFB, Ohio



Can you use the talent that built 1,500 Y-4 bombsights on schedule?

These General Mills technicians are representative of the production talent that built more than 1,500 Y-4 bombsights, 1,500 coordinate converters, 1,400 azimuth and sighting angle indicators and 1,400 amplifier and power supply units—and, delivered them to the Air Force *on time*. Here the men inspect a bombsight before it progresses to the next stage of production.

Because we have the highly skilled men—and the men have the specialized tools and machines—we produce precision piece parts or complete, complex assemblies to meet the most exacting requirements.

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No slow-downs for the B-47—Bombsights ready in advance! During production of the B-47 Stratojet, not a one was kept from the ready-line for lack of a bombsight. The same developmental, engineering and production skills that gave the Air Force on-time delivery are available to speed production of your products.

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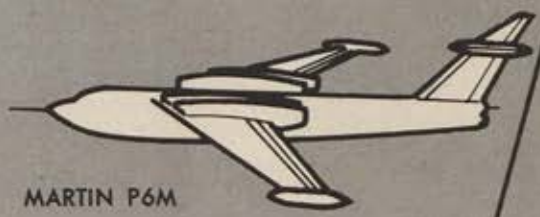
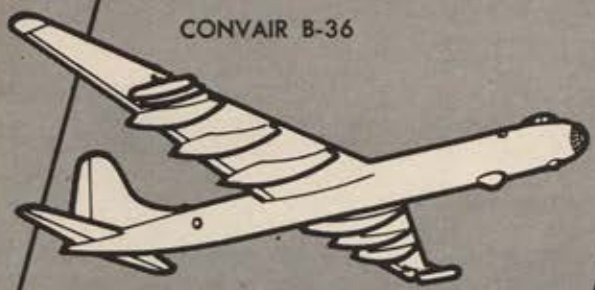


MARTIN P6M



CONVAIR B-36

DOUGLAS DC-8

NORTH AMERICAN
F-100D

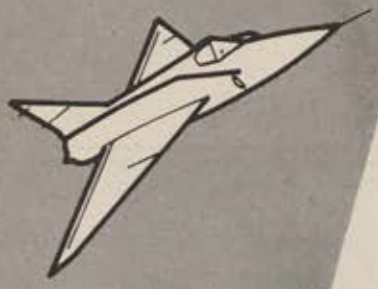
BOEING B-47E

MARTIN P5M

McDONNELL F-101

DOUGLAS RB-66

CONVAIR F-102A



Over 10,000 SUNDSTRAND DRIVES have logged millions of flight hours setting records for reliability and performance

These are the aircraft on which over 10,000 Sundstrand Drives have logged millions of flight hours. Further evidence of industry acceptance are the two new jet airliners which will soon be adding to the Sundstrand Drive's record for reliability. A record built on ten years' experience and encompassing applications to every major type of aircraft. A record covering over 20 models, backed up by service throughout the free world. At the same time this record for reliability was being built, the Sundstrand Drive set the industry standards for constant speed drive performance—frequency control to $\pm$ 1/10% and the first automatically paralleled system are just two examples. *Reliability* and *performance* have made Sundstrand *first* in constant speed drives.

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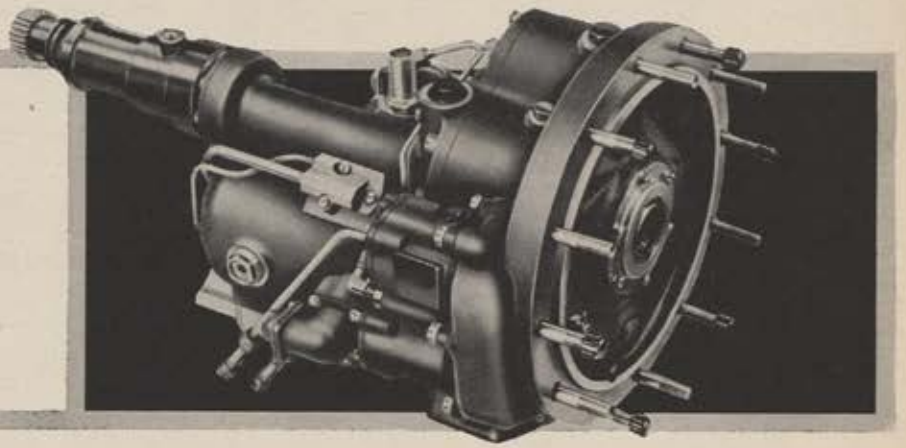

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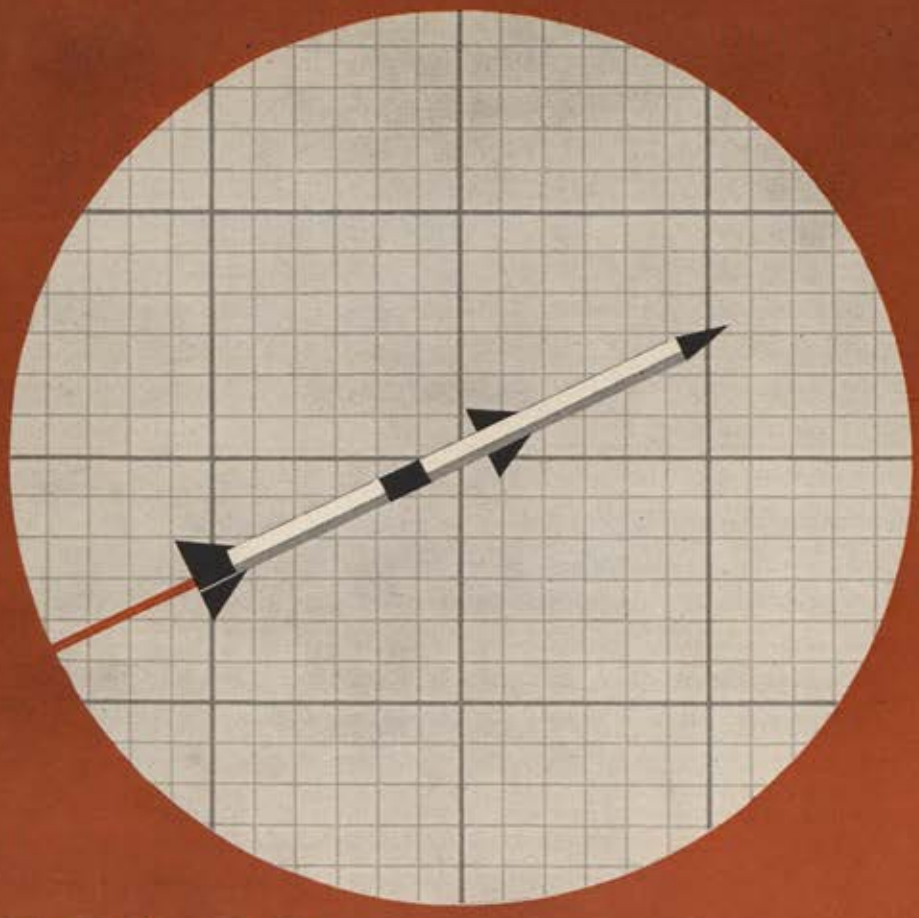

BALLISTIC MISSILES

on target a continent away through Burroughs computation

For some time, Burroughs has been participating in the U. S. Air Force Ballistic Missiles program in the field of guidance. This program consists of two intercontinental ballistic missiles: *Atlas* and *Titan*, plus an intermediate range missile, *Thor*.

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Electronic Tube Division, Plainfield, N. J.
The Todd Company, Inc., Rochester, N. Y.

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Looking to future expansion, Burroughs invites inquiries from qualified engineers.

wing tips

By Wilfred Owen

Cities enplaning the largest number of overseas and international air passengers are New York, Miami, Seattle, San Francisco, Los Angeles, and Fort Worth.

• • •

Northeast Airlines has ordered five Bristol Britannia turboprop aircraft for its Florida runs next winter. That puts three British aircraft on US airlines, including Capital's fleet of Vickers Viscounts and the coming Capital fleet of pure jet de Havilland Comets.

• • •

During the first ten months of 1956, the United States exported 159 helicopters—126 of them to Europe. Practically all helicopters flown by the world's airlines are US products.

• • •

The dizzy pace of technological change has hit the Army hard. Pigeon training now has been abolished in favor of electronic communication, and the last 125 Army mules have been retired in deference to thirty-eight helicopters.

• • •

The J. L. Hudson Company, Detroit's largest department store, relies on Meteor Air Transport to fly merchandise daily from New York to fill customer orders overnight on styles not carried in stock.

• • •

There is enough nylon in a single tire of a big airliner to make 120,000 ladies' hose.

• • •

Jet aircraft suck in so many rocks, nuts, bolts, and so much dirt and other debris on take-off that resulting engine damage costs the Air Force an estimated $25 million a year.

• • •

Keeping the jet runways clean is the job of giant sweepers that move along at twenty-five miles per hour and generate a force six times greater than the velocity of a hurricane.

• • •

Air traffic control operations of the Civil Aeronautics Administration require the use of 75,000 miles of full-time telephone lines and 100,000 miles of teletype lines.

• • •

Domestic airlines in the United States carry three times as many men as women.

AIRPOWER IN THE NEWS

■ In his State of the Union Message last month, **President Eisenhower** set the stage for an expected proposal from the US in the United Nations for **international control over space missiles.** In Mr. Eisenhower's words, "We are willing to enter any reliable agreement which would . . . mutually control the outer space missile and satellite development." This statement seemed to imply two things: that the **ICBM**—either ours, the Russians', or both—may be reasonably close to reality, and that the artificial **earth satellites** to be launched during this International Geophysical Year may have a far greater military potential than publicity on Project Vanguard has thus far indicated. The President prefaced his remarks with a renewed proposal for **the "Open Skies"** plan. Early this winter the **Russians eased their objection** to the American aerial inspection plan by saying they would agree to inspection of a 1,000-mile-wide band through Central Europe.

Wide World Photos, Inc.

At Wright Day dinner in Washington, D.C., Vice President Richard Nixon poses with recipients of nation's top air awards: (from left) Boeing's William Allen; AF Chief Gen. Nathan F. Twining (Collier Trophy); Mr. Nixon; Ray Mertes (Brewer Award); and Dr. Edward Warner (Wright Trophy).

■ **The Navy,** which had been working with **the Army** on development of the **Jupiter intermediate-range ballistic missile,** now has plans for its own **1,500-mile IRBM.** The new missile, called **Polaris,** will be developed by a team of four contractors. The **airframe** will be undertaken by **Lockheed's Missile Systems Division.** The **Aerojet-General Corp.** will work on **propulsion,** using solid propellents, and **General Electric** and the **Massachusetts Institute of Technology** will develop the **guidance system.** Armed with either an **atomic** or **H-bomb** warhead, Polaris will be able to be launched from surface vessels or **underwater, from a submarine.** Commenting on the Navy's withdrawal from the Army missile program, Assistant Navy Secretary for Air **Garrison Norton** pointed out that the Navy's desire for **sea-based** intermediate-range missiles is different from the Army requirement. The Army's Jupiter program must still be reconciled with the November **policy declaration from the Pentagon,** which **limited Army** weapons to a **200-mile range.** This same paper, however, went on to say that use of missiles like Polaris was "the **sole responsibility** of the US Navy."

Meanwhile, the **Air Force** announced that **$570.5 million** had been awarded in **three contracts** for the development of airframes for three AF ballistic missiles. Largest contract—**$358 million**—went to the **Martin Co.** for continued work on the ICBM **Titan. Convair,** which has long been working on the **Atlas** ICBM, received **$145 million.** And the **Douglas Aircraft Co.** received **$67.5 million** for work on **Thor,** an intermediate-range missile.

■ **Robert Tripp Ross,** Assistant Secretary of Defense for Legislative and Public Affairs, was, at presstime, on an **indefinite leave of absence** from his Pentagon post, while an **Army contract** to a company headed by his wife was investigated. Mr. Ross announced his intention in a letter to **Sen. John McClellan** (D.-Ark.), chairman of the Senate Government Operations Committee. It was this committee's investigation into the affairs of AF Secretary Harold Talbott in 1955 that resulted in Mr. Talbott's resignation. In his letter to Senator McClellan, Mr. Ross explained that he had **severed connections** in 1952 with **Wynn Enterprises, Inc.** The firm now has a $834,150 contract with the Army for men's trousers. Meanwhile, published reports said that former **Rep. Dewey Short** of Missouri, who was not reelected in November, was being considered as a possible replacement for Mr. Ross.

■ The Defense Department's announcement of an **atomic-armed anti-aircraft missile**—to be available in about two years—recalled the article **in this magazine** in **July 1952,** entitled "A-Bombs for Air Defense." The new missile is to be called **Nike B, or Nike-Hercules,** and is actually an entirely new version of the Nike that now rings nineteen major cities in the US. For air defense **the Air Force,** according to published reports, prefers the **Talos** missile, developed by the Navy, to the Nike B. Like Talos, Nike B has a range of about **seventy-five miles,** about three times the range of the present Nike.

■ The **Air Foundation** has canceled plans to hold a 1957 version of the **National Aircraft Show.** In announcing the move, **Ben T. Franklin,** executive secretary of the Foundation, said that the decision was reached because of the recent Department of Defense memo that **prohibits major participation** by the armed services in a national air show. The 1956 meeting was held at Oklahoma City.

■ The **globe-girdling flight** last month of three giant **Boeing B-52s,** which flew the **24,325 miles non-stop** at an average speed of **"better than 530 mph,"** was described by one of the participants as **"routine."** The flight, led by Fifteenth AF Commander **Maj. Gen. Archie Old,** was met on landing at March AFB, Calif., by SAC Commander-in-Chief **Gen. Curtis LeMay** who awarded each crew member a Distinguished Flying Cross. The trio of B-52s **refueled "several times"** during the **forty-five-hour and nineteen-minute flight.** The previous record of more than ninety-four hours was set in 1949 by the B-50 **"Lucky Lady II."**

■ The **Russians,** who claim to have invented everything since the bean-shooter, now say they have flight-tested **"atomic power units" for aircraft.** This word appeared last month in *Soviet Fleet,* official newspaper of the Russian Navy. The writer predicted that **within five years** the Russians would have an **"atomic-powered flying boat** capable of carrying 1,000 equipped men, plus 100 tons of cargo."

And on the night of December 30, **Radio Moscow,** in one of its shortwave English-language broadcasts, reported that the "USSR now has a **new plane with flapping wings."** The plane, the broadcast continued, "is **an experimental model,** capable of flying **higher than propeller aircraft."** This was particularly interesting because last year it was

(Continued on page 21)

SALVO AT 40,000

This split second in the RCAF's radar-controlled lead collision course attack technique demonstrates the most powerful weapon in air defence. Automatically released, a salvo of rockets from the Avro CF-100, packing the punch of a destroyer, *boxes the target in a lethal concentration of fire power.* Interceptor squadrons of the RCAF being equipped with the Mk. 5 variant of the CF-100 . . . capable of operational performance at high altitude . . . practice rocket firing day and night, as part of their round-the-clock alert.

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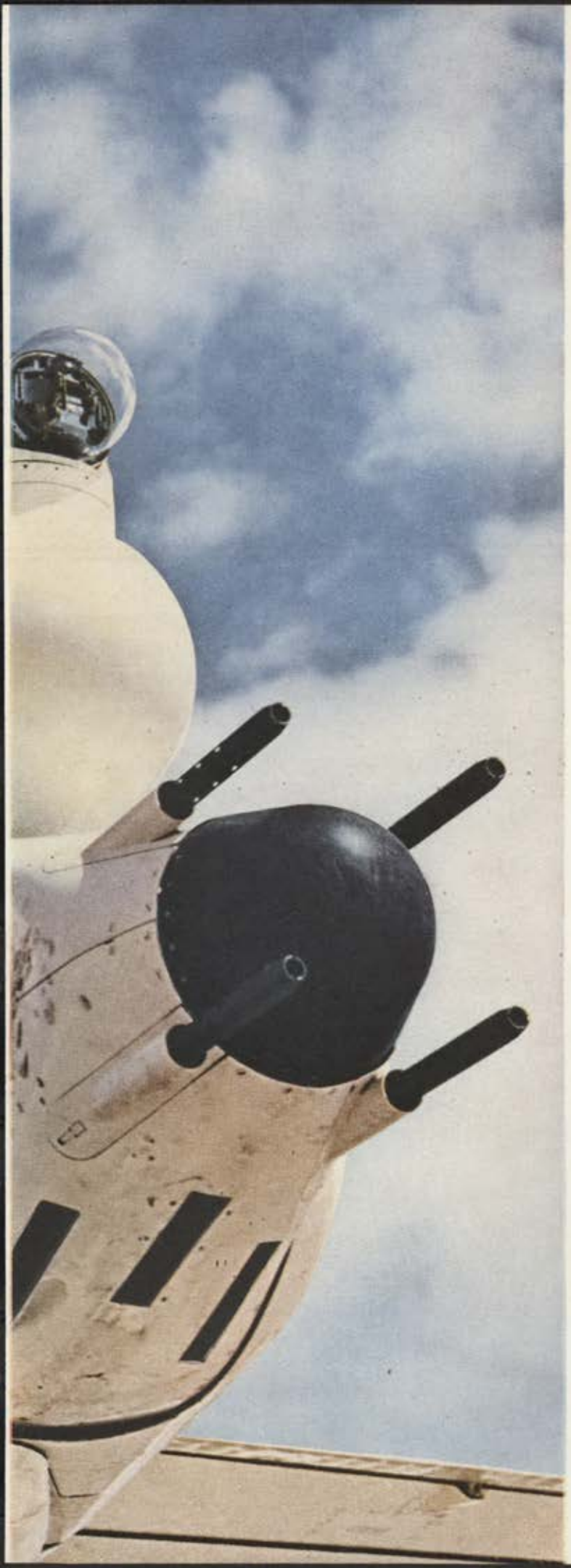

The fatal sting...

defending the B-52 intercontinental bomber is the Arma MD-9 fire control system that picks up, tracks, and with uncanny accuracy fires at its target.

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reported that one of the aircraft the Russians *might* show on **Soviet Aviation Day** was a **"flapping wing sailplane"** called *Kashuk*.

■ **AIRCRAFT** . . . The latest Air Force plane in the Century Series, the **Convair F-106A,** was test flown for the first time the day after Christmas at Edwards AFB, Calif., USAF announced last month. The F-106, an **advanced version** of the delta-wing interceptor, the F-102, is powered by the **Pratt & Whitney J-75.** The plane is described as having "the most advanced electronic fire-control system and armament yet developed for an AF interceptor." . . . The first two **Chance Vought F8U-1 Crusader** fighters for Fleet use by the Navy have been delivered to the Naval Test Center, **Patuxent, Md.,** after a non-stop flight from the company plant in Dallas. The Crusader is described as the Navy's fastest fighter. . . . In his speech to cadets at the USAF Academy in December *(see page 50)*, Air Force Chief **Gen. Nathan F. Twining** announced that during the two-week period ending December 11, **more than 1,000 SAC B-47s** flew **non-stop missions** averaging **8,000 miles each,** in the most intensive exercise of its jet bomber fleet that SAC has ever conducted. . . . It was in the same speech that General Twining gave the cadets an indication of how rapidly the AF is moving into **the missile era.** "In 1954," he said, "about **ninety percent** of procurement money went for aircraft, and only about **ten percent** for missiles. In the 1958 budget, about **thirty-five percent** of our procurement will go for missiles, and in **1961,** that money will be **split fifty-fifty** between aircraft and missiles." . . . After nine years of continuous production, the famed **North American F-86 Sabrejet** was discontinued last month. America's **first sweptwing airplane,** the Sabre made a name for itself by enabling USAF pilots to rack up a fourteen-to-one kill ratio over the **Communist MIG-15s** in Korea. Production of the '86 is continuing in four other countries. The more than **6,000 Sabres** produced by North American in the US will remain the dominant fighter in the USAF arsenal—in both the active establishment and the Air Guard—for some time. . . . At **North American's** Port Columbus, Ohio, division, last month, the FJ-4B made its first flight. The new plane, a modification of the FJ-4 Fury, is powered by a **Wright J-65** engine and designed for low-altitude attack operations.

■ **HONORS AND APPOINTMENTS** . . . Among the ten men named by the **US Junior Chamber of Commerce** as the "Outstanding Young Men of America" in 1956 was **NACA engineer Richard T. Whitcomb,** 1955 winner of the **Collier Trophy** for his development of the **"Area Rule"** concept. Application of the Area Rule, under which the waists of fighter aircraft are nipped in, provided aircraft designers many answers to **drag problems** met in transonic flight. Application of this principle, hailed by many as **"the greatest advance in aviation since the start of the jet age,"** enabled the Convair F-102 to become supersonic. . . . Another of the "Outstanding Young Men" was educator **Millard Harmon** of Auburndale, Mass., who is a member of the **Air Force Association.** . . . The **Institute of the Aeronautical Sciences** last month announced its annual awards. The **John Jeffries Award,** for "outstanding contributions to the advancement of aeronautics through medical research," went to **Ross A. McFarland,** Harvard University professor, for his contributions relating to human factors in the design and operation of transport aircraft. **Ross Gunn,** of the US Weather Bureau, won the **Robert M. Losey Award** for his work in meteorology. To Lockheed's **Clarence L. Johnson,** designer of the Lockheed F-104, went the **Sylvanus Albert Reed Award,** for "design and rapid development of high-performance subsonic and supersonic aircraft." And the **Lawrence Sperry Award,** for "the advancement of precision automatic flight control," went to **George F. Jude,** of the Sperry Gyroscope Co., for his work in the development of the SP-30 flight control system. In addition, the Institute of the Aeronautical Sciences announced **two new Honorary Fellows,** the highest honor the Institute can bestow. They are **Harry F. Guggenheim,** from the US, and **Air Commodore F. Rodwell Banks,** from Britain. . . . The Institute's president for 1957 is **Mundy I. Peale,** president of the Republic Aviation Corp. Mr. Peale, who becomes the Institute's twenty-fifth president, succeeded **Edward R. Sharp,** director of NACA's Flight Propulsion Laboratory. . . . **David F. McCallister,** Air National Guard jet pilot who won the Air Force Association-sponsored **Ricks Memorial Trophy Event** in 1956, has been appointed chief of the engineering flight test section of **All American Engineering Co.,** Wilmington, Del.

Photo by Don Rice, N. Y. Herald Tribune

At American Legion dinner in New York honoring her, Mrs. James H. Doolittle accepts William J. McGough Memorial Award from NYC Fire Commissioner and Air Service Post 501 Commander Edward F. Cavanaugh, Jr. (right). At left, AFA's Gen. Jimmy Doolittle. The award recognized Mrs. Doolittle's contributions to aviation through the years.

■ **STAFF CHANGES** . . . **Maj. Gen. Gordon A. Blake,** Assistant DCS/Operations, Hq., USAF, replaces **Maj. Gen. Harold H. Bassett** as Commander, USAF Security Service, on February 10. General Bassett will become Deputy Commander, US Taiwan Defense Command at Hq., Pacific AF/FEAF (Rear), replacing **Maj. Gen. Harold W. Grant,** who will move to Hq., ADC, for duty as DCS/Operations, April 1. There General Grant replaces **Maj. Gen. Hugh A. Parker,** who will become Commander of ADC's Western Air Defense Force in May. . . . **Maj. Gen. William H. Blanchard,** Deputy Director of Operations, SAC, will replace **Maj. Gen. James H. Walsh** as Commander of the 7th Air Division, SAC. General Walsh will be assigned to Hq., USAF as DCS/Operations in March. . . . **Brig. Gen. Lewis L. Mundell,** Commander, Spain Air Materiel Area, has been reassigned as Special Assistant to the Commander, Air Materiel Forces, European Area. . . . **Brig. Gen. James V. Edmundson,** Commander of SAC's 36th Air Division, will become Deputy Director of Operations for SAC on February 15.—END

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.

One Russian airplane the German ground forces came to fear before the end of World War II was the famous *Stormovik,* the Ilyushin IL-10. Thousands of these fast-moving, simple but effective aircraft were built during World War II and afterward, until 1953 when production was halted.

Powered by a 2,000-hp. in-line piston engine, they came equipped with cannon and machine guns; sometimes with rockets or bombs. They were effective against German tanks and armored vehicles as well as troops, and invariably worked closely with the Red Army.

The *Stormovik* was used in Korea; thousands of them have been turned over to the satellite countries and many

Sketch of IL-10, effective Russian ground-support plane during World War II. Production on it ceased in 1953.

IL-10's jet-powered successor is slightly larger, much faster, but has pretty much the same close-support job.

are flown in the remote areas of the USSR today. A few were junked in East Germany earlier this year, with a great fanfare of Russian propaganda about Soviet aircraft leaving that country, never to return.

Well, the *Stormoviks* of World War II fame aren't returning, but a twin-jet successor is. The new aircraft—its Russian name or designation not yet known and its NATO code-name yet to be chosen—has been seen at Kubinka airfield not far from Moscow, and more recently with a front-line unit while flying near Berlin in East Germany.

Getting precise data on Russian aircraft is no small task. Even so, it seems evident that the new airplane is a development from the IL-10. The main task of the new jet-*Stormovik* is the same as its predecessor: clear the battlefield of resistance before the advancing ground troops.

The accompanying drawing of the new aircraft, which is based on the reports of eyewitnesses, shows a twin-engine type with a cockpit exterior arrangement similar to the IL-10. Pilot and gunner have tandem seating, and the length of the cockpit suggests there may be room for a third crew member for certain operations.

The relative height of the cockpit bubble and its apparent heft have led observers to believe that it is of bullet-proof glass.

The gunner, who faces the rear, operates twin guns by remote control, a relatively new feature for Soviet aircraft.

The wing has a trapezoid shape and a straight-line leading edge. Either droppable tanks, some other droppable weapon, or rockets in a mounting, are found at the wing tips. The aircraft appears to be about the same size as its predecessor and has a span estimated at fifty feet and a length of forty-two feet, six inches.

The two jet engines are built into the wing roots in the manner of the Canadian CF-100, built by A. V. Roe Canada, Ltd. To judge from their size and the apparent absence of afterburners, the turbojets probably generate about 4,400 pounds of static thrust each at sea level. If armored, as was true of the predecessor types, the two engines would give the aircraft a high safety margin. A total thrust of around 8,800 pounds suggests a power loading of about three pounds per pound of static thrust, which is consistent with the speed and high gross weight estimated for the aircraft. The weight is put at about 26,500 pounds. The aircraft is thought capable of flying at 590 mph, which puts it in the subsonic range. At the same time it is believed to have good characteristics at 250 to 310 mph, thanks in part, at least, to its low wing loading.

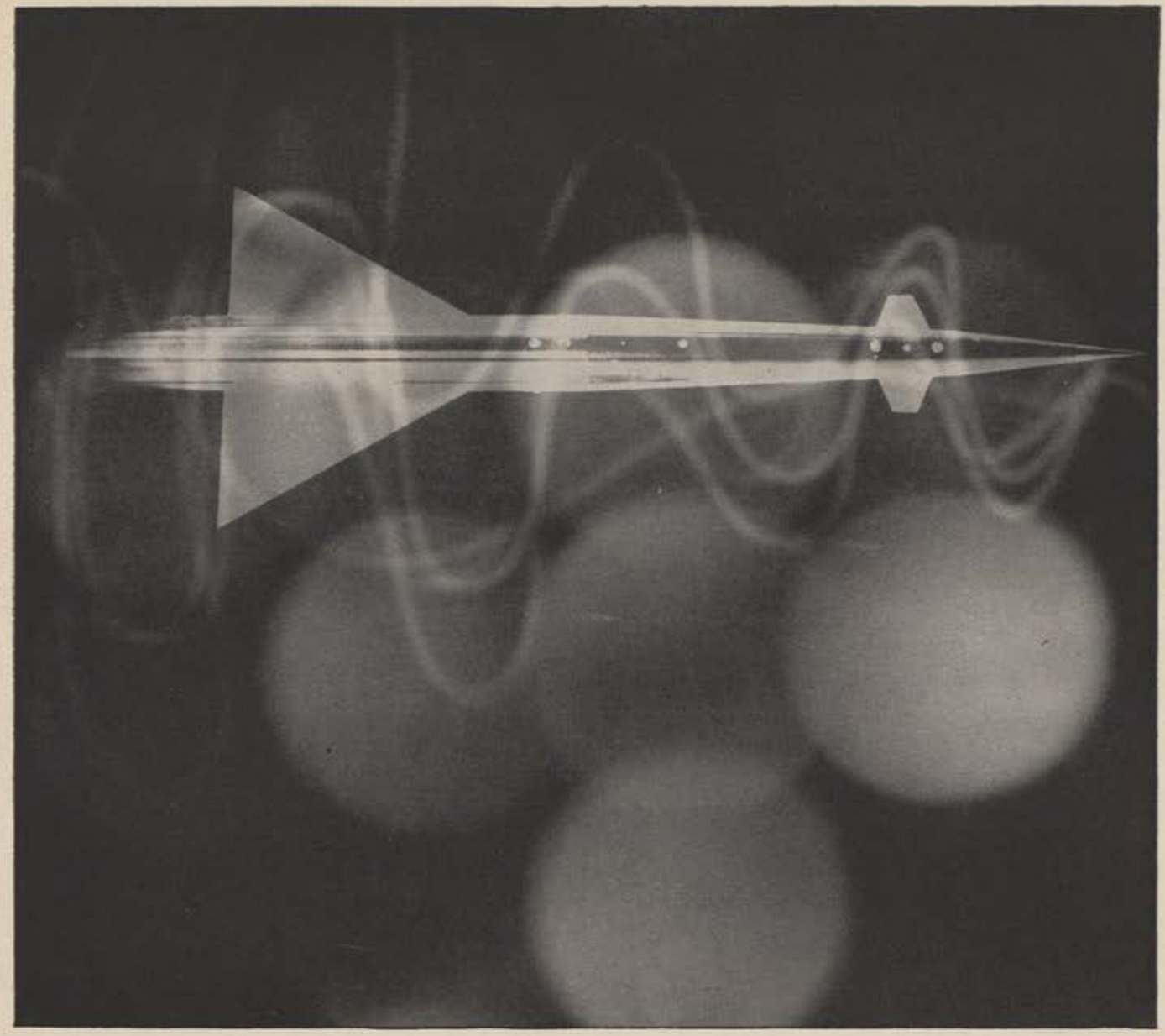
The useful load in terms of droppable weapons, such as bombs, is thought to be in the neighborhood of two tons, and the range is estimated at between 370 to 435 miles.

The new jet-*Stormovik* clearly couples the advantages of high- and low-speed operation. At high speed it can carry out lightning-like attacks on known targets, avoiding radar detection. As an aid in spotting small targets, the aircraft can be slowed down to the speed common to its piston-powered ancestors. Aerodynamic brakes on the sides of the fuselage assist the pilot in slowing down his airplane.

Attack aircraft which fly low are handicapped by a very high rate of fuel consumption if they are jets. Their approach routes cannot be unduly long or complicated; if they are to work with ground troops they must be "fed and quartered" near the front.

These facts indicate that the jet-*Stormovik* meets such requirements: low wing loading, together with low-pressure tires that make landings on sod fields a possibility; a relatively powerful pair of engines; and probably good armor protection.

Closest thing the NATO countries have to the new Russian aircraft is the familiar Republic F-84F Thunderstreak.—END



Portrait of a man's supersonic alter ego

The speeds and altitudes achieved by today's aircraft have placed them beyond a human pilot's physical resources. They fly faster than he can think, decide and react... exert forces beyond his own strength or that of old-time hydraulic systems.

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Three Genisco Accelerometers help the Super Sabre close in

If enemy air infiltration happens, you can be sure that modern knights of the sky powering the swift *Super Sabre* at speeds faster than sound will spearhead America's defense.

Typical of today's supersonic aeronautics, the USAF's *Super Sabre* reflects the finest contemporary engineering skill and scientific creative imagination. But this swept-wing assassin is more than just another jet-powered plane. It is a proven, integrated electro-mechanical system, combining a multitude of precision sub-systems, assemblies, and individual parts.

The automatic flight control system, for example, consists of numerous components, each one vital to the performance of the system. Naturally, component reliability is imperative if the plane is to carry out its mission. The flight control system of the F100D incorporates three Genisco Model DDL Accelerometers.

The Model DDL is only one of many Genisco Accelerometers now in use on America's air guardians, including our most important operational guided missiles. Like other models, the DDL was designed for a particular application—to function perfectly in the severe vibrational and shock environment of supersonic flight.

Genisco's ability to design for the most stringent applications and to produce precision instruments in large quantities has made the company an important link in our nation's defense chain.

Descriptive technical data on the Model DDL and other Genisco accelerometers will be sent upon request.

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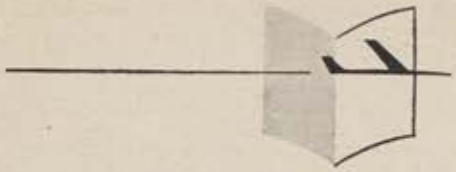

airman's bookshelf

If you want to keep your chickens in your own yard, clip just one wing, not both. This lesson was Basil Rowe's first brush with aerodynamics. He learned it from his father in 1911. Forty years later Capt. Basil Rowe, Pan American's number one pilot, retired with more than 35,000 hours of pilot time logged and, in miles flown, more than 223 trips around the world. His autobiography, *Under My Wings* (Bobbs-Merrill, $4), tells the story of the most glamorous and bold era of human progress—man's conquest of the air. The book recounts Rowe's adventurous life—stunt flying, air racing, barnstorming, test-hopping, organizing a West Indies airline (which later became Pan American), pioneering new air routes in South America, and flying in two wars as a military transport pilot. The author gives a clear picture of what the pilot on a giant airliner must do, the kind of a man he must be, and the shape his thoughts take as he plows through the lonely, sometimes dangerous, skies with his human cargo.

Looking back over his four decades of flying, Rowe feels the real glamor of flight disappeared about the time airplanes were made with hard skins, internal trusses, and instrumented cockpits. After that, he observes, it was no longer possible to feel your way through the sky like a prowling cat, or listen to the song of the wind through the flying wires, or smell the pungent castor oil, or angle your head into the slip stream and laugh at the earth far below. Today flying is a matter of instruments, earphones, slide rules, power-curve and radio-facility charts. Pilots have become airborne technicians. And though feeling nostalgia, Rowe realizes that such is the path of progress—inevitable, necessary, and wonderful. And it is the record of this progress through the life and work of a real air pioneer that makes *Under My Wings* a significant addition to air literature and a book every air enthusiast should read.

• • •

AF Lt. Col. Walt Lasly's *Turn The Tigers Loose* (Ballantine, hard-cover, $2.75, paper-cover, 25¢) is a "first novel" about the USAF night intruder boys who prowled the North Korean skies in obsolete B-26s and some of the world's sloppiest weather. Their job, which nobody envied them: to keep the enemy supply convoys from moving at night. A heavily armed enemy waited with every convoy, allied with the mountains, the darkness, and the weather. Few returned who went down on night missions. Yet during the entire war, almost half of the UN effort in every twenty-four-hour period was performed by a pair of AF B-26 wings. This effort went largely unheralded, however, with the action in MIG Alley making front pages in the US almost daily. Colonel Lasly writes from first-hand experience. He was wing operations officer for the 17th Bomb Wing and bases his novel on the activities of the 3d and 17th Wings.

• • •

Many former Nazis admit they lost in World War II because they had the wrong kind of airpower. Among them is Ernest Heinkel, a German flyer, aircraft designer, and builder of some of the world's most successful military airplanes, including one of history's earliest jets, the HE-178 which first flew in 1939. Heinkel's memoirs, *Stormy Life*, edited by Jurgen Thorwald (E. P. Dutton, $5), is told primarily in terms of the history of Heinkel airplanes from drafting board to flight. Long before World War I, Heinkel was prominent as a designer and builder. Then, ignoring the Versailles Treaty, he covertly built planes and sold them to foreign countries, including the US. As early as 1935 he worked with Dr. Wernher Von Braun on rocket and jet-propelled planes. After the Nazis came to power, he worked with the *Luftwaffe* and the German High Command, but he scorned the German emphasis on a ground-support air force and advocated long-range heavy bombers.

Heinkel's memoirs tell of his intimate business relationship with the top German military and political figures, and give an insight into the problems and frustrations of an aircraft industry under totalitarian rule.

Heinkel, who has made auto engines and bicycles since the war, faces the future with hopes he can lend his talent and resources to the build-up of Western airpower. *Stormy Life*, a solidly written account of a turbulent career in a turbulent era, is a fine companion to Harold Mansfield's Boeing history, *Vision: A Saga of the Sky*. From the two the reader can get a picture of how two great nations forged their airpower for war.

• • •

We're pleased to see Don Whitehead's *The FBI Story* (Random House, $4.95) on the best-seller list. It should be read by every thinking citizen. It is a dramatic history, recounting the origins of the Bureau and describing its subsequent accomplishments. Especially interesting to the military is the story of the FBI during wartime. This book reads like a novel, is packed with adventure, but still manages to be informative and educational.

• • •

First in a series of four popular service histories is Col. R. Ernest Dupuy's *The Compact History of the United States Army* (Hawthorn Books, $4.95). Colonel Dupuy (USA, Ret.), a well known Army journalist, has produced a history or Army life for light reading. Although it's a pleasant change of pace over the usual military history, still the book becomes a first-class job of back-scratching the Regular Army establishment, and as a result lacks both objectivity and critical appraisal. Take the Bill Mitchell case. The episode is handled lightly. Nothing is said about the impact of Mitchell's theories on Army thinking, doctrine, or progress, or about Mitchell's contributions to American military strategy.

Airmen will find only brief references to the Army's air arm, to Army airmen, and to the great accomplishments and contributions of Army airpower. If any branch of the Army ever developed a unique set of military habits, a special esprit de corps, or made a particular impact on Army life, it was the men of the AAF. A history of an Army cannot be complete without recognition of this. But then, perhaps Colonel Dupuy is leaving all that up to AF Lt. Col. "Casey" Gantz who is doing the Air Force volume for this series. Gantz's history is to be published next fall. Lt. Col. Frank O. Hough, USMC, is preparing the Marine volume, and Fletcher Pratt completed the Navy volume just before he died.

• • •

The Philosophical Library's *Sound Barrier*, by Neville Duke and Edward Lanchbery ($4.75), is the sixth edition of this highly popular English volume, revised and enlarged to bring the subject of high-speed aeronautics up to date. Although it deals with a technical science, it is written for the layman in simple, informative style that will give any reader a clear understanding of the technical and historical aspects of high-speed flight.—END

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In "Jet Blasts" you can sound off on any subject you want. We'll pay a minimum of $10 for each "Jet Blast" used. All letters must be signed but we'll withhold names on request. Keep letters under 500 words. "Jet Blasts" from service personnel do not necessarily report official policy.

Moral Force - - Vital Element of Airpower

The issues of our times are, basically, moral and spiritual issues, and in our struggle for survival through better weapon systems we dare not forget this fact. Today's battlefields are the hearts and minds and souls of men. These familiar words may be poetic, but they contain more truth than poetry. For along with our search for superior weapons we must recognize that only better ideas can supplant false doctrines and fill the world's spiritual vacuum.

America's moral might is not equated with religious practice alone. But, religion in the services, as elsewhere, is the moral flywheel of society and the dynamic of individual life. Each man has both the privilege and the right to worship according to the dictates of his conscience. This right is among his most cherished possessions. And the United States government has always tried to make facilities for this exercise available to men in service, for its importance to the deep-seated needs of each of us has been fully recognized. It is also true that religion supports the service.

The armed services are always concerned with the characters of men, their temperance, their courage, their sense of justice. Religion is one of the most effective disciplines to achieve these qualities. Native bravery and intensive training cannot alone produce the best type of airmen. There must be a consciousness of personal obligation to one's duty in every area of life, fortified with a deep sense of honor. These qualities derive, in large measure, from a man's theology.

Thus, the normalcy of worship as a native need in man is fused with the requirements of character in the airman. The "religious man"—where the intents and objectives of good religion are understood—should be the best airman. He will be a God-related man, strong in his convictions on moral issues, with a will to work and to preserve the best he knows. He will be concerned with his country's welfare, a co-worker with his God to achieve the best values in his world.

Moral fiber is always at a premium in the services. It is a prerequisite of good citizenship and group living. The workload of any Air Force base falls upon the shoulders of serious-minded and reliable persons. Among such, purity is still a salutary virtue. Personal cleanliness in habit, speech, and conduct characterizes the man who is ready at all times to do his duty. He will be a man of exemplary attitude; an integrated personality, interested in wholesome pursuits. He is dependable, loyal, and fortified against failure when confronted by evil circumstance.

The ultimate of service affiliation and training, active or reserve, is *combat*. Each man must have the will to work or, when necessary, to fight. In combat we need men who will display both fighting power and staying power under fearful tests. It is this spiritual stuff with which the chaplain largely concerns himself; for it is among the chief assets of any man under test. An engineer, in testing concrete, uses the expression "tested for failure." In this process he places samples of his product under such stress that they will crumble and break. Men under stress are often tested to failure —and the failure most often occurs in the realm of mind and spirit. The cure of this fact lies not in despair but in deliberate, positive educative processes leveled at the minds and hearts of men.

Character is largely the contribution of religion, for it is rooted in the knowledge and worship of God. Character derives from what a man holds sacred. In the service, the constitutional guarantee of freedom of religion is not merely a matter of directive. Religion is supported in the conviction that through its expression much good is achieved for the man and for the service.

Today we must remind ourselves (as indeed, many of our leaders continually remind us) that only righteousness can exalt a nation. Strength, stability, and peace must be based upon ingredients more basic than material power alone. Only a fool would deny our need for the best in weapon systems. But democracy is a spiritual concept which cannot long survive unless it has spiritual power, spiritual energy, and a stockpile of righteousness. Deep conviction regarding the dignity of the individual and the brotherhood of man, in reverence for the will of God whose sons we are, is of paramount importance. For instance, consider the place of the chaplain.

In some ways a chaplain is the same as any other officer. He is a specialist in those areas relating to religion, morals, and character building. He is a technician, expert in the performance of religious rites and counseling. But this is only a partial and functional definition of a chaplain. It is all right in what it affirms, but lacking in what it may deny. A chaplain is more than any other officer. It is presumed that he is honest, good, truthful, a man of integrity and devotion to duty—and beyond the call of duty and of duty hours. He is more than a specialist cranking a handle with professional dexterity. He is more than a preacher and a lecturer. More than *what he does*, we may ask *WHO he is*. Theoretically, a good dentist or finance officer will be an ethical person, expert in the requirements of formula duty performance. But a chaplain, in a sense, *IS* his message. It is unthinkable that he can function with unction if he is not a man of the highest personal caliber. He is the representative of God. For many men he is all they know of God. He is inescapably the personalization of God to his service community. He symbolizes God in the American way.

Thus, the chaplain's position in the service is a unique one. It has meaning only so long as God has meaning. It bespeaks an emphasis that is always timely, and yet timeless. For it is in himself, yet beyond himself, that the chaplain's presence witnesses to God and to America's moral might.

In our arsenal of moral force we

(Continued on page 29)

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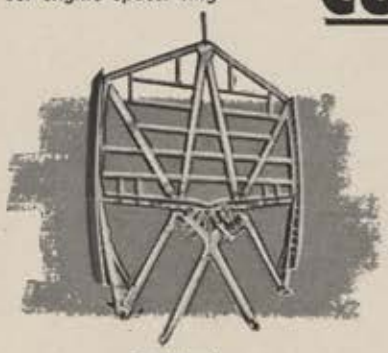

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forge and test the tools for peace and ready them for service in this conflict of ideals on a global scale. These tools are ideas. Ideas like freedom, liberty, and individual worth. These qualities are our true worth; these are the spiritual values that make us worthy of survival. For these values free men will fight and die willingly to achieve and preserve ". . . one nation, under God, indivisible, with liberty and justice for all." These ideas fire men's souls. They derive from God. And God is woven into the very fabric of our nation.

The Bible opens with the words "In the beginning God . . .," and, for Americans, ultimate reality will align us with one inescapable imperative, namely, in the end "In God We Trust." And, so long as God is true, the chapel will give meaning to the maintenance shops, and theology will spark the moral might that renders technology both safe and useful.

CHAPLAIN (LT. COL.)
ORMONDE S. BROWN

The author taught at the Chaplain School, Fort Slocum, N. Y., for several years and was war-time Chief of Plans and Training Division in the Office of the Air Chaplain, Hq., AAF, in Washington, D. C. He is now Staff Chaplain at Hq., Seventh Air Force, Wheeler AFB, Oahu, Hawaii.

Air Defense's Neglected Watchdog

No regular reader of AIR FORCE Magazine can deny that the Continental Air Defense Command has a mountainous task on its hands. ConAD is charged with the responsibility of defending, with as great a degree of efficiency as possible, the entire North American continent.

The USAF's Air Defense Command carries the most pressing responsibility in this three-service defensive system, for the primary ConAD weapon is the Air Force fighter-interceptor. North America's vast early-warning network is designed to enable these interceptors to do their job, with other weapons such as guided missiles currently a secondary or even "last-ditch" defense. It is elementary that ADC should possess the best aircraft that can be built and the most proficient airmen to back them up.

The Air Defense Command now has in quantity service three types of fighter-interceptors, with a fourth, the Convair F-102A, currently approaching full-scale operational status. Yet, despite their otherwise exceptional performance, *not one of these major aircraft types has a combat radius greater than 850 miles!*

The question as to whether or not ADC needs a truly long-range interceptor, an LRI, is one which has met considerable debate. It is generally felt that an aircraft with a combat radius of, say, 2,000 miles, would be extremely complex and would therefore suffer a high percentage of abortive missions. Another objection to the LRI is its probable cost as compared to the cost of a medium-range fighter.

It is a fact that virtually all American combat planes are "junky" in the sense that they carry unnecessary equipment. However, the Air Force is already flying an airplane that could be well adapted as an LRI—the Convair B-58 medium bomber. With a flight crew of three, an aircraft such as the B-58 would be no more difficult to operate than a small fighter.

There is more validity in the statement that an LRI would cost considerably more than the interceptors currently in use. Unfortunately, one of the problems that comes with defending a free country is that of economy.

Yet, in the long run, it would be less expensive to concentrate on an LRI immediately than to continue the present concept. One long-range interceptor carrying a heavier armament load would be worth a number of smaller interceptors in combat, and a lesser number of LRIs would have to be built. The LRI would also do away with the need for our northernmost fighter bases and, existing in lesser numbers, would cut down the cost of training technicians.

There are really no other major factors to consider in the LRI question. This country strongly needs an aircraft with the capabilities of range, armament load, and greater kill percentage that can be had only with a long-range interceptor. The Air Force is already flying at least one aircraft that fits in this category and has several more on the drawing boards. It is time to look at the need for such an aircraft and follow through with a revision in our air defense concept.

CADET CAPT. ROBERT F. DORR, CAP

One of our younger air enthusiasts, seventeen-year-old Bob Dorr has his sights set on an AF career. His hobby is airplane photos. He has a collection of some 3,000, many autographed by famous flyers.

One of GPL's ground speed and drift angle measuring equipments, AN/APN-81, provides basic input information to computers which tell Air Force WB-50s exactly where they are every flight second.

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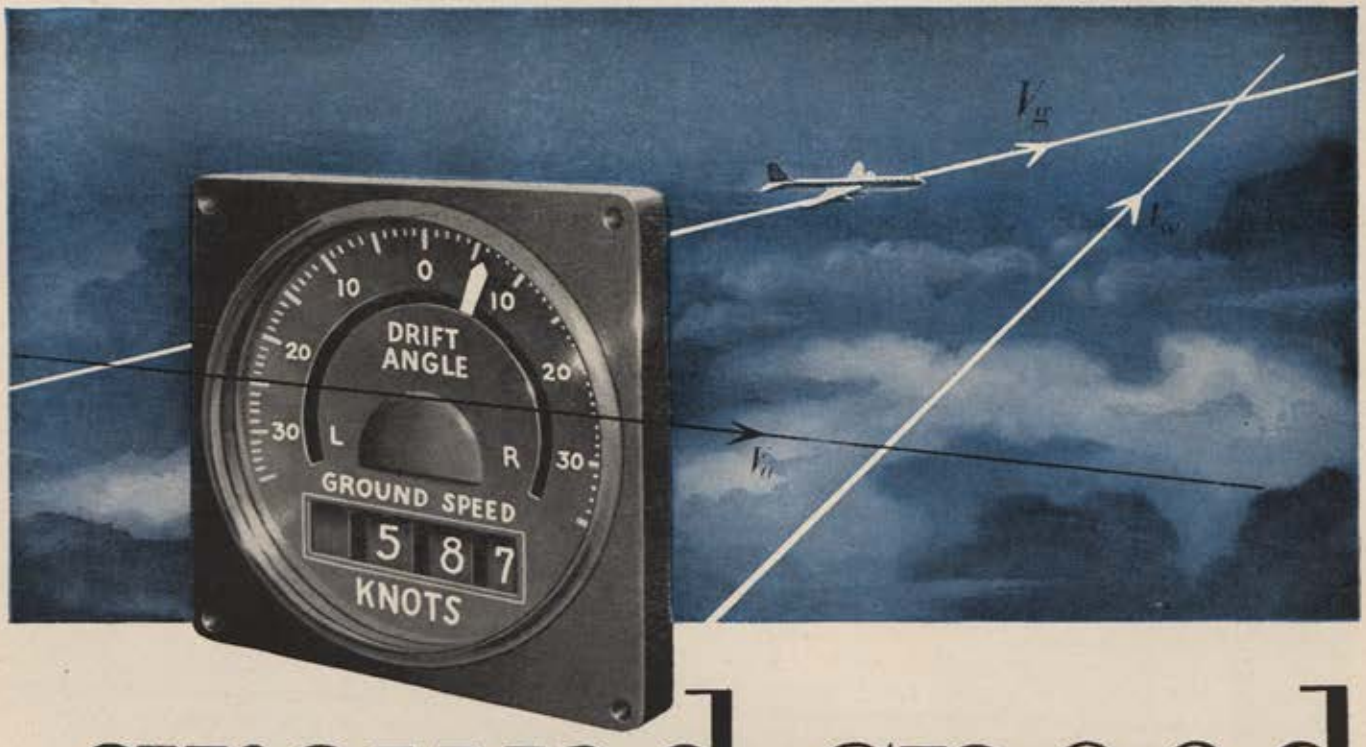

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An Editorial

The Pinch Becomes a STRANGLE

LAST month we predicted that the budget figures for Fiscal Year 1958 would reveal that we are building toward an Air Force of approximately 110 wings by the year 1960. Since then, the President has delivered his annual budget message to Congress, the budget itself has been made public, and Assistant Secretary of Defense Wilfred J. McNeil, the Pentagon's money man, has explained the military portion of it to the Washington press corps. Careful examination of these sources discloses no reason to renege on our prediction. As a matter of fact, the situation is even worse than we had feared.

First of all, let's look at the money to be made available. In his press briefing, Mr. McNeil broke down the budget into what he called "its three dimensions." These are not the familiar three dimensions of war—land, sea, and air—but a new fiscal approach—"new obligational authority," "direct obligations," and "expenditures."

New obligational authority we were familiar with. This is the traditional measure of a budget. It is the new money which Congress is asked to make available. In FY 1958 it adds up to $38.5 billion. Of this, the Air Force gets $17.746 billion, the Navy $10.92 billion, and the Army $8.92 billion. The balance is accounted for in miscellaneous accounts.

Using the yardstick of new obligations, the Air Force did not fare so well. Instead of the considerable increase that both Secretary Quarles and General Twining said would be needed in FY 1958, the Air Force is about $50 million above FY 1957's $17.68 billion. In contrast, the Army went up more than a billion, the Navy went up about half a billion.

Expenditures, the amount actually to be paid out of the Treasury during a given fiscal year, were another of Mr. McNeil's three dimensions. They will total, during FY 1958, about $38 billion—$17.6 billion for the Air Force, $10.4 for the Navy, $9.2 billion for the Army.

But, said Mr. McNeil, these figures are relatively unimportant. He called his third dimension—direct obligations—the true measure of a budget. This is the amount that will be contracted to spend during the fiscal year. Coincidentally, perhaps, this column adds up to $40.5 billion—$18.8 for the Air Force, $11.15 for the Navy, $9.7 for the Army.

Thus, by using Mr. McNeil's "third dimension," the budget appears to be some $2 billion more than the amount of new obligational authority. As one veteran newsman grumbled, "It's a new kind of shell game—three shells and no pea."

So, Mr. McNeil to the contrary, we're still going to keep an eye on that new obligational authority.

Over the months while the FY 1958 budget was being prepared, we examined the Air Force problem carefully and attempted to establish a rough sort of yardstick against which to measure the budget when it should be announced. Without taking Mr. McNeil's rubber ruler into consideration, here's how the funding stacks up.

We said that, if the amount allocated to it in FY 1958 fell below $22 billion, the Air Force would inevitably dwindle in strength and effectiveness. This year's amount falls more than $4 billion below that figure.

Let's take the matter of wings. Mr. McNeil's budget table, "Summary of Military Forces," calls for a planned force of 128 wings by June 30, 1958. This subtracts down to an official loss of nine wings in strength and twelve months in time from the previous goal of 137 wings by June 30, 1957. (Continue to bear in mind the compound adjective "combat-ready," which should be affixed to the wing structure at all times.)

This is a sizeable loss. But a patient examination of the bookkeeping reveals that it is only part of the story. For once again the budget-makers have changed the ground rules in the middle of the game. What we are really getting is a 123-wing force. Let's add them up.

The Strategic Air Command will lose six strategic fighter wings.

The Tactical Air Command will lose a tactical bomb wing and five fighter wings—a total of six wings.

The Air Defense Command will lose two interceptor wings.

The total reduction is fourteen wings. Fourteen from 137 leaves 123. How, then, does Mr. McNeil get the figure back up to 128? Why, by adding in four assault transport wings and a tactical guided missile wing (Matadors), which had been in the 137-wing program all along but which had never been counted as combat wings in the 137-wing goal. As Al Smith once said in another context, "No matter how thin you slice it, it's still baloney."

All of this is just more of the Washington numbers racket. The simple truth is that the Air Force no longer has a force goal. There is nowhere near enough money to maintain 128—or 123—wings on a modern, combat-ready basis, and one more budget like this one will push the Air Force down toward our predicted 110 wings even faster than we had feared.

Some of these reductions make a little sense. Some do not. One purpose of the SAC fighter wings was to escort the B-36. They would also assist the penetration problem, by helping to saturate the Red defenses and, as a matter of fact, could have had an H-bomb capability of their own. Like many another element of the budget, dropping these wings now represents an out-and-out gamble.

Presumably, the bomber wing cut from TAC consists of B-45s. This airplane is getting old, and B-57s and B-66s could probably be counted on to make up the difference. The fighter cut in TAC can only be explained by an increased Army missile capability in close support. It is hoped that this capability is actual, not merely on paper.

(Continued on following page)

The cuts in Air Defense Command are much more difficult to understand. One reason put forth is that we are getting more modern fighters and therefore need fewer of them. This logic leads to a point where a fighter gets so modern that we may need only one or two of them. Actually, the need to modernize our fighter force springs from the improving Soviet delivery systems. As Soviet bombers fly higher, faster, and in greater numbers, it would seem we would need *more* and *better* fighters to cope with the threat. A second reason given for cutting air defense fighters is the increase in Army Nike sites. Here, too, the rules are being changed in the middle of the game. The Nike is admittedly a point defense weapon. The Air Defense fighter force has an area defense responsibility. It is a little murky as to how an improved capability in the Army's point defense capability makes it easier for the Air Force to discharge its area defense responsibility. It's a little like cutting your police department because your fire department is getting so good.

Another part of our budget yardstick said that the Air Force could be kept modern only if money for new aircraft was upped at least $2 billion over that provided in the current fiscal year. Yet the increase is piddling—$4.78 billion as compared with $4.6 billion in FY 1957. Last year the procurement plan called for about 1,900 aircraft. This year's figure is down to 1,515.

The main reason given for the cutback in new aircraft is that we are moving rapidly toward new weapons, particularly missiles. As a result, you might expect that missile money would be increased. Our own estimate was that at least $1 billion additional would be needed in FY 1958. The shocking fact is that there is less money for missile production in the FY 1958 budget than in 1957—$1.8 billion as against $1.95 billion, to be exact.

This paradox Mr. McNeil explained by saying that large sums were included in the FY 1957 budget to get the ballistic missiles program under way. The clear implication was that the program would somehow cost less as it went along, that the big sums were involved only in the beginning. Yet, not until we begin procuring ballistic missiles in quantity will we even begin to find out what big money is.

We previously estimated that funds for operations and maintenance would have to go up considerably in FY 1958. Jets require more fuel, and their support demands a more complex, and therefore more costly, logistic structure. The number of bases and installations, particularly air control and warning sites, is increasing. Yet there is no comparable increase in funds to meet these costs. In FY 1957 operations and maintenance money totalled $1.95 billion. In the new budget, it is only $1.8 billion.

The base construction program will drop farther and farther behind schedule under this new budget. Last year General Twining told Congress that the Air Force needed and could effectively use, another quarter of a billion dollars for construction. He didn't get it then. He won't get it in FY 1958, either. The sum remains the same for both years—$1.2 billion. This means another slow-down in the DEW Line and the SAGE program, and it renders SAC's retaliatory force increasingly vulnerable to enemy attack.

Air Force money for military personnel is up only slightly. The sum for Fiscal Year 1958 is put at $3.84 billion as against $3.69 billion in FY 1957. At the same time, the Cordiner Committee has been studying the question of pay and allowances and undoubtedly will recommend a pay raise. If the recommended raise should be significant (and it will do little good if it is not), there is no money in the budget to meet it. Mr. McNeil indicated that a supplemental request to meet a pay raise would be made most reluctantly, and it is likely that such a raise would have to come out of some other part of the already too-tight budget.

As has been the case over the years, research and development money represents the gloomiest picture of all. It still hovers at $661 million, a point at which it has stuck for years. In a period of rapid technological change and inflated costs, holding R&D funds at a given level is not maintaining a plateau—it is building a toboggan slide. In this connection it is interesting to note a recent statement by Dr. Clifford Furnas, recently resigned Assistant Secretary of Defense for Research and Development. Dr. Furnas pointed out that, during the period from 1949 to 1957, research and development costs have suffered inflation of an estimated forty-three percent. The R&D dollar buys fifty-seven percent of what it bought in 1949. In addition, according to Dr. Furnas, technology has brought heavy pressure on research spending. He cited as an example the fact that developing the B-29 involved 2,700,000 engineering man-hours; the B-47, 3,500,000; the B-52, 4,000,000, while estimates of engineering man-hours needed for a successor to the B-52 run as high as 9,000,000.

Mr. McNeil made a case for the low R&D figure by saying that much R&D money comes from other funds, such as procurement, for prototypes, testing, evaluation, and the like. This is true. But it has always been true and does not change the fact that each year in which R&D funds remain static is a step down the hill to qualitative defeat.

An intriguing sidelight on the FY 1958 budget is the mystery of the $900 million appropriated by Congress last year in excess of the Administration's request. This sum originated in the Senate, which wanted it ticketed specifically for B-52s, for interceptors, and for research and development. In conference with the House, the language was diluted to allow the money to be spent, in effect, on any weapon systems that showed promise.

Part of the $900 million has not yet been obligated, and is now being used to pare the Air Force figures for the FY 1958 budget by about a quarter of a million dollars. The portion of the $900 million which has been obligated went largely into the ballistic missile program, according to Mr. McNeil, and is presumably being used to help justify the decrease in new missile money. It would seem that the clear intent of the Congress at the time it voted the money is being flouted, or at the very least, compromised.

Above all, the new budget puts in sharp focus the inadequacies of our present military organization. When, out of a total budget of $38.5 billion, the nation does not get either the quantity or the quality it needs of the weapons of decision, then something is radically wrong with the system. In the years ahead, the technological requirements for national security will tend to pyramid, rather than shrink. And so the need to spend our money on the right things will become more and more pressing. We fail to see how this can be accomplished short of true unification of the services. Until that day, our defenses will always stand short.

We understand that both Mr. Wilson and Mr. Quarles fought against the budget cuts. We salute them for their fight. Within the imposed fiscal ceilings and within the current Department of Defense organization, the new budget probably represents the best that could be done. But while Washington fiddles, Moscow burns—with ambition. The Air Force mission grows more difficult of accomplishment with each passing day, even as the means with which to accomplish it dwindles in proportion.

There is a point at which austerity becomes starvation, and a pinch becomes a strangle. We submit that this point is being reached and fast.—END

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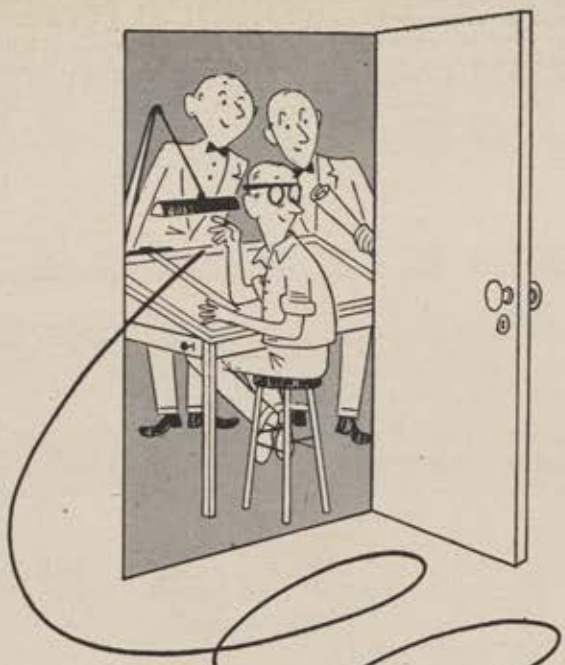

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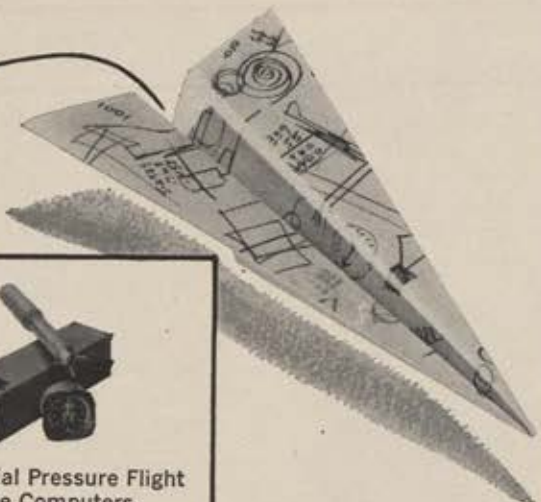

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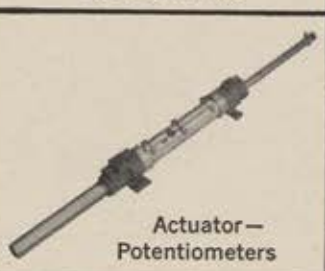

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SHOOTING THE BREEZE

WITH THE EDITORS OF AIR FORCE MAGAZINE

John Crosby, syndicated television columnist of the New York *Herald Tribune*, has some kind words to say about the CBS "Airpower" series. Wrote Crosby, "Homer, Shakespeare, and Tolstoy all fell prey to the fascination of warfare as a subject to write about and discovered that it was also a great money-maker. The audience, alas, likes war, and CBS, which tackled its monumental 'Airpower' documentary series with the highest possible motives, is in danger of eventually making some dough out of it, which is reprehensible for so high-minded a series. At any rate, it has a sponsor, and with re-runs and such, CBS may yet recoup the $1 million it spent on it, as NBC did with 'Victory at Sea.'"

☆

Preview Department: Look for a "Steve Canyon" series based on notes and sketches Milt Caniff made on a recent visit to the Air Force Academy. Also watch for an article by Quentin Reynolds in the upcoming *Reader's Digest* called "The Battle Hymn of Dean Hess." Hess is the AF colonel whose new book *Battle Hymn* is due out in movie form this month. The *Digest* article concerns "Operation Kiddy Car," Colonel Hess's efforts to establish an orphanage for Korean youngsters.

☆

If Air Force wives aren't made happier, the Air Force will never solve its manpower problems. That was the conclusion reached by Reserve Lt. Col. Margaret Chase Smith after a fifteen-day tour of active duty, which took her to AF bases from Colorado Springs to the Panama Canal.

Colonel Smith suggested that pressure from a discontented wife is as great a factor in forcing a man out of the service as is the promise of higher pay in private industry. This isn't likely to change, said Colonel Smith, as long as wives have to live as much as forty miles from their husbands' base or in isolated areas deficient in recreational and school facilities.

Fortunately, unlike the average AF Reserve officer, Colonel Smith is in a position to influence legislation designed to correct such conditions. Her civilian job is senior United States Senator from the state of Maine.

☆

The "Concrete Cobweb," otherwise known as the Pentagon, has a housing shortage of its own. To take care of the burgeoning staff of the Department of Defense, the huge A-ring corridor is being sliced in half by a cinder-block wall to provide an extra 80,000 square feet of office space.

☆

If you have an extra buck, or five or ten, don't forget the St. Clement Danes Memorial Fund. Spearheaded by the US Third Air Force, stationed in the UK, the drive has gained world-wide momentum and, at our last reading, had collected more than $30,000. Goal is $75,000 to pay for an organ to be installed in St. Clement Danes Church, an historic London landmark bombed out during World War II, which is being restored as the official chapel of the Royal Air Force. Send contributions to: St. Clement Danes Fund, Air Force Association, Mills Building, Washington 6. D. C. We'll forward them to Third Air Force.

☆

Every so often, as is common practice in the publishing trade, we will do a circulation mailing to a rented list. Naturally, it is impossible to screen the thousands of names on the list to cull out obvious non-prospects. As a result, we occasionally get an out-of-the-ordinary letter from a customer. Here's one that came in recently which amused us:

"Thank you for sending me an application for membership in the Air Force Association.

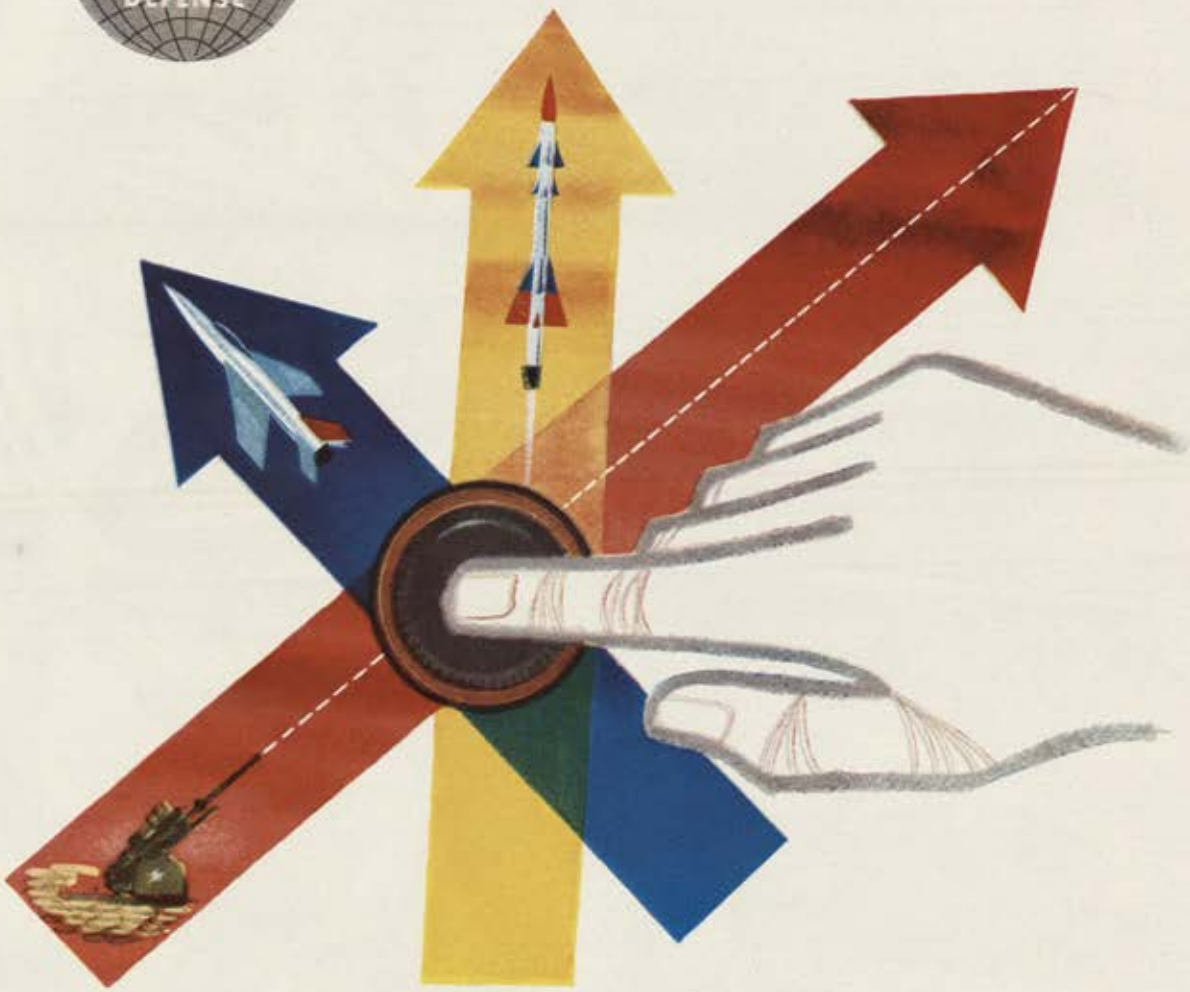
"You ask me, in your form letter, how I would like to have 'an invitation to rub shoulders with the top men in

(Continued on page 39)

The Burgess Battery people, one of whose products she's holding, don't identify our February Breeze-cake girl for us. The product? A "powerful, red flashing emergency warning light," handy for marking runway repairs. Two six-volt batteries enable it to flash continuously for more than fifty hours. The beam, Burgess says, can be seen for up to one mile.

THE BUSINESS OF AMERICA'S DEFENSE

IBM IN ACTION



HOW DOES AMERICA COME TO "READY ARMS"?

In an age of push-button warfare, turning defense needs into combat-ready realities is no simple matter. America's answer is weapon systems management—a team-up of a broad cross-section of the military and American industry to produce a complete weapon or combination of weapons.

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This involved a dual role. One, building the computers; the other, planning for the complete weapon system. In doing this, the contributions of many, many other companies had to be closely coordinated.

The results? "Ready arms" for America with saved time, effort, expense.

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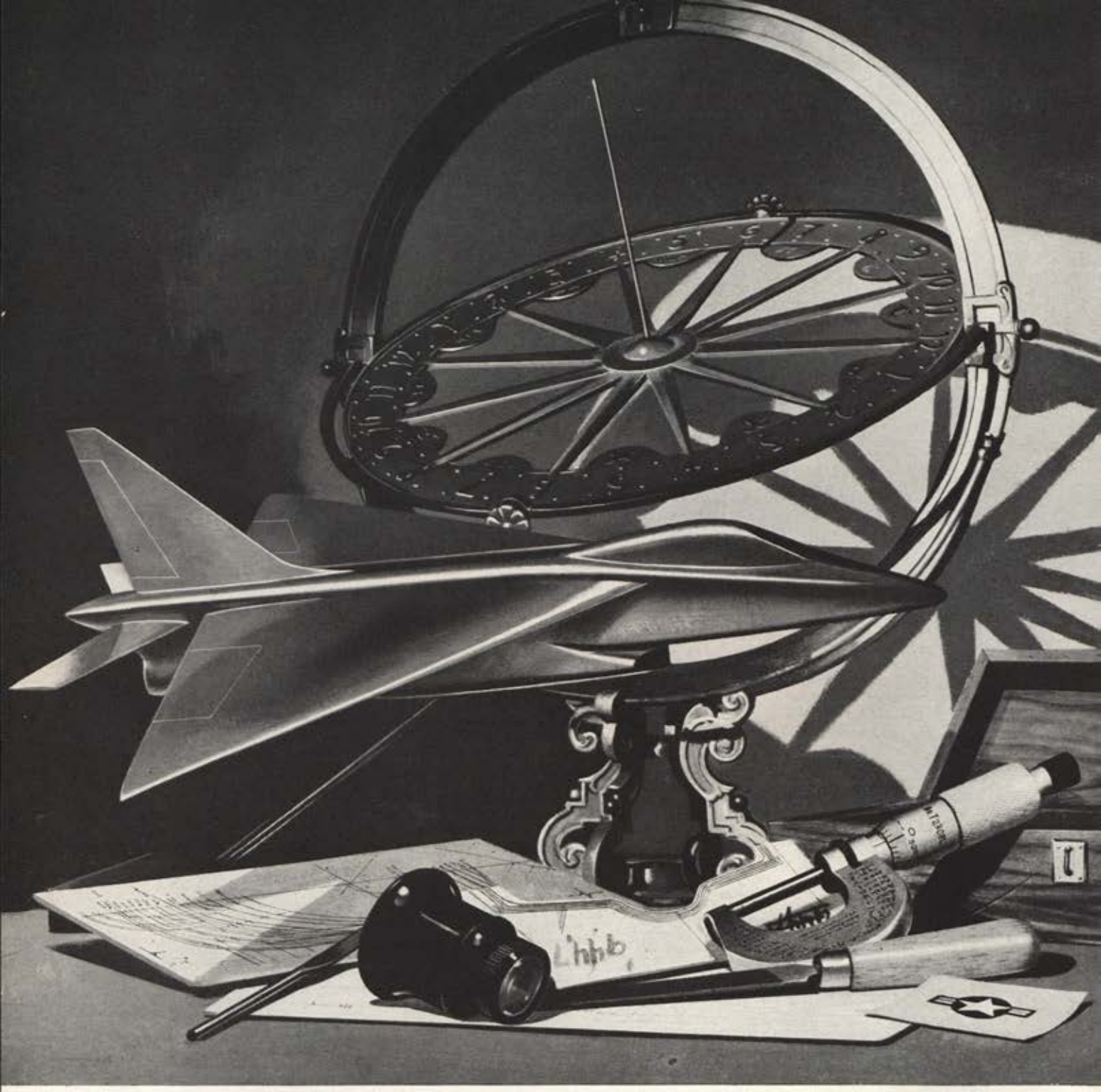

TIME WELL SPENT— Northrop Aircraft's engineering and production team continuously pursues scientific developments to strengthen the national defense. Often this trail-blazing corporate effort commences long before a military requirement is known to exist. For example, when Northrop engineers started work on a supersonic trainer airplane, it was without the benefit of contract support. Now, two years later, this jet trainer is an important Air Force-Northrop project. The time which Northrop devotes to scientific exploration without guarantee of future returns has often paid dividends to the defense effort. It has proved to be time well spent in the interest of the American people.

NORTHROP

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military and civilian aviation once or twice a year—for only $5.'

"Frankly, I think I would thoroughly enjoy rubbing shoulders with the top men in civil and military aviation, but is seems to me that $5 is rather too high a price to pay for only one or two rubs per year. On my budget I simply cannot afford it.

"If you should have an end-of-the-year bargain offer—say, two rubs for the price of one—please let me know and perhaps I shall be able to avail myself of your services.

Betty G."

☆

In case you're still wondering why defense costs are going up and up, ponder how the $8 million price tag on one B-52 stacks up against the $15 million we paid for the Louisiana Purchase—out of which fifteen states were eventually carved—and the $7 million we paid for Alaska.

☆

This isn't exactly new but it's well worth repeating. In our January issue we noted that Dr. Edward Teller had as an avocation the writing of poetry. Here's a sample of his rhyming wit. It was written in 1950 in answer to a British poem which expressed fear that America might precipitate a world war by rattling the A-bomb. Dr. Teller's answer appeared in the January 1951 issue of *The Bulletin of the Atomic Scientists*. It is reproduced here with the permission of the *Bulletin*:

If to a poet a physicist may speak
Freely, as though we shared a common tongue,
For "peace in our time" I should hardly seek
By means that once proved wrong.
It seems the Muscovite
Has quite a healthy, growing appetite.
We can't be safe; at least we can be right.
Some bombs may help—perhaps a bombproof cellar,
But surely not the Chamberlain umbrellar.

The atom now is big; the world is small.
Unfortunately, we have conquered space.
If war does come, then war will come to all,
To every distant place.
Will people have the dash
That Britons had when their world seemed to crash
Before a small man with a small mustache?
You rhyme the atoms to amuse and charm us—
Your counsel should inspire, and not disarm us.

☆

World's Biggest Business Department: According to Ass't. AF Secretary Dudley Sharp, the Air Force's supply inventory of $15 billion contains more than 1,250,000 line items. Sears, Roebuck, largest mail-order house in the world, carries only 250,000 line items.

☆

An Air Force recruiter has established an enviable first. M/Sgt. Robert F. Anderson is the new president of the Mesa, Ariz., Kiwanis Club, the first active-duty airman ever to serve as head of a Kiwanian organization.

Anderson accepted the gavel of office last month before 300 of the top civic and business leaders of Central Arizona; his boss, Brig. Gen. Arno H. Luehman, commander of the 3500th USAF Recruiting Wing; and Gen. Edwin W. Rawlings, commander of AMC (*see cut*).

A native of North Adams, Mass., Anderson has been in service since 1940. He has been stationed at Mesa since October 1955, and has been an active community leader.

M/Sgt. Robert F. Anderson, right, new president of Mesa, Ariz., Kiwanis Club and Kiwanian "Man of the Year" for 1956, takes over gavel from retiring president Don Peer. At left, Gen. Edwin W. Rawlings, AMC Commander, who was guest speaker at the inaugural banquet, attended by 300.

He served on the original committee to organize a YMCA in the Arizona city; he is one of two persons credited with organizing Mesa's Civil Air Patrol squadron; he instituted Mesa's observance of National Newspaper Day, which raised $286 for a children's home; he has served as chairman of the Kiwanis Club's major fund-raising activities.

Anderson's community efforts are seemingly endless. Last October he organized the Kiwanis Ballot Battalion, which consisted of eighteen automobiles. On election day these were stationed at the Air Force recruiting office, and anyone who needed transportation to and from a polling place had only to call for a car. At almost the same time he was elected to a two-year term as director of the United Fund of Mesa.

And he has served the Air Force as well as Mesa. In fourteen months as a recruiter, he has averaged 154 percent of assigned enlistment goals. He has received outstanding recruiting awards twice in the last year.—END

"... Fourth floor, garden hose, fertilizer, lawn mowers —watch your step—Fifth floor, sports equipment, bird seed, parakeets ..."

The C-123 can't stop on a dime—

but it can land in 700 feet!

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Almost any clearing, almost any field is a potential C-123 airbase; even deeply 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.

Performance, ruggedness, payload and versatility . . . these are traditional hallmarks of Fairchild aircraft.

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AIR FORCE
FEBRUARY 1957

The Symington Subcommittee's Airpower Findings

ON THE following pages are reproduced the findings, conclusions, and recommendations of the Symington Subcommittee. The Subcommittee was appointed by Sen. Richard Russell (D.-Ga.), chairman of the Senate Committee on Armed Services, "to examine into the condition and progress of the Department of the Air Force and ascertain if present policies, legislative authority, and appropriations are adequate to maintain a force capable of carrying out its assigned missions." Shortly after the hearing opened on April 16, 1956, the scope of the inquiry was extended to cover Army and Navy airpower as well.

Serving on the Subcommittee, in addition to its chairman—Sen. Stuart Symington (D.-Mo.)—were Sen. Henry M. Jackson (D.-Wash.), Sen. Sam J. Ervin, Jr. (D.-N.C.), Sen. Leverett Saltonstall (R.-Mass.), and Sen. James H. Duff (R.-Penna.). Fowler Hamilton served as General Counsel for the Subcommittee, with Ramsay D. Potts, Jr., as Associate General Counsel.

The Subcommittee report is based on sworn testimony of 100 witnesses taken in sixty-three different sessions, with a published record of a million words in 1,863 pages. The complete report contains, in addition to the conclusions, findings, and recommendations, voluminous extracts from testimony, supporting documents, and an introduction which space does not permit our publishing. The meat of the report, however, is all here. Study it carefully.—THE EDITORS.

The CONCLUSIONS

Arrived at in the report of the Symington Subcommittee

Airpower Forces in Being

IN ANY future war there will be far less time than ever before in which to mobilize. As a result the importance of "forces in being" has steadily increased to the point where they are now indispensable.

The United States has a strong strategic striking force at this time. This is due in large measure, however, to weapons designed, money appropriated, and contracts let many years ago; and even this strength is declining relatively as against the steadily growing striking capacity of the Soviets.

The defenses of the United States have been weakened because of the failure to act on national intelligence information; and also because of a tendency to either ignore or underestimate Soviet military progress.

The Soviets exceed the United States in the number of modern combat aircraft in operational units ("forces in being"). They are currently producing more combat aircraft than the United States. They have decreased the time used between the original design and quantity production of combat aircraft as compared with the time required by the United States.

We now have an insufficient number of long-range modern jet bombers, and there is no program to produce a sufficient number.

The growing shortage of skilled manpower is resulting in inadequate maintenance of aircraft, and therefore unnecessary accidents and unnecessary deaths. This manpower shortage results in our inability to maintain a proper state of alert against possible attack.

The United States has the capacity to produce an adequate number of jet tankers, but has failed completely to do so; nor has it any adequate program to overcome that deficiency. This neglect has seriously decreased the effectiveness of our airpower.

The decline in the strategic striking power of our Air Force as against that of the Soviet cannot be overcome significantly by the use of naval airpower.

The effectiveness of our strategic striking power, and also of our air defense, is dependent in large measure on an adequate base structure at home and abroad. The United States has an insufficient air-base structure. The present structure affords neither the alert status, nor that dispersal necessary for security. This deficiency in the continental United States is becoming increasingly dangerous because of the current deterioration in our overseas base structure, along with the growing long-range capability of Soviet aircraft.

Inadequate housing and inadequate pay scales are decreasing the operational effectiveness and morale of our armed forces.

The vulnerability of the United States to sudden attack has increased greatly during the past decade, and this vulnerability will continue to increase in the foreseeable future.

The Department of Defense has failed to develop an adequate defense warning system.

The direction and planning of naval strength again leaves the United States vulnerable to submarine attack against our shipping, and particularly vulnerable to submarine missile attack on military and civilian targets within our heartland.

Airpower Forces for the Future

The Soviets are rapidly closing the qualitative gap. Yet, our qualitative lead is now being given as justification for our having passed over to the Soviets quantitative superiority in military airpower.

The duplicating approach charasteristic of many research and development programs in the Department of Defense, along with the dollar limitations established for such programs, has retarded needed modernization of weapons systems. These policies have retarded important scientific breakthroughs. They contrast with Soviet policies which have produced extraordinary Soviet progress in the research and development field.

The Soviets exceed the United States in rate of technological development, in training facilities, in speed and quantity of prototype development, in the training of scientists and engineers, and in many other phases of airpower development.

The Department of Defense has permitted duplication, even triplication, among the three services in the development and production of missiles; and has permitted comparable waste in the allocation to the three services of responsibility in the missile field.

The Department of Defense also delayed in giving overriding priority to the ballistic-missile program. As a result, there has been a serious loss of time as compared with the rapid progress of the Soviets in this field.

Airpower Forces for Limited War

Confusion and therefore inefficiency in defense planning have developed from the vacillating policies of first emphasis, then deemphasis with respect to limited war as against unlimited war. It is essential that we be prepared for both.

The United States has insufficient airlift capacity to maintain the mobility of the Army and enable the latter to meet overseas commitments; nor do plans include provision for adequate airlift.

Airpower Preparedness and Fiscal Policy

Financial considerations have often been placed ahead of defense requirements, to the serious damage of our airpower strength relative to that of Russia; and hence to our national security.

The United States has the capacity to produce and maintain airpower which is relatively stronger than that of the Soviets; but the Department of Defense has not utilized this capacity.

With proper programming and administration in the Department of Defense, it would be possible to maintain air supremacy over the Soviets without jeopardizing a sound economy and without imposing additional tax burdens upon the people.

Airpower Preparedness and an Informed Public Opinion

Under our form of government, the American people have not only the right, but also the need, to receive all information about our national defense which would not help a possible enemy. Nevertheless, the public is neither adequately nor accurately informed about our military strength as against the great and growing military strength of the Communists. The public has failed to receive from official sources complete, accurate, and timely information which it has the right to know.

RECOMMENDATIONS

The Subcommittee recommends that the deficiencies in military strength, as pointed out in the "conclusions," be corrected as promptly as possible.

If any conclusion could be singled out for special attention, it might well be the importance of taking prompt steps to see that the American people are given more of the truth about the relative strength of the United States as against that of the Communists.

The FINDINGS of the Subcommittee

AS AN aid for reference to the excerpts from the testimony and the record of the hearings, we summarize herewith the testimony on certain fundamental points.

The roles and missions of the Army, Navy, and Air Force were defined some nine years ago in the well-known Key West Agreement. Those definitions remain basically unchanged at the present time.

According to the Key West Agreement, the main missions of the United States Air Force are:

- To be responsible for strategic air warfare;
- To be responsible for defense of the United States against air attack;
- To gain and maintain general air supremacy.

The Subcommittee has made findings as to the adequacy of our present policies and programs to enable the Air Force to discharge these missions; and also findings as to Army and Navy airpower.

In addition, there are findings on two points of a more general character. One deals with the relationship between fiscal policy and airpower; the other deals with our present and prospective airpower strength vis-à-vis that of the Soviet Communists.

The points covered by these findings are:

1. The adequacy of present plans and programs to maintain an Air Force capable of defeating enemy air forces in strategic air warfare and controlling vital air areas.
2. The adequacy of present plans and programs to maintain an Air Force capable of defending the United States against air attack.
3. The adequacy of present plans and programs to maintain an Air Force capable of gaining and maintaining general air superiority.
4. The adequacy of naval airpower to carry out its assigned missions.
5. Airpower and the modern army.
6. The present policies that determine the relation between fiscal considerations and national-defense considerations.
7. The present and prospective position of the United States and of the Soviet Union as to the principal elements of airpower.

The adequacy of present plans and programs to maintain a force capable of defeating enemy air forces in strategic air warfare and controlling vital air areas.

The testimony is that the Russian long-range air force has in operational units more long-range jet bombers (B-52 class) with a nuclear bombing capability than has the United States; and also that Russia is producing more bombers of this character than the United States.

The Chief of Staff of the Air Force testified that he has requested six additional wings of modern long-range jet bombers. This would provide the addition of about 300 B-52s to the Strategic Air Command.

Nevertheless, this request for additional long-range bombers has been held up in the Joint Chiefs of Staff for months.

The testimony also showed that if present plans and programs are not changed, by the period 1958-60, the Russian long-range air force will be stronger than that of the United States; and therefore by that time we will have lost our superiority in strategic airpower.

Additional testimony established the fact that it is not sufficient for us merely to match the Russians in strategic airpower. To be safe, we must have strategic airpower of sufficient strength to absorb any surprise attack and, even after suffering the heavy damage incident to such an attack, be able to retaliate with an effectiveness that would assure victory.

The principal factors which limit our strategic airpower are:

- Lack of technical personnel.
- Lack of modern jet tankers and long-range jet bombers.
- Lack of bases needed for safe dispersal of SAC aircraft.

Testimony is to the effect that, provided adequate funds were expended, these limitations could be removed and our

(Continued on following page)

SYMINGTON SUBCOMMITTEE'S AIRPOWER FINDINGS

These are the Senators who served on the Symington Subcommittee

Stuart Symington, D.-Mo.

Fabian Bachrach

Henry M. Jackson, D.-Wash.

Sam J. Ervin, Jr., D.-N.C.

Leverett Saltonstall, R.-Mass.

Harris & Ewing

James H. Duff, R.-Penna.

present estimated strategic air superiority maintained over the Russians.

The adequacy of present plans and programs to maintain a force capable of defending the United States against air attack.

Expert witnesses agreed that at the present time and during the foreseeable future the best defense against air attack is a strong offense. There was also agreement that an effective air-defense system is necessary to discourage enemy attack and to make it costly to the enemy if he does attack.

The testimony is that at the present time our air-defense system is inadequate, primarily because most of our fighter planes in operation are not capable of attaining sufficient altitude to attack successfully modern Russian bombers, and because our radar warning network is inadequate.

The adequacy of present plans and programs to maintain a force capable of gaining and maintaining general air supremacy.

As a matter of policy, the United States has abandoned its former position of quantitative superiority in the field of airpower. Instead, the testimony shows that the Department of Defense relies on the qualitative superiority of our airpower; in other words, the results of our efforts in the research and development field.

In 1953 a ceiling was established for research and development funds. The testimony shows that this ceiling has been maintained from 1953 to date.

These continuing limits upon research and development expenditures have been imposed despite the fact that in the years since 1953 we have learned much about the startling scientific developments made by the Russians in airpower, developments which were not anticipated when the ceiling was imposed.

In 1953 the Russians demonstrated that they could produce the H-bomb. Later they demonstrated that they can produce modern long-range jet bombers by flying, in their May Day 1955 air show, in a single formation, more bombers of this kind than the US had produced at that time.

It was made clear throughout the testimony that a nation's air-atomic strength is not measured simply by the number of bombs in its stockpile. Rather such strength should be measured primarily by the ability to deliver effectively an adequate number of weapons from the retaliatory stockpile on the target in the shortest possible time.

We have learned also that the Russians are producing substantially more submarines than the United States; and that they have a fleet in excess of 400 modern submarines as against our much smaller fleet of 110 submarines. In this connection, it is significant that the testimony credits them with the capability to produce missile-launching submarines.

Also according to the testimony, we have learned that since 1953 their developments in the fields of electronics and radar exceeded our 1953 appraisals. There was testimony that they have fired long-range ballistic missiles farther than we have; and that they are as far, if not farther, advanced in the long-range ballistic missile field than the United States.

In respect to these developments, we had to undertake additional research and development programs, not anticipated in 1953, but furnished from the 1953 ceiling-limited funds.

Testimony was to the effect that if the present fiscal limitations on research and development continue, the Russians, after three to five years, will have qualitative superiority in airpower.

In recent years, the senior military research officer in the scientific research and development field of each of the three services opposed these fiscal ceilings.

The adequacy of naval airpower to carry out its assigned missions.

The greater part of the Navy's military power is now airpower. Under the Key West Agreement, the main missions of the Navy are:

- To seek out and destroy enemy naval forces and to suppress enemy sea commerce.
- To gain and maintain general sea supremacy.
- To control vital sea areas and to protect vital sea lines of communication.
- To establish and maintain local superiority (including air) in an area of naval operations.
- To seize and defend advanced naval bases and to conduct such land operations as may be essential to the prosecution of a naval campaign.
- To conduct air operations as necessary for the accomplishment of objectives in a naval campaign.

The Navy witnesses made clear that the Navy does not have capability to engage in extensive strategic attacks on the mainland of Russia.

Airpower and the modern Army.

The Army is interested in three aspects of airpower:

- Missiles for anti-aircraft defense and close support of ground forces.
- Organic airpower which is used for reconnaissance, limited transport, etc., within a theater.
- Airlift: the transportation by air of substantial numbers of men and equipment either from one theater to another, or within a theater.

The subject of airlift leads to many questions that have to do with basic doctrines concerning the type of military establishments needed to deter or, if deterrence fails, to win a general war, and the type of military establishment needed to deter or, if deterrence fails, to win a limited war. It was clear from the record, however, that both the quantity and the availability of airlift bear directly on the defense capability of the United States. Army witnesses testified that as of today this country would have great difficulty in lifting and supporting even one division overseas. They also testified that there were no plans to remedy the situation.

Present policies that determine the relation between fiscal considerations and national defense considerations.

In view of the importance to airpower of fiscal policy as shown by the findings with respect to research and development, the testimony on this general subject is also examined.

The fiscal policies that have been in effect since 1953 have applied generally to all three services; therefore, the evidence concerning the effect of those policies upon our airpower position deals broadly with the entire defense establishment.

Fiscal factors must, of course, be considered in determining the size and character of our defense establishment. To say that fiscal factors must be considered, however, is not to say they must be decisive, or even predominant.

No witness disputed that the United States must make whatever expenditures are necessary to give us the military strength needed for survival.

In general, there are two ways in which the problem of balancing defense needs against fiscal requirements can be approached.

One way is to ascertain essential defense needs and then see if the funds can be made available to meet them. The other is to predetermine, as a matter of fiscal policy, a dollar limit for defense expenditures; and thereupon refuse to satisfy any defense needs that cannot be compressed within that limit.

The testimony shows clearly that during recent years the latter approach has been followed. Early in 1953, the Executive Office of the President, through the Bureau of the Budget, issued general directives to all Departments calling for a curtailment of expenditures. In the case of the Department of Defense, these were implemented by additional directives from the Office of the Secretary of Defense.

Thereafter, despite Soviet developments, or rising costs, or any other considerations, it was recognized throughout the Department of Defense that over-all defense expenditures were to be held to a limit of about $35 billion annually. In the implementation of this policy of a dollar ceiling approximating $35 billion, cuts in expenditures were imposed in 1953 and 1954 in the process of decreasing to that level.

Published documents from the Bureau of the Budget showed expenditures for 1953, 1954, and 1955 and estimated expenditures for 1956 and 1957, as follows:

In 1953 defense expenditures were $43.7 billion.

In 1954 defense expenditures were $40.3 billion.

In 1955 defense expenditures were $35.5 billion.

For 1956 defense expenditures were estimated to be $35.1 billion.

For 1957 defense expenditures were estimated to be $35.7 billion.

The testimony of the Chiefs of Staff of the Army, the Navy, and the Air Force was that, in the aggregate, those three services would require approximately $48 billion for the fiscal year 1958.

The Chief of Staff of the Air Force testified the Air Force would require approximately $23 billion.

The Chief of Naval Operations testified the Navy would require approximately $13 billion.

The Chief of Staff of the Army testified the Army would require approximately $12 billion.

The present and prospective position of the United States vis-à-vis the Soviets as to the principal elements of airpower.

In this connection, the evidence shows:

Aircraft production. At the present time the Soviet is producing more combat aircraft than the United States, and in the past three years the Soviet has outproduced the United States in modern combat aircraft.

Aircraft in operational units. At the present time Russia has thousands more fighter planes in combat units than the United States.

Fighter planes. The Soviet is currently producing about ten times more fighter planes than the United States and has more jet fighters in operational units than all types of jet aircraft combined in United States operational units.

Light bombers. The Soviet has many more light jet bombers in operation than the United States.

Medium bombers. The United States has several times as many medium jet bombers as the Soviet.

Heavy bombers. The Soviet now has more jet heavy bombers than the United States and is producing these bombers at a faster rate.

Research and development:

- General: The Soviets are progressing in this field at a faster rate than the United States in the development and production of new type scientific weapons and, if present plans and programs of the United States are not changed, the USSR will attain superiority this field.
- Scientific and engineering personnel: Russia is currently graduating twice as many trained scientists and engineers per year as the United States.
- The Soviet has high energy physics research facilities superior to any others in the world, and Soviet researchers are very capable.
- Missiles: Russia started earlier in the development of ballistic missiles than did the United States and is believed to have made substantial progress in this field, to the extent of having exceeded the United States at least in some aspects of the ICBM and IRBM.
- The Soviet has, in operational aircraft, jet engines with substantially more thrust than any the United States has in operation.—END

An RAF Leader Looks at Airpower

'THE CENTRAL BLUE'

By W. Barton Leach

IF HISTORY can be written by the men who made it—if the chromosomes are so distributed that one man combines the qualities of leader, analyst, and master of a vivid prose style—a great book emerges. Churchill is the archetype with his massive account of World War II. Marshal of the Royal Air Force Sir John Slessor is a comparable example in his recent book* which covers the forty-year history of airpower as Slessor has seen and helped to direct it.

Sir John is a vibrant personality with warm friendships and strong antipathies, sometimes both focused on the same person as in the case of my colleague Prof. Samuel E. Morison, historian of US naval operations in World War II. Sir John gets on famously with Americans and is probably on first-name terms with more people in this country than any other prominent Briton.

Despite assertions that he has "tried to avoid personal controversy as much as possible," he rips unmercifully into Adm. Ernest J. King, who in Slessor's view was ignorant of the realities of anti-submarine warfare, obstructionist in matters with which he had minimal concern, and incapable of seeing beyond the interests of the United States Navy. Quite a few others are on the receiving end of Slessor's barbs, including even the great Sir Winston, whose series on the second World War suffers, he says, "from his occasional genius for self-deception and his Olympian detachment from the detailed workings of the machine for the higher direction of war."

By rights, Sir John should never have got into any military service, least of all the Air Force. A boyhood attack of polio left him with a pair of game legs that have never let him dispense with a cane. Rejected in 1915 by a War Office medical board as "totally unfit for any form of military service," he pulled the strings of parental influence through the chief of Royal Flying Corps officer procurement, who had served with Slessor's uncle in the Indian Cavalry, an episode that established "a lifelong conviction that one of the best possible methods of selection of officers is by controlled nepotism."

Once in the outfit, he rose rapidly in all types of flying and non-flying posts. During World War II he headed Coastal Command and, later, RAF Mediterranean, where he also acted as Deputy to Gen. Ira C. Eaker in Mediterranean Allied Air Forces. But mostly his career was that of a planner. He was "Plans, Air Ministry" in 1928 under the great Sir Hugh Trenchard when this division comprised two officers. He was back again in Whitehall as head of Plans Division from 1937 to 1940; still again as ACAS (Policy) in 1942; and then finally as Chief of Air Staff, 1950-52. He participated in most of the Anglo-American war conferences beginning with Casablanca and performed a number of special missions to the United States.

* *The Central Blue*, by Marshal of the RAF Sir John Slessor, published by Frederick A. Praeger, Inc., $7.50.

Reading this book gives you that here-we-go-again feeling. Consider the following items:

Stop-and-start inter-war planning. Between 1934 and 1938 the RAF was handed no less than eight plans of expansion and contraction to meet the fluctuating guesses as to the strength of the *Luftwaffe*. A scare would produce a new plan; then apparent relaxing of tension would cause a stretch-out to a later date or a failure of adequate financing. Not until October 1937 was a plan based on strategic requirements, and this was emasculated three months after adoption on grounds of political and fiscal expediency. Not until after the capitulation at Munich was imposed upon the diplomats by known deficiencies in the air did there emerge a realistic plan to meet the German threat, and even this was not destined for completion until March 1942. (Remember the seventy-group AF program of the Finletter Commission Report? Then forty-eight, fifty-five, forty-two, ninety-five? Then the only real cold war requirements plan, the 143-wing program of 1951 growing out of the studies following NSC 68? We all know what happened to that: a 120-wing "interim" program in 1953; then a "firm" 137 wings. And if anyone still wants to bet on 137 wings being attained, advise him to put his money on the horses—it's safer.)

The refusal to recognize any *present* danger from the air build-up of a potential enemy, which in this country is represented by the "long haul" principle, was expressed in inter-war England by the Ten-Year Rule, a Treasury-sponsored dictate that UK forces would be tailored to the concept that there would be no major war for ten years. The ten-year period was always being computed from the current date, thus assuring that no adequate air force in being would ever be created.

Tactical air. *In the American services a supposedly rare phenomenon has been noted: that control of tactical air is bitterly disputed in the Pentagon but almost uniformly works out amicably in the field in the face of the enemy. But is the phenomenon so rare? Here is the parallel as related by Slessor:* .

"There is no getting away from the fact that some senior officers of the Army—including Sir Alan Brooke, who had taken over from Dill as CIGS at the end of 1941—still seemed to find it difficult to regard the RAF as anything much more than a corps of the Army, at least in connection with a campaign on land. In 1939-40 there had still been an 'Air Component' of the BEF under the orders of the Commander-in-Chief, and it was perhaps understandably difficult for older officers to adjust their mentality to the new conception of a land campaign as a joint venture, rather than one in which the RAF was in a position entirely subordinate to the Army. Montgomery understood that brilliantly, but for some time he was almost a voice crying in the wilderness. . . . It is significant that in the one theater of war where a British Army was fighting in 1941,

(*Continued on page 49*)

THE **SOUND** OF PROGRESS

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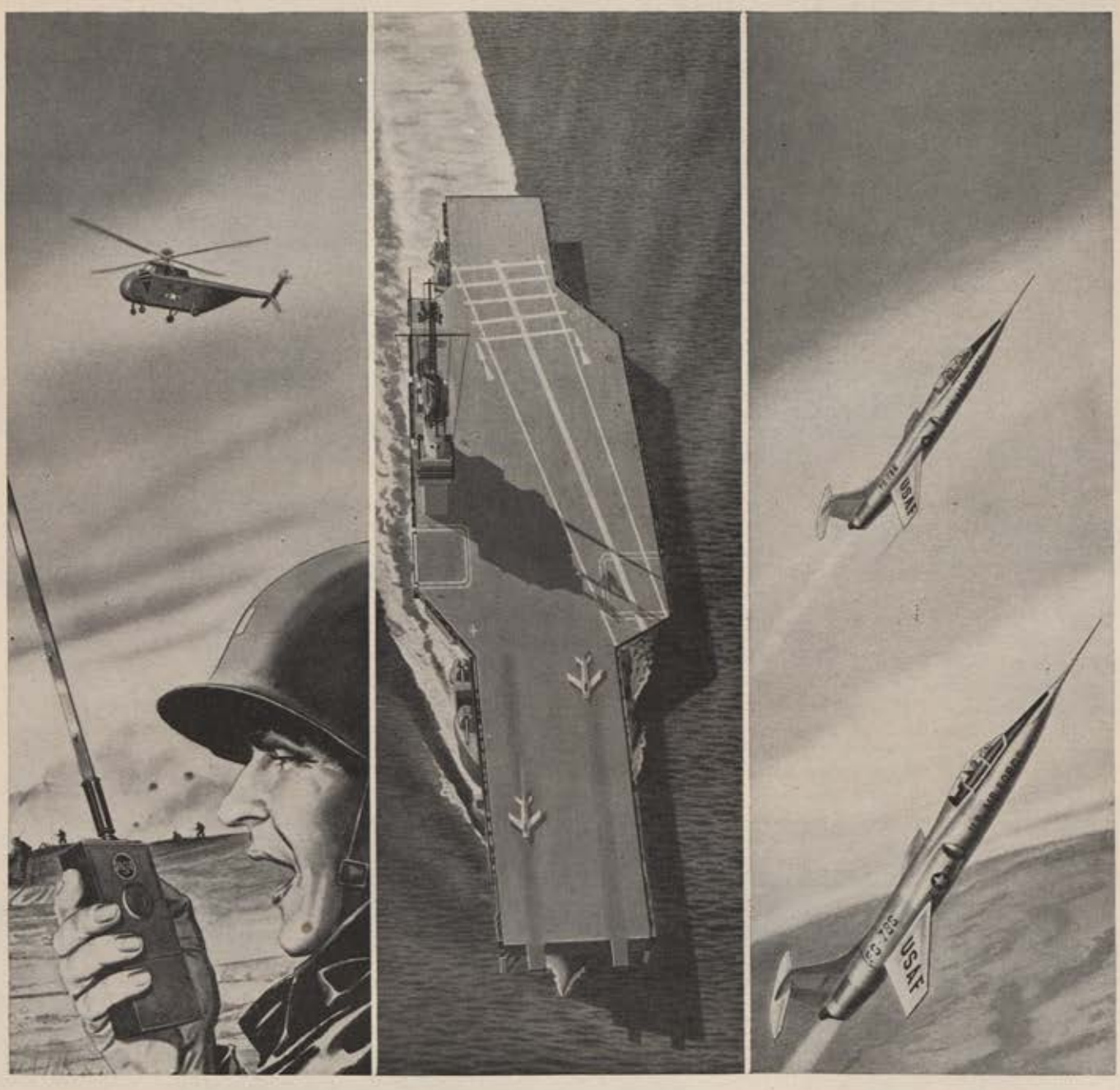

ON LAND . . . ON SEA . . . IN THE AIR . . .

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the Middle East, the relations between the two services were excellent in spite of our reverses, and the foundations were laid of that superlative system of integrated Army/Air control and cooperation which later reached its peak under Montgomery and Coningham."

With reference to USAAF support of the surface operations in Italy, Slessor is particularly irritated by criticisms in Professor Morison's naval history volume on "Sicily-Salerno-Anzio." Morison suggests that the AAF was fighting a war on its own, "making the usual brash claims," and "did no good to the amphibious forces bound for Anzio." Slessor comments:

"In point of fact the counter-air operations prior to the landing, and in particular the destruction of the enemy reconnaissance airfield at Perugia, had the effect that the fleet of nearly 250 vessels arrived off Anzio completely undetected and unopposed. It is a little difficult to see how much more good it could have been expected to do! . . . As far as air action was concerned, enemy attacks on the beachhead were a serious nuisance, did some damage, and inflicted some casualties. But you don't fight any action without suffering some damage and casualties. . . . The casualties to shipping between D-Day on January 22 and February 19 were three naval vessels (including H.M. cruiser *Spartan*) sunk and five damaged, one merchant vessel sunk and seven damaged. It must frankly be said that if the US Navy imagined that we should get away with twenty-five days of this major amphibious operation against a skillful and determined enemy with fewer losses than that, they were expecting far more than they were entitled to in the circumstances. . . ."

To provide support for his position at the professional level, Sir John reproduces verbatim his long contemporary report to the Chief of Air Staff, a document which (like many others in this volume) could well serve as a textbook on the realities of warfare.

Unification. *We of the USAF almost automatically expect the air-minded to favor a tight form of service integration. But not Sir John. He is the apostle of things as they are:*

"There are few things that could not be improved; but I think our Chiefs of Staff system as it has developed and matured over the thirty years which included the most testing time in our history, is about as good a method as could be devised for the higher direction of defense policy in this country. I do not say it is necessarily the best for other countries, though many have adopted it, or something like it; but nothing I know of the variations elsewhere, or the alternative systems in other countries (including Germany), leads me to believe they are an improvement on ours—even for the peoples concerned; I have certainly seen nothing I think we should emulate. It may be that we British are, by temperament and experience, better at working in committee than some other peoples. But to condemn the Chiefs of Staff system as 'making war by committee' is merely silly. The only alternative is to make war by one man. That may have worked all right with Napoleon—though he was ultimately defeated by the British. But even if a military dictator were acceptable in a democracy, there seems to me little evidence that military dictatorship is a sound working system with lesser men than Napoleon—it certainly was not in Germany. . . ."

He disposes of the contrary view of Field Marshal Lord Montgomery by an argument ad hominem:

"I am among the Field Marshal's most fervent admirers. He was a superb battlefield commander in the late war—an incomparable tactician—and understood more clearly than any other soldier the dominant influence of airpower in war, and the proper relationship between the soldier and the airman. He is a clear, objective, and courageous thinker. His views on the development of land/air warfare are always challenging—and can seldom be faulted. And the Free World owes him a great deal for his unstinting service to NATO. But his experience in Whitehall is limited and his period as CIGS was perhaps the least successful episode of a brilliant career. And I think that he is wrong in advocating a Chief of Staff of the armed forces, for the reasons set out in this chapter which, in my view, remain valid even in this nuclear age."

He sees no serious difficulties in the compromises, alias horsetrades, in the Chiefs of Staff Committee, though he dislikes seeing the controversies appear in Parliament or the press—a desideratum more easily achieved in England than in the United States:

"There must always be give and take, and a Chief of Staff who is incapable of making concessions to the views of his colleagues is a menace. But on something which he regards as a matter of vital principle he must be prepared to stick his toes in. No Chief of Staff or senior staff officer should be afraid of being 'controversial,' provided he does it in the right way—and there is very much a right and a wrong way in these matters. To give in merely to avoid unpleasantness, or to give the impression of a unified opinion that does not really exist, is merely lack of moral courage and a dereliction of duty. But these controversies should be kept 'in the family,' thoroughly thrashed out, and then, if no agreed solution is in sight, submitted to Ministers, whose ruling must then be loyally observed. No good can come of allowing (still less encouraging) inter-service disagreement on the Chiefs of Staff level to leak out and become a subject of public debate in Parliament and the press. . . ."

His solution is decision at the civilian level by a man who, as described, we would all like to find in charge of things in either country, if he exists:

"When there is a fundamental difference of view between two Chiefs of Staff (and it happens far less frequently than sometimes seems to be imagined), it usually has its roots in financial or political ground and it can only be resolved on the highest political level—that is, by the Cabinet, on the recommendation of the Prime Minister or Minister of Defense. The same is true when the difference is on a more purely professional military issue. . . . The best man to make a decision on an issue of this sort is a civilian statesman with no first-hand knowledge of any service but with a keen brain, long political experience, with the courage of his convictions and no preconceived prejudices. . . ."

Enough has been said, perhaps, to suggest the scope and temper of this volume. The author is a great, dedicated, informed, uninhibited, and articulate airman with a flair for making the practical problems of national defense understandable. His book should be required reading for all who are troubled by our security in a troubled world. —END

ABOUT THE AUTHOR

W. Barton Leach, who wrote the "Memorandum to the Next Secretary of Defense" in our last issue, is a former AFA national director. He conducts the Harvard University graduate seminar in Defense Policy Administration and also teaches at the Harvard Law School and the Graduate School of Public Administration. In WW II he served in the AAF as Chief of the Operations Analysis Division. He's now a brigadier general in the AF Reserve.

The Tradition of COURAGE

By Gen. Nathan F. Twining

OF THE many traditions you inherit, it is the tradition of courage that has left a unique imprint upon our record.

There are many kinds of courage. To military men, the first that comes to mind is courage in battle.

Certainly, the Air Force can hold its head high on this score.

But so can almost every fighting force of every type in the history of the world. The challenges and heat of battle tend to make men fearless. Even men who are normally timid suddenly display extreme bravery.

Many forces work to create this sort of courage. High among them are patriotism and dedication to a cause. As a recent example of this, I need only to mention the dedicated Hungarians, who against the most frightening kind of odds are offering their lives in a dramatic quest for freedom.

Battle courage is also born of the respect of our fellow fighters. Believe me, it is easier to be brave when every other man in the outfit is fighting bravely. In fact, in combat it becomes hard to admit fright.

Thus, while valor in battle is indispensable to a fighting force, it is comparatively easy to achieve. Although we honor such heroic feats with medals and decorations, I personally believe that there are other brands of courage that are more important to us—more important because they are harder to come by. These form an even richer heritage for you. It is these that I wish to dwell upon tonight.

Capt. Glenn Edwards

Capt. Joe McConnell

Foremost among these is the tradition of peacetime courage. The American airman finds his peacetime jobs as demanding and as dangerous as those he faces in war, and, in many cases, more so.

This might not be readily apparent, so let me explain.

For us, peacetime is a time of experimentation and development of research flying, probing the dangerous unknown. Last fall, we were all saddened by the death of one of our youngest pilots, Capt. Milburn Apt. On his last flight, he took the Bell X-2 supersonic rocket plane through the sky several hundred miles an hour faster than any man has ever been known to fly. His flight was a monumental achievement in this time of so-called peace. He paid the price of this progress with his life.

The price of aviation progress has always been high. The honor roll is long with the names of those who have helped to pay this cost—men like Capt. Glenn Edwards, who was killed testing the YB-49 and in whose memory we have dedicated Edwards Air Force Base, our Flight Test Center in California.

It is paid by men like Capt. Joe McConnell, killed while testing a Sabrejet in 1954, and by Maj. Richard Bong in a P-80 in 1945. Both of these men were top combat aces. Both lost their lives on peacetime missions.

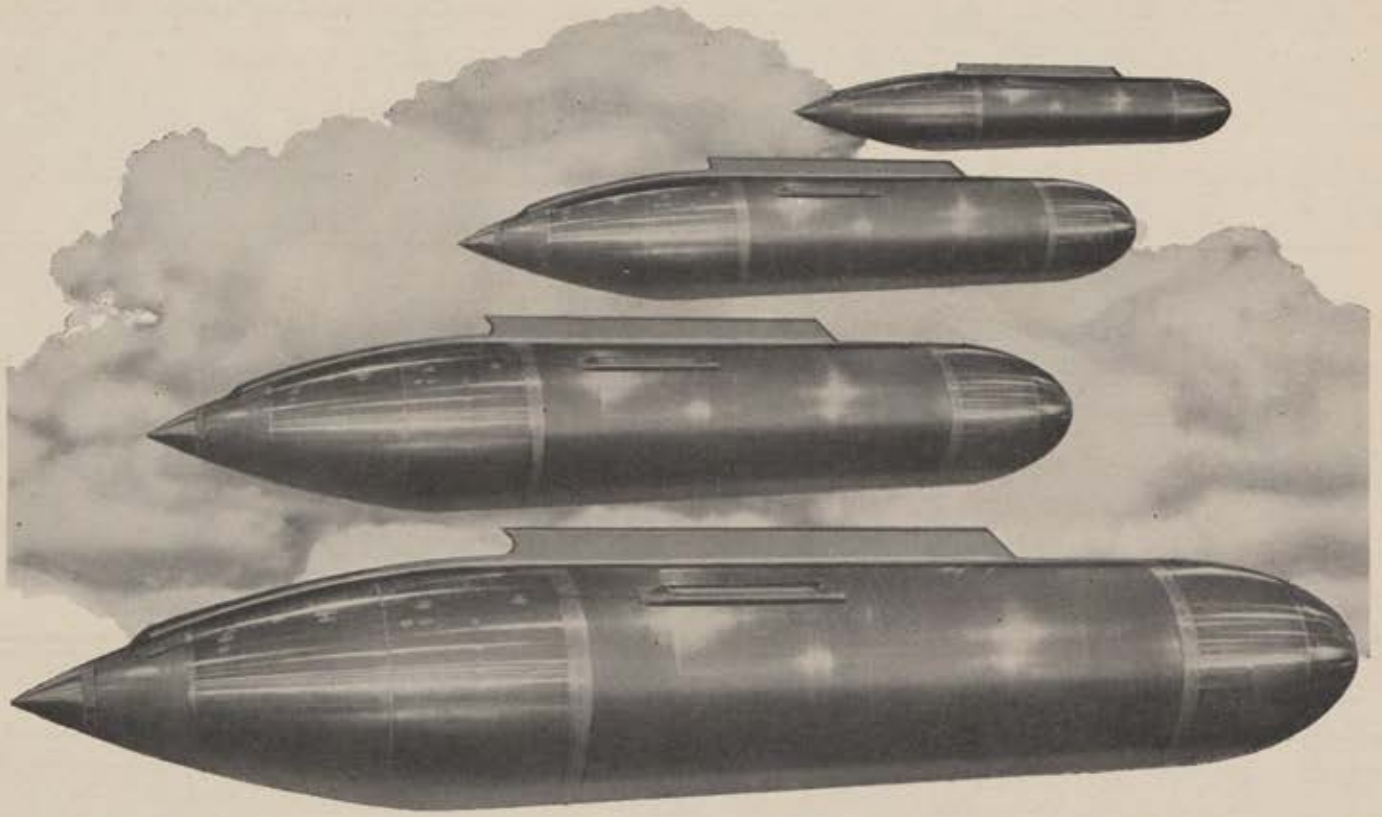
Of course, the top name on the roll is Lt. Thomas Selfridge, the first Army officer to give his life. He crashed in 1908 during a trial flight of the Wright flying machine.

Lt. George Kelly, the second Army officer killed in an airplane, crashed to avoid striking a crowd of soldiers during maneuvers in Texas in 1911.

In those early days, they had difficult and tragic times

(Continued on page 53)

CAPABILITIES . . . Manpower, Tools and Experience



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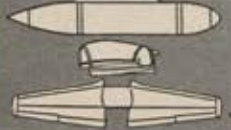	TANK-WING-MAJOR SUBASSEMBLY SUBCONTRACT PRODUCTION

The 1700-gallon jettisonable fuel tank for the Boeing B-47 "Stratojet" is only one of the many designs manufactured on Beechcraft's versatile production lines. During the Korean War, for example, Beech Aircraft Corporation manufactured 20 different types of aircraft tanks and fire bombs, establishing a production record of 400 tanks a day and delivering a total of more than 150,000 tanks to the U. S. Armed Forces.

In addition to the 1700-gallon "Stratojet" tanks, Beechcraft's "tank line" is now producing 1400-gallon tanks for Lockheed's G-130 "Hercules" . . . 282-gallon tanks for McDonnell's F3H-2N "Demon" . . . and 230-gallon and 450-gallon tanks for Republic's F-84F "Thunderstreak" and RF-84F "Thunderflash." Beechcraft's Research & Development Laboratories are busy, too, with classified projects for new aircraft tanks and refueling equipment.

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The Stroukoff C-134 is destined for an important role in modern military strategy.

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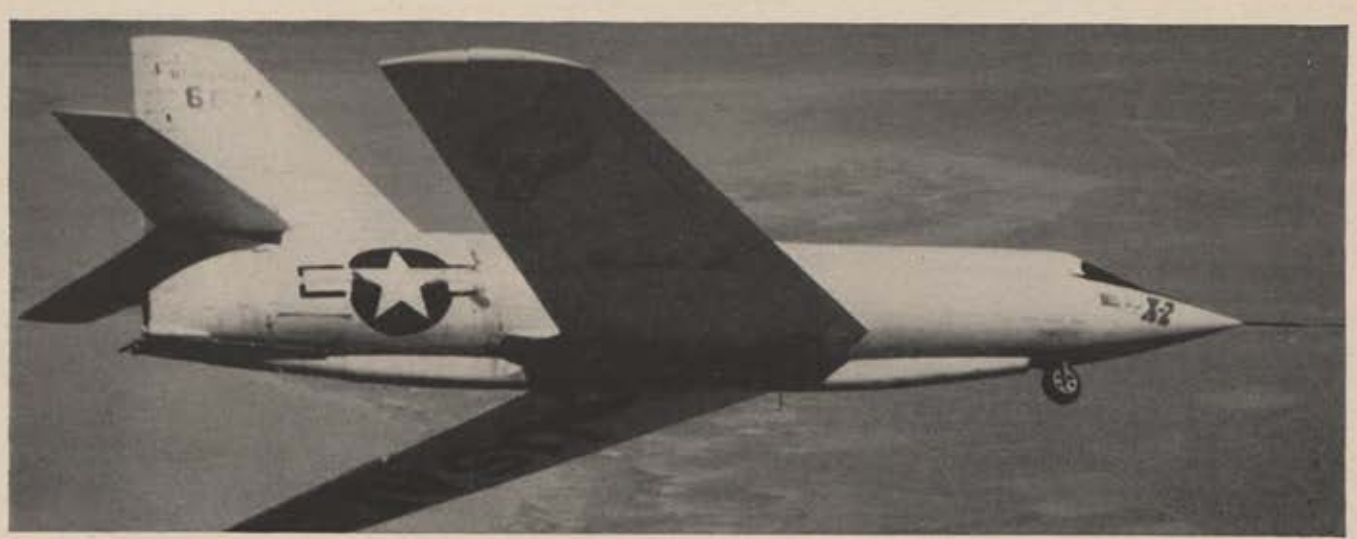


The rocket-powered Bell X-2 in which Capt. Milburn Apt died. He "paid the price of progress with his life."

getting our military flying started. In 1914, we had only fourteen licensed military pilots. Of these, eight were killed in crashes that year alone. Higher military authority was so discouraged by these fatalities they considered calling a halt to military flying. However, for every airman that went down, ten more eagerly volunteered to fly, and the Air Service was kept alive.

This record of courage in peace, of courage that bought progress at the greatest price a man could pay, is studded with shining examples that make up the tradition of the American airman. However, I would not want to leave the impression that our foundation was built solely on lives lost. On the contrary, it rests even more on the many men—of all services as well as civilians—who accepted hazardous tasks, performed them, and carried on, sharing success and progress with their fellow airmen.

Their many contributions brought valuable additions, large and small, that led to today's faster but safer flight.

As one example, during the early days of the airplane, safety belts were unknown. One day two lieutenants named Towers and Billingsley were flying their old Wright plane out over the water. They hit a down-draft and were tossed from their seats. They carried no parachutes, and so Billingsley, who fell clear of the aircraft, was lost.

Lieutenant Towers spent several seconds tumbling around through wires, struts, and wings. He finally grabbed onto a wire and hung on for dear life. He held grimly until the plane hit the water and he was rescued. This made him an enthusiastic advocate of safety belts—which were devised and used from then on. I might add that Towers later became an admiral in the Navy.

Then there was the humorous example of dogged courage set by Lieutenant Foulois, who learned to fly by correspondence course. Actually, he had taken a few lessons from the Wright Brothers at College Park, Md., but before he ever learned to make a landing, he and his airplane were sent to San Antonio.

There, Lieutenant Foulois would make excellent take-offs and good flights while in the air. But each time he tried to land, he crashed. While his plane was being rebuilt, he would send a letter to the Wright Brothers and describe exactly what he had done. The Wrights would mail back an analysis and some suggestions for improvement. Then Foulis would take off and crash again.

He finally learned to land the airplane, and went on to become one of our most famous early pilots and later Chief of the Air Corps in the 1930s.

Of course, not all demonstrations of courage led to an immediate advancement in aviation. I can recall Gen. Hap Arnold telling about his first encounter with a second lieutenant named Doolittle. It seems that Jimmy Doolittle was looking for something to do one day, so he made a bet that he could ride on the undercarriage of an airplane during a landing. Once his bet was taken, Jimmy approached the pilot of an airplane who had been practicing landings, and asked for a ride. The innocent pilot agreed, and regretted it soon thereafter. Once airborne, Jimmy left his seat, climbed down to the lower wing, and then underneath to seat himself on the cross bar between the landing wheels. The pilot tried frantically, but he couldn't talk Jimmy into coming back up, so finally he had no choice but to land with Doolittle sitting down there on the landing gear.

After the landing, Jimmy crawled out from under the airplane, walked over to the loser, and casually demanded payment of the bet.

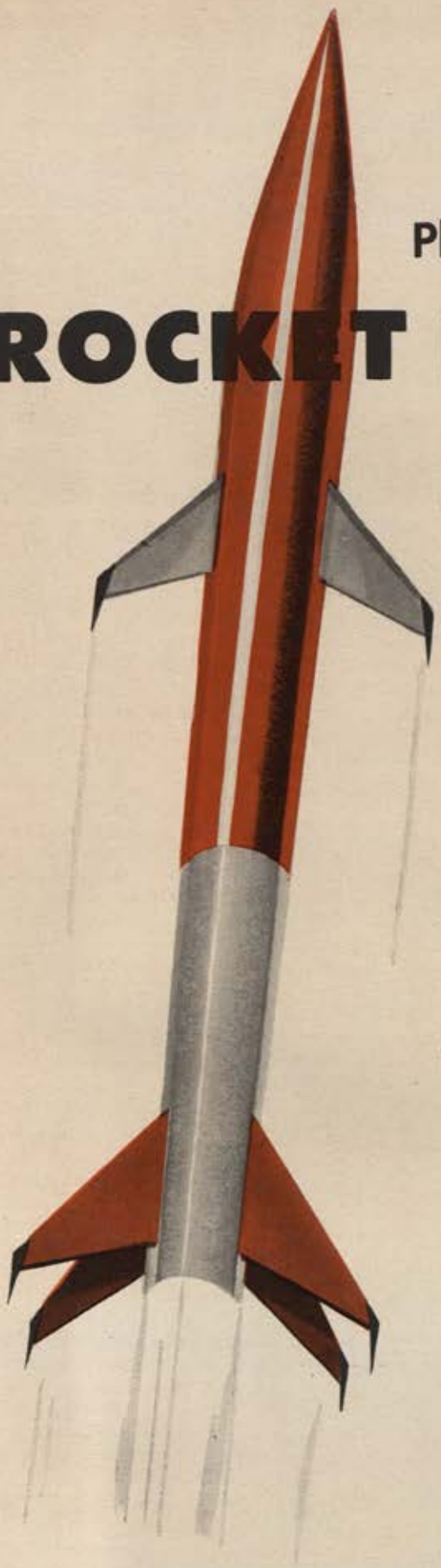
Perhaps in this way Jimmy helped to convince us of the need for a retractable landing gear.

Nevertheless, Hap Arnold took steps to insure that Doolittle's courage was directed toward more worthwhile projects in the future, and Jimmy Doolittle's later record as a courageous airman both in peace and war is unparalleled in our history.

Gentlemen, I could reminisce for hours. The courageous exploits of our great American airmen cover the pages of

(Continued on page 56)

Edwards AFB, Calif., perpetuates the name of one of the men who died in a test flight of the YB-49 Flying Wing.



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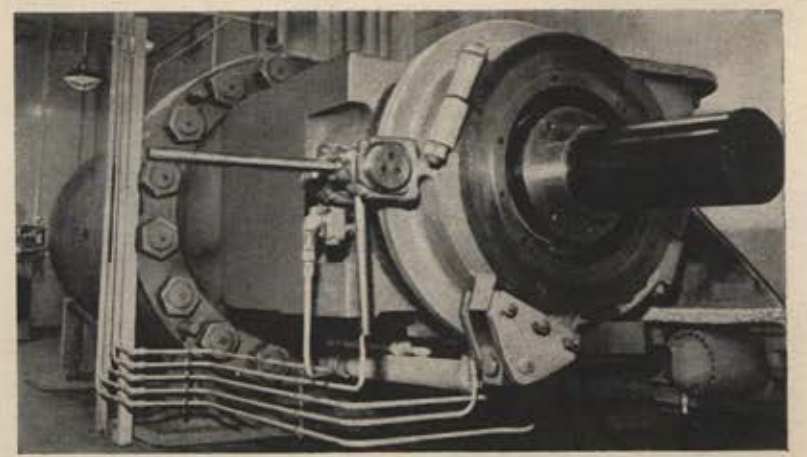

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Three giants of the AF: from left, Gen. H. H. "Hap" Arnold, wartime chief; Gen. Carl Spaatz, first head of independent USAF; Gen. Hoyt Vandenberg, his successor.

history, and my memory is filled with them. Taken together, it is clear that the American airman's requirement for courage is fully as great in peace as it is in time of war. This requirement has been met by your predecessors, and this great heritage is part of the rich tradition passed on to you.

There is yet another kind of courage that is perhaps even more rare. This could be called by many names: moral courage—the courage of one's convictions. It is the determination to hold to one's principles in the face of ridicule and strife even at the cost of a career.

We are here tonight to commemorate one of the brightest days in the history of aviation—December 17—the day of the first powered flight.

I would remind you that December 17 has also been called one of aviation's darkest days. On this day, in 1925, Gen. Billy Mitchell was found guilty by court-martial. He was sentenced to five years suspension from rank, pay, and command.

I am not fully convinced that these circumstances made for a dark day. General Mitchell's trial helped throw the light of truth on airpower. I can think of no way more dramatic or effective, to have brought the importance of airpower to the attention of all Americans. Of course, this was exactly what Billy Mitchell intended his trial to do. Yet, to face this ordeal voluntarily took a large amount of that rare brand of courage for which he was always famous.

There were others at the time who demonstrated the same kind of bravery, and who faced great damage to their careers because of their belief in airpower. Gen. Hap Arnold was one. He went on to become our great wartime leader in spite of, not because of, his beliefs and his association and support of Mitchell.

Billy Mitchell. His court-martial helped to throw the light of truth upon airpower.

When General Mitchell was court-martialed, General Arnold was one of that group of officers who wanted to resign in protest. Billy convinced them that they could better serve the cause of American airpower by staying in the service. They did stay. They carried on the fight. This is something that all Americans can be grateful for. Nevertheless, at that time, it appeared that Arnold's career would suffer irreparable damage.

The history of aviation shows many other men who clung to their visions of airpower in spite of all kinds of frustrations and persecutions. Perhaps you are familiar with the name of Giulio Douhet.

From almost the beginning of powered flight, until his death in 1930, this great Italian air general was fighting the same kind of battle in his country that Mitchell waged in America.

As early as 1909, when our military men were still doubting that airplanes would ever be of tactical or strategic value, Douhet said this:

"Now, we are fully conscious of the importance of the mastery of the sea. Soon it will be no less important to gain the mastery of the air. It will be fought for."

Throughout his life, Douhet developed and expounded theories of airpower. Many of these theories have now been proven and have become accepted principles in modern strategy.

His career was strikingly similar to Billy Mitchell's. He wrote one critical analysis of military operations which so angered the supreme command in Italy that he was condemned to a year in prison. As a matter of fact, he too, was sentenced in December—in 1916. December would seem to be a poor month for air prophets.

Douhet, Mitchell, and Arnold—all had a goal in common—a strong, effective, independent Air Force. They all labored for this goal at great personal cost. There is another man who certainly deserves to join the ranks of airmen of high moral courage: Gen. Carl A. Spaatz, the first Chief of the United States Air Force.

He was already prominent in aviation annals as a pioneer of aerial refueling. In 1929, then a major, he was commander of a crew that set a world record for endurance by staying airborne for nearly a week.

As his career was drawing to a close, General Spaatz proved his courage in yet another way, by a little known decision involving our postwar reorganization.

I remember, back in 1946, when it seemed that a United States Air Force might never come into being, General Spaatz was offered a deal by the opponents of unification. The offer made would have created a separate Air Force, true enough, but without unification of the services under a single Department of Defense. General Spaatz firmly believed in the concept of unification. He refused to accept this compromise, even though he stood to lose the separate Air Force, which had been the goal of airmen from the beginning. Through his determination to stick by what he believed to be right, we have a strong defense organization today.

There is a strong temptation to tell you more of these examples. These acts of moral courage are, in a way, even more impressive than flying exploits of sheer physical courage.

Fortunately, we have a great wealth of instances of both

(Continued on page 59)

KLM Royal Dutch Airlines pioneers the overseas jet age with

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A powerful turbine coupled with the high-propulsive efficiency of a propeller. Now setting new records in military transport, the Allison Prop-Jet will be backed by two years of flying before entering commercial service.

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The 15,000 horsepower of the four Allison Prop-Jet engines will wing the Lockheed ELECTRA through the air at well over 400 miles per hour, cutting KLM's time schedules by 30% and providing new smoothness and quiet comfort over KLM's 152,000-mile air network.

What's more, it can operate out of "short-hop" airports with runways shorter than those required by today's four-engined transports.

In selecting Allison Prop-Jet power, KLM has demonstrated the same foresight that has marked the purchase of Allison Prop-Jet engines and Aeroproducts propellers by 5 major U. S. airlines—American, Eastern, National, Braniff and Western.

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

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LEWYT

AF Academy cadets pass in review for Gen. Nathan Twining, AF Chief of Staff, on his first visit to the Academy since its dedication in 1955. He toured the temporary site at Lowry AFB, and addressed the cadets.

types of courage that is, again, a part of the great tradition passed on to you.

You may wonder, with so much already done, what remains for you to do. You may feel that the day of the air pioneer is over, and that in the air age, dramatic and daring have given way to discipline and duty.

By no means is this true. You recall that in mentioning battle courage, I stated that bravery is contagious among men fighting shoulder to shoulder. Our bomber crews, who were never turned back by enemy action, pushed on to the target partially inspired by others in the formation.

The power of nuclear weapons enables one airplane and one crew to do what formerly required thousands. The courage of one interceptor pilot may save a city and, with it, millions of lives. In battle, your requirements for courage would be much greater than that required of your predecessors. There would be no one around to observe and condemn you if you faltered. You would have only yourself from whom to gather strength.

I am confident though, that if you must face this test, you will acquit yourselves with honor and add to the tradition you pass on to those who follow you.

We hope we may be able to prevent war, with these challenges.

There are other challenges which you will certainly face, and soon.

One that I think is of utmost importance is this. It is squarely up to you to demonstrate, to the Air Force and to the nation, that the expense and tremendous effort that have gone into this Air Force Academy are justified. You must establish an academic record that makes it clear that the Air Force Academy is a top institution of learning.

You must earn for the Air Force Academy a great reputation. By so doing you will attract other outstanding young men to follow you. This can be your first contribution to the airman tradition.

If you achieve this, you will at the same time equip yourselves for the bigger-than-ever jobs ahead.

Since December seems to be a bad month for air prophets, I will not attempt to tell you the things you will find that must be done during your careers. However, I can give you my reasons for thinking it is so important that you are properly equipped.

A broad understanding of national and international problems above and beyond Air Force problems will be required of those who must convince our national leaders of the nation's requirements for airpower. Conviction does not follow assertion. It comes first from the acquisition of that kind of confidence that educated men of character inspire in each other. Second, it comes from the ability to explain and convince. This ability must be based on a broad knowledge of the total picture.

Airmen have developed a motto which is, in essence, this: "To proceed unhampered by tradition." It was the recognized need to break away from traditional concepts and methods of warfare that led Douhet, Mitchell, and Arnold into their lifelong battles against the established order. In other words—what's good today may not be good tomorrow. We must fight the tendency to hang on too long to favorite weapons and tactics.

As long as man is inventive enough to produce new equipment of combat utility, there must be other men who are quick to foresee its potential, and who are able to develop new concepts for its most effective use in the defense of our nation. Right now we are coming into the missile era. Let me give you some indication of just how rapidly we are moving.

In 1954, about ninety percent of our procurement money went for aircraft, and only about ten percent went for missiles.

In the 1958 budget, about thirty-five percent of our procurement money will go for missiles, and in 1961, we now estimate that money will be split fifty-fifty between aircraft and missiles.

Just as the aircraft required new flexibility in military thinking and planning for its most effective use, missiles will require even more. Our main challenge during the coming years will be to integrate missiles into our combat force without losing effectiveness. In short, our problem will be one of when and how to substitute missiles for aircraft without endangering our security at any time along the line. Just as new aircraft have led us to certain changes in our organization structure, it is more than likely that missiles will create the need for entirely new structures. It is obvious that we must keep our minds free to move ahead rapidly if we are to get the most effectiveness from our progressing technology.

We are in the midst of a great revolution in weapons. But perhaps the greatest revolution of all has come about as a result of airmen who created change, and then adapted themselves to this change. The ability to do this in the future may determine how well we can achieve our most important national goal, which is peace—real security.—END

ABOUT THE AUTHOR

General Twining, AF Chief of Staff since 1953, was Vice Chief for three years under Gen. Hoyt Vandenberg. Born in Wisconsin in 1897, he was a 1918 graduate of West Point. In WW II, he served in the South Pacific, headed the 13th AF, then the 15th AF in Italy, and, in 1945, the 20th AF. He became CG of the Alaskan Command in 1947. This article is slightly condensed from the speech by General Twining to USAF Academy cadets on December 18.

MILITIA . . .

Old Cloak, New Buttons

By Brig. Gen. Royal Hatch

FOR THE third time in a decade, the Air Force is taking a long, hard, hungry look at its own Reserves—and in the story of those long looks lies the most encouraging change of heart in modern military history.

Twice before, the Pentagon microscope has focused on the part-time men in blue. In the first case, the new Air Force thought to abandon the venerable militia system of the Air National Guard. Three years later, the system was officially accepted in a new long-range study, but primary attention was placed on the more flexible Air Force Reserve. Today, the Air Force is maturely, soberly, and hungrily considering how much more both Reserve systems can do.

The militia system, older than our nation, is a watch not every military man knows how to wind. As in Indian warfare days, it gives "every able-bodied citizen" the right and privilege of bearing arms to protect his fireside. In this fireside aspect, its greatest strength comes from community and state support.

To some in the Air Force, however, its greatest weakness comes from this same state connection, in that the governors of the states and territories actually command the flying militiamen, subject only to general Air Force supervision. To others, however, proof of the militia pudding has been the eating thereof in every war of the past 150 years. And in countries like Switzerland, where militiamen have been guarding Alpine mountain passes for ten generations, the country's safety rests in their hands. Recently here, a similar reliance has been felt even by the professional airmen.

Hence the hungry look. And why hungry? Because Reserve forces of today are expensive. Not expensive in the sense of the DEW Line or the B-52, but to harried budget officers in the Pentagon trying to buy new aircraft, the Guard's $280 million annual cost isn't hay. It isn't even straw unless the money is buying something pretty good. And time was when you could get yourself a pretty good argument on that particular point in the Pentagon.

Lately though, some striking new threads are being woven into the militia cloth. Here and there around the states and in some overseas locations of the Air Force, you hear the Air National Guard mentioned in terms that would have been impossible even ten years ago. And the argument today in the Pentagon is one so novel, so striking in its possibilities, that if it proves out, the Air Force may well find itself again beckoning the other services with concepts as *avante garde* as strategic bombing once was.

This argument — this concept — is nothing less than giving the Reserve forces full partnership in the defense role. The free thinkers around the Air Force are struck with the possibility of dividing up the pie of na-

(Continued on page 65)

IN AIR CONDITIONING

WHEN PERFORMANCE COUNTS COUNT ON STRATOS

Turbine wheel from refrigeration unit for Boeing B-52.

N15 Air Cycle Machine for simple system often used in fighters.

EA75 Package for Jet Bomber; Complete System includes temperature regulation, flow and pressure limitation and moisture separator.

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Performance is the payoff in aircraft air conditioning. Weight size, efficiency and reliability are prime criteria.

Simple air cycle packages for trainers—complex systems for heavy bombers or Century fighters—Freon refrigeration systems—for any of these the aircraft engineer knows he can count on Stratos. One of the first to produce aircraft air conditioning, Stratos has designed, developed and delivered complete systems for transports as well as for combat aircraft.

Introduced by Stratos were such advances as evaporative cooling, moisture separators, variable area nozzles, integral controls for temperature, flow and pressure regulation, pressurization rate limitation and many other features.

Faced with a tough air conditioning problem? Look to Stratos for an original, effective solution. Others do.

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THIRD OF A SERIES

Why reliability engineering is not enough

There's more to reliability than meets the eye . . . a thousand inspectors cannot put reliability into an item that is inherently weak in engineering or production design . . . highest reliability in a component is obtained only when the manufacturer is aware of the problems in obtaining reliability . . . plus providing a proper climate in which employees are motivated by pride in product to surpass specifications.

In our humble opinion, the building of reliability into a product requires an alert *awareness* of the many, many facets of the problem. We'd like to submit these . . .

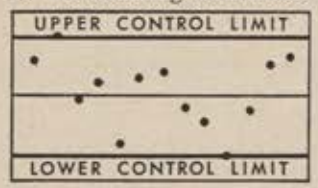
- ***"Integrity of intent" on the part of the manufacturer to meet the problems . . . coupled with provision of a proper climate for the carrying out of reliability objectives***
- ***Financial ability to take the necessary steps***
- ***Modern manufacturing equipment and methods***
- ***Plant capacity and flexibility***
- ***Design and engineering know-how that recognizes end-use requirements and environmental conditions***
- ***Careful employee selection and training***
- ***Long-range master planning***
- ***In-plant industrial and production engineering***
- ***Research, testing, development laboratory activities, including complete testing of prototype to end-use requirements***
- ***Continuous reliability assurance testing during the manufacturing operation, and institution of required corrective action***
- ***Collection, in the field, of failure data, analysis, and corrective action***
- ***All of these facets in depth***

Important as all of these are, the most important is the provision of proper climate, in the form of spirit and attitude of all personnel in pride of product, to carry out reliability objectives. In preceding articles in this series we've touched on some of the more technical aspects of reliability engineering. The manufacturer must naturally have an awareness of the problem, the integrity of intent to turn out the best product it can for a particular market or application, the financial ability to establish a Reliability program, the management ability to install it, the necessary manufacturing equipment and engineering organization to carry it out. But *all of these are not enough, if they are not instituted in a climate where an attitude will prevail that makes such things effective.*

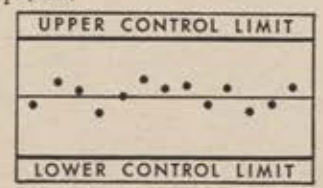
The manufacturer's integrity must necessarily be carried out, also, in the design, in manufacturing, and in finally warranting the product created . . . but, again, with every man and woman in the organization trying to meet or exceed the standards that have been created. This latter aspect we call "pride of product" on the part of the people who are producing it. And such pride must exist not only for the final product but for each part of that product, and in each step in the process. There is also an added dividend to reliability; the reputation of the product will cause the user to handle it with the same pride and care as was put into its manufacture.

It is interesting that people who are proud of a product, and enjoy what they are doing, can keep closer tolerances on the parts they work with and produce than those who are merely working for their pay. An assembler, who's proud of the product turned out, sees questionable components and avoids putting them into the assembly, while a disinterested person leaves them for "inspection" to catch. It is interesting in this connection, too, that some of the finest watch

parts made in Switzerland are produced in little shops where modern quality control techniques are unheard of . . . produced by a craftsman whose major technique is pride in his work . . . and thereby builds everything to the exacting tolerances required.



Quality control graph . . . without pride in product.



Quality control graph . . . with pride in product.

The atmosphere here at Cannon, since our inception in 1915, has included a design and manufacturing philosophy embracing the highest quality and reliability in each Cannon Plug for the specific application for which it is to be used. *To these principles all Cannon Plugs are built*! Even on connectors designed to customer or MIL-spec we constantly strive to give even more . . . to increase the safety factor . . . to give that "something extra" according to our own high "Cannon Standards", as exemplified in our Cannon Credo.

THE CANNON "CREDO"

TO DEVELOP *an organization of exceptional people possessed of respect for the dignity of the individual and imbued with the spirit of the team.*

TO PROVIDE *a facility with which we can produce to our utmost in an efficient and pleasant environment.*

TO DEVELOP *and produce products of such quality, and render such service, that we may always be proud of our efforts.*

TO MARKET *the product of our endeavor at a reasonable profit for continuing growth, reward for effort and a return on investment.*

TO ACCEPT *our responsibility to our community, our country, and our fellow man.*

The Cannon "Credo" is posted through all departments of all Cannon plants . . . Copy available to you on request.

On the more technical side . . . we at Cannon have attempted not only to provide the proper climate for a complete reliability program from the viewpoint of mental attitude, but to provide the necessary facilities in which that attitude may work effectively. One of the most important of such fields is that of engineering organization and proper utilization of specialized engineering personnel. As a purchaser of Cannon Plugs, with a personal stake in their reliability, you will be interested to know that our engineering divisions are grouped as follows:

Master Planning Group . . . men who look to the future . . . investigating the newest in technological improvements, providing interplant project coordination for maximum flexibility to meet the challenges of our ever-changing future.

Industrial Engineering Group . . . experts who call out the materials, methods, and processes to be used in the manufacturing cycle . . . experts who collect, analyze, and institute corrective action in accordance with field failure data.

Sales Engineers . . . fully qualified technical men who contact our customers.

Design Engineers . . . specialists in past and present design methods who analyze failure data caused by design inadequacies and initiate corrective action.

Development Engineering and Model Shop Group . . . specializing in the development of prototypes. In these Laboratories, your prototype is tested to see that all specifications are met . . . physical, operating, environmental. Test reports are made up, and presented to you for review and approval. Not until all these steps have been taken is your order placed in production.

Product Engineers . . . specialists in particular types of connectors.

Quality Control Group . . . well qualified to administer the high requirements of "Cannon Standards" . . . staffed by well trained inspectors and analysts equipped with the most modern equipment.

Quality Engineering Group . . . handling the technical aspects of sampling plans . . . preparing inspection and test procedures to realize the customer's desired quality level and the over-all quality level of the entire Cannon manufacturing operation. Materials are processed through receiving inspection. Process, re-work and final inspection barriers are set up. In addition to standard Military and Cannon manuals of quality control procedures, specific jobs . . . such as yours . . . may require additional special inspection or testing. If so, these requirements are established throughout the process, and where necessary, coordinated with you. Our failure data collection and analysis in this field has given us intimate knowledge of the critical points at which such control should be used. Recognized statistical control procedures are used both in process and at the inspection points.

Materials and Processes Laboratory Group . . . working in both the research and production phases. This is the group that checks performance of new designs, constantly investigates new materials and processes, and (over and above normal manufacturing supervision and quality control operation) runs continuous reliability and assurance tests on the manufacturing cycle.

* * *

Each of our 20,000 Standard Cannon Plugs are of highest quality and were designed to meet exacting reliability requirements. We also produce special designs to meet the most exceptional AQL end-use requirements.

If you have a problem requiring high-reliability Cannon Plugs, we would appreciate the opportunity working with you.

Cordially,

Robert J. Cannon *President*

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The Cessna-developed T-37 introduces the cadet to all combat jet airplane characteristics while training on this safe, easy-to-fly jet trainer.

It is designed to provide the Air Force with a jet trainer that can be operated at substantial savings and cover the most important and longest phase of the cadet-pilot's jet training.

It is a privilege for us here at Cessna to team with the Air Force in its forward-thinking plans for the jet age. CESSNA AIRCRAFT COMPANY, Wichita, Kans.

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Be an Aviation Cadet. Inquire today about the future your Air Force offers from your Air Force Recruiting Office.

tional defense among those who have the best teeth. At the highest level, the Air Force has assigned one of its ablest senior officers the services of twelve generals to read the future as best they can and recommend the outlines this defense partnership should take. The tasks impossible for Guardsmen as citizen-soldiers would be reserved to the active Air Force. The roles which the Air Guard can perform would be entrusted to the Guard. It sounds simple, even self-evident. It could save billions and might win a war.

How this new partnership would operate in the future may best be illustrated by the slowly turning parabola of a huge radar antenna, high on a windy hill in Kaneohe on the island of Oahu, Hawaii. There, at this moment, the citizen-soldiers of the Territory are furnishing radar warning information to the nearby Air Force control center, twenty-four hours a day, seven days a week. Not one Regular officer or airman is stationed in the radar station. Every man Jack is a citizen-soldier of the Territory, a few full-time employees, but mostly men with occupations which require scheduling free time at the radar site, nights, Sundays, holidays. The product? Radar information, called plots, as accurate, timely, and complete as ever came out of a trained unit of the full-time Air Force.

The Air Force Reserve is also on this first-team roster, but it is service like this—performed at the request of the Air Force to fill a chink in the defense armor—that has put the Air National Guard organization in a new light in the Pentagon. It has not always been so.

Ten short years ago, the newly hatched United States Air Force was testing its mettle in flight, independent of the old Army for the first time. A new command organization, new military methods, new organizations were being introduced. The tradition was anathema. Among the most traditional of legacies from the olive drab was the Air National Guard.

At that time, the Air Guard constituted a force almost half the size of the then forty-eight-group Air Force, but a force in peacetime under the jurisdiction of the states and territories, though largely financed and equipped by the Air Force for federal use in war.

In its complexities and balanced relationships, the Air Guard represented and still represents one of the oldest compromises between the federal government and the states which created it. The long years between World Wars I and II had given the Air Guard a reputation of country-club operation, weekend flying on a catch-as-catch-can basis, and promotion by politics. In 1948, Lt. Gen. Elwood "Pete" Quesada, the first Air Force Special Assistant for Reserve Forces, made his controversial statement that the Air National Guard would never be effective until brought under federal command. One year earlier, a board headed by Gordon Gray, former Army Secretary, had advised President Truman substantially that: "The federal government in its relationship to the National Guard must operate through a patchwork of expediencies with the several states, a patchwork that could be abrogated at will by the states."

In 1949, the first Commander of Continental Air Command, Lt. Gen. Ennis Whitehead, said that the Air Guard could never render an effective contribution to air defense since the legal machinery of forty-eight states

(Continued on following page)

Where once the concept of "forty-eight little Air Forces" threatened to paralyze Guard effectiveness, now, in time of emergency, ANG jet fighter pilots would instantly and automatically resume the US label and take to the air.

One reason why training plays such an important part in the Reserve forces' program is the increasing complexity of the electronic equipment used today.

F-84. ANG fighter pilots are on ready alert, with guns and rockets loaded.

made the questions of effective utilization impossible.

The passage of years and the seriousness of the threat against us have proved Whitehead wrong. The governors of every state and territory have approved procedures whereby a button pushed to alert the nation's defenses will also alert the fighter squadrons of the young-old Air National Guard. In time of national emergency, jet fighters wearing the state colors of Arkansas, Texas, Alabama, Massachusetts, Alaska, and all the rest would instantly, automatically resume the United States label and take to the air. Not solely in case of national emergency does this happen.

Today, at Foss Field, S. D., the ready-room buzzer sounds and Butterfly Control comes through with its throaty rasp, "Scramble two on vector 360—angels at twenty-five." Air National Guard Capt. Lloyd G. Olson and a wing man seize crash helmets and sprint for the two alert aircraft on the ramp, polished and ready since early morning. In seventy-four seconds both aircraft are airborne and climbing at 300 knots with that peculiar ear-filling swish of jet tailpipe exhaust.

High over the lakes of the northern Dakotas, Butterfly Control comes thinly through the earphones, "I am not sure I paint you on the weapon, Red Flight. Can you squawk two?"

Captain Olson switches a control in the cockpit and Butterfly is back on the air: "I have you now. Your vector now 275, turn left, angels still twenty-five."

At 25,000 feet, the two sleek Guard interceptors close in at almost the speed of sound on a de Havilland Dove which has just crossed the Canadian border unidentified. Meanwhile, below the two interceptors, the identification complete, a 400-foot ceiling of icy fog has rolled in. Calmly, competently, with help from Butterfly Control and local radar, the two pilots descend through the undercast and are back on the runway twenty minutes later with another mission of air defense completed for the United States Air Force.

Thirty-one-year-old Captain Olson, former Navy torpedo-bomber pilot, stumps wearily home for lunch, and back to work selling wholesale appliances in Rapid City, S. D. Even if you asked him, he would probably not realize that he and several hundred others like him have just written a new chapter in the book that was started at Lexington and Concord so many years ago—the chapter General Whitehead thought six years ago was impossible.

Lloyd Olson, Navy alumnus, appliance salesman, father of four, is a member of the new team of the Air National Guard—a team calmly and unexcitedly standing runway alerts under actual battle conditions, as citizen-soldier Guardsmen, rather than as airmen on active duty.

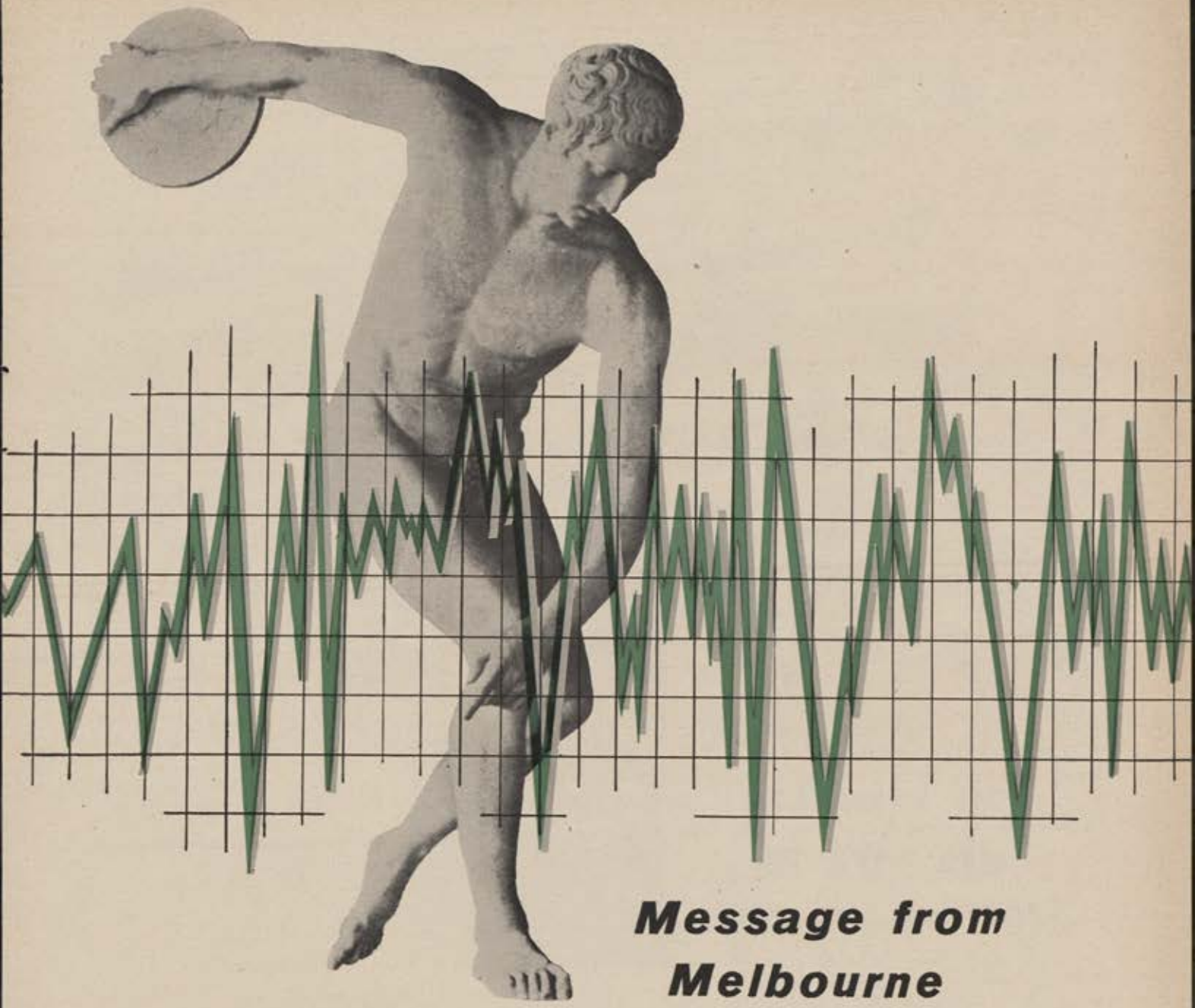
"No, we don't think it's anything so special," says Lloyd. "I have been in the old 175th Squadron for four years now and I don't believe I ever missed a drill or an alert schedule. My wife doesn't fuss. I guess she thinks what we are doing is helping out some. She was a WAVE in the last war."

There are nineteen other squadrons of the Air National Guard and one of the Air Force Reserve like the 175th in Sioux Falls, S. D. Strategically located, each squadron furnishes ready pilots and combat aircraft, guns and rockets loaded, to augment the efforts of the active Air Force in the critical job of defending the borders of the nation from air attack, not in some future emergency but every day of the year.

The reason for the day-to-day aspect of this defense partnership is

(Continued on page 69)

A C-119 of Operation Sixteen Ton takes off in realistic training exercise.



Message from Melbourne

A recent short-wave broadcast from Melbourne, Australia . . . received in Syracuse, N. Y. (over 10,000 air miles) **with no perceptible flutter or fading** . . . is further proof that General Electric's new radio technique . . . Synchronous Amplitude Modulation*. . . is the solution to the problems of long-range radio operations. Its concept and operation are uniquely simple . . . SAM* is compatible with all present forms of radio equipment . . . its operators need no further specialized training . . . yet it preserves complex wave forms even while handling the Doppler effect. Its suppressed-carrier, double-sideband transmission and synchronous reception promise significant savings in weight and cost. Of paramount importance is SAM's* resistance to jamming and interference. Here again, is a vivid example of LMEE's invaluable contribution to progress . . . in furthering new uses for electronics.

For the very latest information on SAM* . . . write Section A

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IN FLIGHT OR EJECTED HIS LIFE IS *Scott* PROTECTED

The New, Scott Global Survival Kit, developed in conjunction with Wright Patterson Air Force Base, now makes high altitude, high speed, escape a practical operation.

In line with human factors policies of simplifying the pilot's task during emergencies, Scott in cooperation with WADC Aero-Med Laboratory personnel, has developed a system of High Altitude Breathing and Survival Protection. This eliminates many steps previously required to successfully escape from high speed jet aircraft at very high altitudes. The new system integrates all pressure suit and breathing oxygen functions, as well as disconnect operations. These are automatically accomplished in changing over from ship to emergency supplies of pressure and oxygen.

For the "Shape of Things to Come" keep an eye on Scott Research and Development, backed by a quarter of a century of experience in aviation breathing equipment.

Complete information on the Scott Integrated System of High Altitude Breathing and Survival Protection will be mailed to persons active in this field.

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simple. The Air Force just cannot afford enough permanent, full-time squadrons to investigate every "unknown track" that appears on the radar screens of this country and Canada. It's also the best possible training for the Guardsmen.

"I work at this whenever I can get a little time off from work, like all the other boys in the outfit. We swap the job around since the boss, old Duke Corning, thinks that's the best way for us all to keep up to par. These intercept procedures change some from time to time and we all enjoy getting on the alert program when we can," says Olson.

Around the clock, seven days a week, these heirs of Paul Revere man the ready room, drink coffee, and listen to the throaty admonitions of Butterfly Control. Its first commander, Congressional Medal of Honor winner Joseph J. Foss, recruited his pilots from former Army, Navy, and Marine combat veterans in 1946. He is now governor of the state, and has turned over the squadron to his close friend, another Navy veteran, thirty-nine-year-old Duane L. "Duke" Corning.

None of the men involved is particularly impressed with the novelty of the job being done—to them it's an old story, another job they have become used to in a fast-moving world.

Air Force Reservists flying mainly transports rather than fighters are also deeply involved in this new day-to-day contribution to the defense effort. Almost every day of the past summer and fall, far out over the lagoons of the Caribbean could be heard the engines of heavily loaded aircraft, manned by Reservists of the Air Force.

"They called it 'Operation Sixteen Ton,'" says Brig. Gen. Clayton Stiles of the Long Island 514th Troop Carrier Wing, AF Reserve. "Before we were through, we'd lugged 430 tons to San Juan and San Salvador. Best training my boys ever got. Training? It was more like wartime operations the way I saw it."

Operation Sixteen Ton *was* more than training. At the request of the Coast Guard, Reservists flew combat materiel from East Coast airports to Puerto Rico on a scheduled, split-second, on-time, in-place basis all summer and fall without nicking a propeller or sustaining one accident, great or small. For Stiles, veteran of two wars, airline captain on a transcontinental run, and father of two, his new status on the Air Force first team is a heart-warming climax to his twenty years as part-time military airman.

For the thirteen general officers in Washington, the question goes to the heart of the defense dilemma: "How much at what cost?" Between now and mid-March, chairmanned by the present Commander of Continental Air Command, Lt. Gen. Charles B. Stone, III, these men will be measuring just how complete a change of opinion the Air Force has undergone since the days of General Whitehead and Gordon Gray. At stake is nothing more nor less than what functions of the next decade in national defense this lean, competent group of citizen-soldiers can perform—not in the active service, but as citizens wearing the uniform only when flying the airplane, or operating the radar, or handling the missiles, or running the computor.

As the financial pressure of defense bears heavily on the US economy, as the cost of new weapons rises fantastically, the Air Force has eagerly, gladly, liberally turned to its own Reserves and is looking to them for the first time as full partners, fellow members of a team playing on the same field with the same signals.

Where this trend of thought may lead can be only a subject for speculation in the next few fruitful months. It may be that increased responsibilities in defense may prove more than citizen-soldiers can perform as civilians, and that the present day-to-day contributions represent the limit to which the old Guard system can be stretched. It may be as the years roll by that realization will become more and more general that every hillside here and abroad is potentially the front line.

In these circumstances, the citizen-soldier of tomorrow may be four days a soldier, three days a civilian worker, may be paid by a civilian employer part-time, and find his work as part-time soldier more nearly approaching full-time. Like the citizen of Switzerland or the Alaskan Scout, he may take his rifle home, so to speak. As in those two countries, this habit and the resolution that inspires it may make invasion impossible.

With typical American adaptability, this country and its armed forces seem to be adjusting well to the mantle of world leadership. As we do so, new cuts of the cloth are being made, new buttonholes, new places to wear weapons.

In this cloak the Air National Guard and the militia system seem to be finding a useful place. By next spring, when the Air Force will have finished its long careful study, we will know for sure.—END

Fast break from an Air Guard ready room. If a button is pushed to alert the nation's defenses, the fighter squadrons of the ANG will be alerted, too.

ABOUT THE AUTHOR

Brig. Gen. Royal Hatch, Jr., is Special Assistant to Lt. Gen. Charles Stone, ConAC Commander, for the Air National Guard. Born in Massachusetts in 1917, he was graduated from Dartmouth College and in 1941 commissioned in the AAF. During WW II he served in Training Command, and afterward commanded an ANG bomb squadron. He was recalled in 1950 and again in '55 for his present assignment.

So You Finally Made MASTER...

FOR THE briefest instant the freeze thawed and there, big as life, is your name on orders. You've been sweating it out. This is it—you made it!!

By M/Sgt. Frank J. Clifford

SPECIAL ORDER)
NUMBER 223)

1 Nov 1956

EXTRACT

23. UP AFR 39-29, each of the FNA, org indc, this sta, is pro to the grade indc, with DR 1 Nov 56. Auth: AFR 39-29, and Ltr HQ USAF, EPMPS, Subj: Armn Pro Quota for Nov 56, dated 6 Oct 56.

TO MASTER SERGEANT (TEMPORARY)

T/Sgt Adolphe M Frappee, AF20 301 556 50th HEDRON

The rest of the order is a waste of paper as far as you are concerned. You made it. But you can't quite believe it yet. Check that name and serial number again. It's you, all right, Frappee. You're a "zebra" now.

A cute idea dances gleefully around inside your glowing skull. You'll go home, see, with the new stripes on, not saying a word and see how long it takes the Old Girl to spot the new rocker. Bet she won't notice a thing until you say, "Oh, Honey, how about sending this coat to the cleaners tomorrow," or something like that.

Aw, come on, spread a little sunshine. You reach for the phone.

Yes, you are now a master sergeant in the Air Force. You are now one of a new breed of non-commissioned officers entirely different from all of those who have gone before. The new AF master sergeant moves in a Buck Rogers world where an imaginative mind, technically trained hands, and energetic competence are not only required but are taken for granted.

Take another look at the other men who wear "all six." Your perspective is much altered now—you're a *honcho* now yourself. You're in fast company now where competition is keen and your peers guard the hard-earned respect and integrity of their rank by a very effective device which might be called "public opinion" for want of a better name.

There is always an older "Old Sarge" who sets the tone, and the "community of master sergeants" will enforce compliance. As a recruit zebra you will do well to gauge the local scene accurately. This is not as grim as it sounds, and in a short time you will be one of the boys.

Recently, when I was on a promotion board examining candidates for promotion to tech and master, the master sergeant who sat as senior NCO asked us the same set of questions after each candidate left the room and we deliberated in a private session. He did not inquire into the technical competence (which was already thoroughly demonstrated long before the candidate came before our board), time in grade, or length of service.

He asked instead, "Is he one of us?"; "Do you want to associate with him as an equal?"; "Would you send him out as a representative of yourself?" These were the questions he asked, and for the first time I suddenly became aware of a new solidarity in the NCO corps.

He was the "Old Sarge" who set the tone for that board, and it was he who controlled the quality of master

(Continued on page 73)

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One cure is to shanghai the eight-ball six-striper to another outfit.

sergeants being made on that base. The same quality control is being exercised all over the USAF by men who have reached "field grade" on their side of the fence. AF master sergeants are policing their own ranks, and while few of them would take deliberate action to have a colleague "busted," all of them are united in preserving and improving the quality of the corps by controlling the input.

There is good reason for this attitude. Promotion mistakes made in the past are now accomplished facts and nothing, short of turning the AF upside down, can change what is already done. The wholesale promotion of thousands of men to the master sergeant grade immediately after World War II was a serious mistake of considerable consequence, because it was inevitable that a certain number of them would be unqualified to hold the grade.

But it is contrary to human nature, and general, unwritten AF policy, to reduce a master sergeant. For those of you who have just sucked in your breath, aghast by such a statement, it is my duty to tell you that such are the facts. This is not to suggest that a master sergeant can't be reduced—he can—but in real life this seldom happens and a man would have to do something truly spectacular to be reduced. I myself can recall only four master sergeants who were busted and each of these lost only one stripe.

The cure, practiced every day, is to shanghai the eight-ball six-striper to another outfit or to some innocuous job where he can do no harm or where his weakness can be gracefully concealed. Neither course is a satisfactory solution, but the fact is, gentle reader, these *are* the methods used to correct a mistake in judgment.

The master sergeants themselves have devised a more realistic and humane method—they apparently have united, spontaneously, and on a world-wide basis it would seem, to guard the quality of the corps by attempting to control the input. I say "attempting" because, generally, promotion boards are composed mainly of officers, and the enlisted vote is thus very vulnerable to neutralization. However, from my own experience, and from discussing the experiences of others, I am sure that the enlisted opinion and counsel is taken with the same gravity with which it is offered.

Make no mistake about it—the top-grader is vitally concerned with who makes non-com grade, especially master sergeant grade. He has to work with the man and he has seen his share of muttonheads, personality boys, and flim-flam artists.

The acceptance of enlisted counsel on boards I interpret as an indication of the growing awareness of the maturity and good judgment of "field grade" non-coms. It is traditional to say that the "non-com is the backbone of the service" but in the past several years this has largely been an empty phrase for the awkward reason that it just wasn't so anymore. And it wasn't so because there were too many non-coms of infinite degrees of quality.

In actual practice, the master sergeant grade was the only non-com grade generally recognized as such. All other grades were lumped together.

It became unsafe to assume that a first-three-grader knew his stuff, and thus in too many cases he was ignored and his role taken over by junior officers. This enabled the fakers to slip into the woodwork, fat and happy, but it infuriated the genuine non-coms. A change was indicated, but because of the great numbers of men involved the transition had to be made slowly.

NCO academies were an answer, but the process was too slow and only trained a tiny portion of the men eligible. Something faster was needed, something that could be done on every base in the AF. The answer was to seek a place on the promotion board where mistakes could be averted before they became unpleasant facts of life and hard to correct.

Apparently, commanders approved the idea since promotion boards in increasing numbers have top-graders sitting as a matter of course.

The new-style AF master sergeant has a legitimate place on the board. For one thing the nature of his job has changed. Almost always he is personally responsible for large quantities of materiel, all of it expensive—aircraft, power plants, electronic gear, weapons, the entire bewildering, intertwined technical world that is the modern military machine. If he is a paper shuffler his job is no less complicated for he controls and directs the torrents of information and instruction needed to make the technical AF function.

Technical or administrative, it is the top-graders who see that the wheels turn on cue, and keep on turning.

The new-style supervisor non-com was created and developed by the zebras themselves. Here "public opinion" played a big part. If you didn't look and act like the accepted pattern, you just didn't get to associate with many other six-stripers. Authentic "characters" were exempt, of course, as they always are, from the slings and arrows of public opinion, but these are extremely rare personalities and didn't count in the general reformation.

What does the new model AF zebra look like? Generally speaking, he is approaching his forties and has about fourteen years' service. He has a serious, can-do attitude toward his work, and he expects all ranks to respect him as the *honcho* in his shop. He speaks candidly to all ranks, having discovered there is little profit, progress, or respect in being a "yes" man when the situation demands a "no" man.

As a group, he is a family man and, whenever possible, his family accompanies him on his globe-trotting forays. As a result of his travels he speaks knowingly of Berlin or Bombay, of Taegu or Turkey, and a hundred other places all over the globe. He speaks a polyglot language, mixing words from several languages into a single sentence, if such construction seems best for effective communication. He is also fluent in a special trade patois studded with technical terms, abbreviations, initials, and words coined from initials.

(Continued on following page)

Without this trade talk he would be unable to do business, for ordinary language is inadequate.

Almost to a man, the modern top-grader is a sharp dresser, in or out of uniform. Slip him into a gray flannel suit, install him in a typical executive-type office, and no one would be the wiser. He'd not only look the part but in all probability he could perform the job after a reasonable amount of training; he's been shifted from job to job before.

He watches his waistline. The fond conception of the pot-bellied "Old M/Sgt." does not apply to him—extra poundage slows him down, and, with uniforms as expensive as they are, he finds it cheaper to win his battle of the bulge. He'd rather be fit than fat.

A sociable man, he likes to drink but he loses patience with drunks, especially if they work for him. While he can live it up with the best of them, he has learned to take it easy.

The new-style master sergeant likes to work, and because of his technical training and experience, he knows how to work; and because of the widespread acceptance of management schools he knows how to get the most out of others. Off duty, he talks a great deal of shop—in fact, almost all of his conversation is in relation to the "business."

Finally, he is a cool head when it comes to wars and rumors of wars. What is to be, is to be, and nothing he can do will alter the course of events, is his attitude. No hero, he has learned that a calm attitude is expected of him and is reassuring to younger troops, officer and airman alike. He's been there before.

This is only a sketchy description of the jet-age top-grader; no other kind is possible. It may sound bombastic and might not apply to specific individuals too numerous to mention but it is nonetheless generally a true picture.

I might also mention that my high opinion of the master sergeant grade does not in any way disparage the other NCO grades.

But to get back to you, Frappee, if you can lay that needle and thread down for a few minutes. You are now a much more important man than you were yesterday. No false modesty about it; as far as the T/O, your supervisor, your squadron commander, your wing commander, and the entire AF are concerned, you are more important today than you were yesterday. But don't let it go to your head—actually, what is important is your rank and the visible symbol of it on your sleeve.

If you've picked up on what has been laid down in the preceding paragraphs you'll have no trouble fitting in. The main point is that you have to look and act like a master sergeant, and your best models are the established six-stripers around you.

It will take some time for you to become accustomed to the full sleeve of stripes; you'll find yourself looking down your arm, making a recheck from time to time. But from the minute you appear in public, striding your new chevrons, you will know that you have gained more than a stripe—you now belong to an outfit within an outfit.

You will find that simply by being a master you are automatically equipped with a kind of currency that makes it easy for you to wheel and deal. Use it frugally, Frappee, and only when regular channels fail. A favor asked and granted is an obligation that must be repaid on demand. Attempt to use it for grandstand plays and you'll be cut off.

When you don the complete rack of stripes you forfeit a time-honored privilege of "other ranks"; the right to gripe in public. Gripe you may, but regardless of how masterful your style, how witty and acidly accurate your comment, spare the troops. Because you are a top-grader, your beef commands serious attention and broadcasted indiscriminately it adds support to an element which always stands ready to mount the soapbox. Your job is to support the Old Man and his program.

Gripe you may, but only among other masters. But a word of caution here—go easy—you'll find you are on an extremely fast track.

As a certified *honcho* you are automatically suspected of being in league with management, and as a matter of fact, you are. You will find that your opinion is solicited and your suggestions respectfully considered. The prestige of the corps will carry you for quite a while.

But when you break out in six stripes you at once become an unknown quantity, even to men who have worked with you for years. The question immediately arises, "What kind of a master is Frappee going to be?"

If you are normal, you don't know yourself at this stage of the game. Take it easy. The AF functioned before you made master and it can wait a bit longer before you unleash yourself.

A good thing to keep in mind is that people like to please the boss—given a job, they can almost always be depended upon to do their best. Conversely, if the job does not measure up to standard they realize it and

(Continued on page 77)

For top non-coms, personal appearance is as vital as technical competence.

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are almost pathetically eager to shape up. As a master sergeant your job is to establish a level of quality and insist on it being met.

Personal appearance is as important as technical competence. Oil-stained coveralls, grease-encrusted fingernails, and all the other mortal sins against good grooming are not characteristic of the new era master sergeant. Indeed, the trend is in the opposite direction. It is no longer strange to see maintenance supervisors in *starched and pressed* overalls – a development which I believe originated among troops based in the Orient and the tropics where domestic labor is inexpensive.

At one time technical inspectors always performed in overalls but even this is passing. While fully in touch technically, they have now become "men from the Inspector's Office" and they wear "Class As." Not long ago such garb would be regarded with ill-concealed suspicion, if not downright hostility.

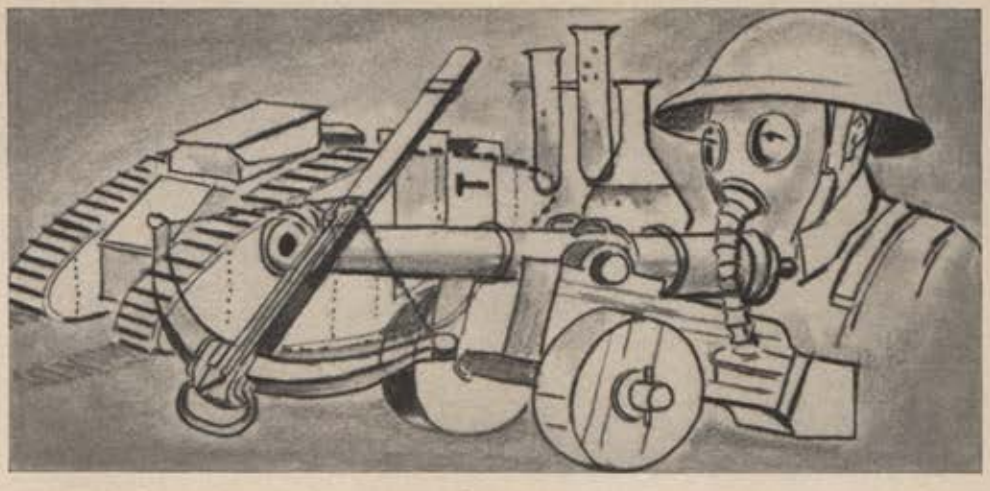
Similarly, in the administrative fields, the NCOIC has adopted the practice of wearing his uniform coat while at his desk. There is a distinction between a man in shirtsleeves and one in a coat. You've got to look like a master sergeant to be treated as one—and unless you are treated as one, you can't function as one.

The new style master is becoming a better speaker and writer. Toastmaster Clubs are being formed at a growing number of bases, and zebras are joining as a matter of course. Gobbledegook is being snipped at the source by the men who are the "action agency" for the bulk of military correspondence. They simply do not have the time to wade through acres of officialese.

This is the kind of man you are expected to be, Frappee. You are in an élite corps that is something new on the military scene. Apparently you had the stuff to qualify for membership—now it is up to you to answer the question, "Is he one of us?"—END

ABOUT THE AUTHOR

Long-time readers of this magazine will immediately recognize the name of Frank Clifford, who's one of our more faithful authors. His most recent article for us, "The Silent Service," in the October '56 issue, generated considerable heat and resulted in Capt. Jim Sunderman's "The 'Silent Service' Speaks Up," in December. Sergeant Clifford's latest offering came in from France, where Cliff's now on PIO duty with the 50th Fighter-Bomber Wing.



The Case for NON-NUCLEAR WEAPONS

By Lt. Col. Edward P. Wynne

IN THIS age of nuclear weapons and the ever-expanding application of these weapons to warfare, any discussion of non-nuclear weapons is looked upon with a jaundiced eye. The more extreme supporters of the new weapons compare any effort to improve conventional warfare with "further development of the bow and arrow." The fact that such thinking exists makes the need for more extensive weapons analysis stronger than ever.

Study of the great wars of the past shows that as new weapons are developed and placed in the military arsenal, the older weapons are not scrapped. History indicates that the old and the new tend to complement each other. The types of old weapons to be used may be narrowed down, but there will always be areas where they can stand on their own and perform a military function more economically, more effectively, or uniquely. For example, the Marines landing at Inchon during the Korean war carried trench knives and used them effectively.

This type of debate concerning the part nuclear weapons will play in future warfare has been heard in the past whenever a new weapon or concept of war was introduced. The use of the crossbow, the introduction of explosives, the advent of tank warfare, the gas attacks in World War I, and the threat of biological warfare have all raised moral issues and aroused intense feelings of self-preservation. However, despite the moral considerations involved, it is impossible to overlook the fact that an aggressor will use any weapon which is available to him in quantity and which he is fairly certain will give him an advantage.

Moral considerations or treaties have never deterred the use of new weapons because aggressive war, itself, is immoral. The use of such weapons has been restricted only by the inability to foresee a clear advantage resulting. With this thought in mind, I will offer the premise that any debate concerning the use of nuclear weapons in future wars is merely academic. We must be prepared to fight with the most powerful weapons available to us and must have an adequate force in being to do so.

On the other hand, we must not allow our armed forces to become obsolete in the employment of non-nuclear weapons. There is a growing danger in our efforts to maximize the nuclear capability to reduce our work in other weapons to a token effort. While the need to prepare our forces primarily for nuclear warfare is paramount, the considerations which demand that other weapons not be overlooked must be examined carefully. The extent and complexity of the analysis which must be conducted can be gained by a look at certain areas in which non-nuclear weapons show promise or may be dictated by circumstances.

The action of the shaped charge in penetrating a block of steel is well known. The mechanics of the penetration are not completely understood. However, it is quite obvious that by itself, the extremely high temperature in the jet cannot be expected to obtain this deep penetration. The kinetic energy in the jet caused by extremely high velocities of impact is considered to be the principal effect which causes the jet to perforate thick steel plates.

This indication has led to a search for hyper-velocity projectors that could propel fragments at velocities of 25,000 feet per second in order to study the nature of the damage caused by the high-velocity impact of the fragments. The actual employment of a weapon which could project a fragment at this velocity is not at hand since the size and weight of such a weapon would make it impossible to use. With the advent of the ICBM we have a natural target to obtain high velocity of impact. Since the ICBM itself will be traveling at an extremely high velocity, the velocity of the fragment can be low and still obtain the high-impact velocity for which we have been searching. It is possible that we may find that a fragmenting weapon will be a very effective anti-ICBM warhead. There is also a possibility that warheads containing a cluster of fragmenting or shaped-charged sub-projectiles may provide highly lethal terminal effects against the ballistic-type missile.

Bomber defense is another area which may provide a

(Continued on page 81)

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continuing requirement for conventional weapons. Close-in defense of bomber aircraft, *i.e.*, within 1,500 yards, will not be practical with a nuclear weapon because of aircraft effects and the effects on the crew. There may also be questions as to the suitability of some types of guided missiles at close range. If it is determined that an active close-in defense for bomber aircraft will be necessary, then we should look at the relative effectiveness of aircraft guns or unguided rockets, or some combination of these types of weapons, as well as guided missiles.

The type of action in which fighters engage in combat to attain air superiority follows the same reasoning in weapons selection as the close-in bomber defense problem. For example, fighters on armed air reconnaissance would not want to employ nuclear rockets or guided missiles if it were necessary to challenge an unidentified aircraft. This type of action is a common occurrence in areas such as Korea or the Middle East. In the future, fighters will probably employ nuclear weapons and guided missiles; however, they will also require a secondary capability that will enable them to close with an enemy aircraft and fight at close range when required.

The air defense problem of defending against low-flying bombers over friendly territories will require non-nuclear weapons in many cases. It would be only as a last resort that we would use nuclear weapons against bombers flying as low as 500 feet over, say, some of our Long Island cities. At the higher altitudes, guided missiles will require nuclear warheads to compensate for guidance inaccuracies in the initial crop of air defense missiles. However, as the guidance systems are refined and the terminal phase of guidance becomes capable of placing a high percentage of missiles within a few feet of the target aircraft, the use of non-nuclear warheads should be more desirable. This area of combat will require a high degree of analysis effort and a constant program to collect weapons effects data to keep abreast of the rapidly changing offensive and defensive capabilities.

Still another mission area which will probably require the use of non-nuclear weapons is that of attacking enemy troops who are occupying friendly cities. It may be possible to employ small nuclear weapons against rail heads or roads; however, it is doubtful whether or not we would employ such weapons against troops occupying residential areas unless all other means were exhausted and the situation were critical.

This problem of attacking friendly cities is magnified when we consider a perimeter type of war. Many objections would arise against the use of nuclear weapons in the Middle East and Indo-China or any of the other small areas which may flame up on short notice. These objections may involve considerations such as the economics of using our nuclear stockpile, the international political situation, or solely the ultimate national objective that was to be achieved. It is highly desirable that we keep a strong non-nuclear capability in order to make at least a substantial effort to control such a situation without committing ourselves to the use of nuclear weapons. Furthermore, this non-nuclear capability should be the best that modern science and technology can provide—not just obsolete World War I and II weapons.

An obligation we cannot forget is the supply of modern weapons to the NATO countries and to our allies in other theaters. The availability of nuclear weapons to most of these countries will undoubtedly be extremely limited or completely lacking for many years. If we allow our conventional weapon capability to deteriorate, we will be forced to supply these countries with obsolete weapons, thus reducing their capability to defend themselves and leaving them open to an easy defeat by an aggressor.

There are undoubtedly other areas in which the desirability of using other than nuclear weapons could be pointed out. The above serve to illustrate the point that the use of nuclear weapons does not provide the cure-all for modern combat. The need to maintain a predominantly nuclear combat capability must be kept foremost in our thoughts but must not be allowed to completely close our minds to a studied balance among all types of weapons. This again points out the need for extensive weapons analysis on all levels.

We can expect such organizations as RAND, the Army's Operations Research Office, and the Navy's Operations Evaluation Group to increase the intensity of their work. The Department of Defense has already started to expand its Weapon System Evaluation Group by the formation of a new group to provide added emphasis to interservice weapon systems evaluation. As the types of nuclear weapons increase and our nuclear combat potential expands, we must employ this analysis capability to keep a proper balance between the old and the new.—END

ABOUT THE AUTHOR

Now Deputy Chief of the Air Weapons Division at ARDC's Directorate of Development, Colonel Wynne is a 1940 graduate of West Point, where he taught for three years before joining ARDC in 1952. In WW II he was in the Signal Corps but transferred to the AF in 1947, and in 1948 earned a master's degree from the University of Michigan. Born in New York in 1918, he's married, has six children.

In a ground safety meeting at Bolling AFB, an airman gives a lecture on the proper way to report a traffic accident.

AIR FORCE CAREERS

NO. 5 OF A SERIES

By Flint O. DuPre

THE TOLL OF TRAFFIC ACCIDENTS

Deadlier Than War

FOUR airmen at an Air Force base on the East Coast formed a car pool not long ago so they could spend their leave together in Florida. They took turns driving—those who weren't driving usually slept.

Dave's turn to drive came about halfway to Florida. This proved unfortunate for his passengers. Dave, a proud young airman first class, didn't really know how to drive. But more important, he'd never admit it to others—or even to himself. His lack of experience caught up with him as he sped up a hill, when he barreled head-on into a truck. Two of his companions, trustingly asleep, never

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Two airmen died here—two among 40,000 Americans killed last year.

Right after leaving on furlough, an airman and his wife died in this wreck.

At Scott AFB, an airman inspects the safety precautions around a trench.

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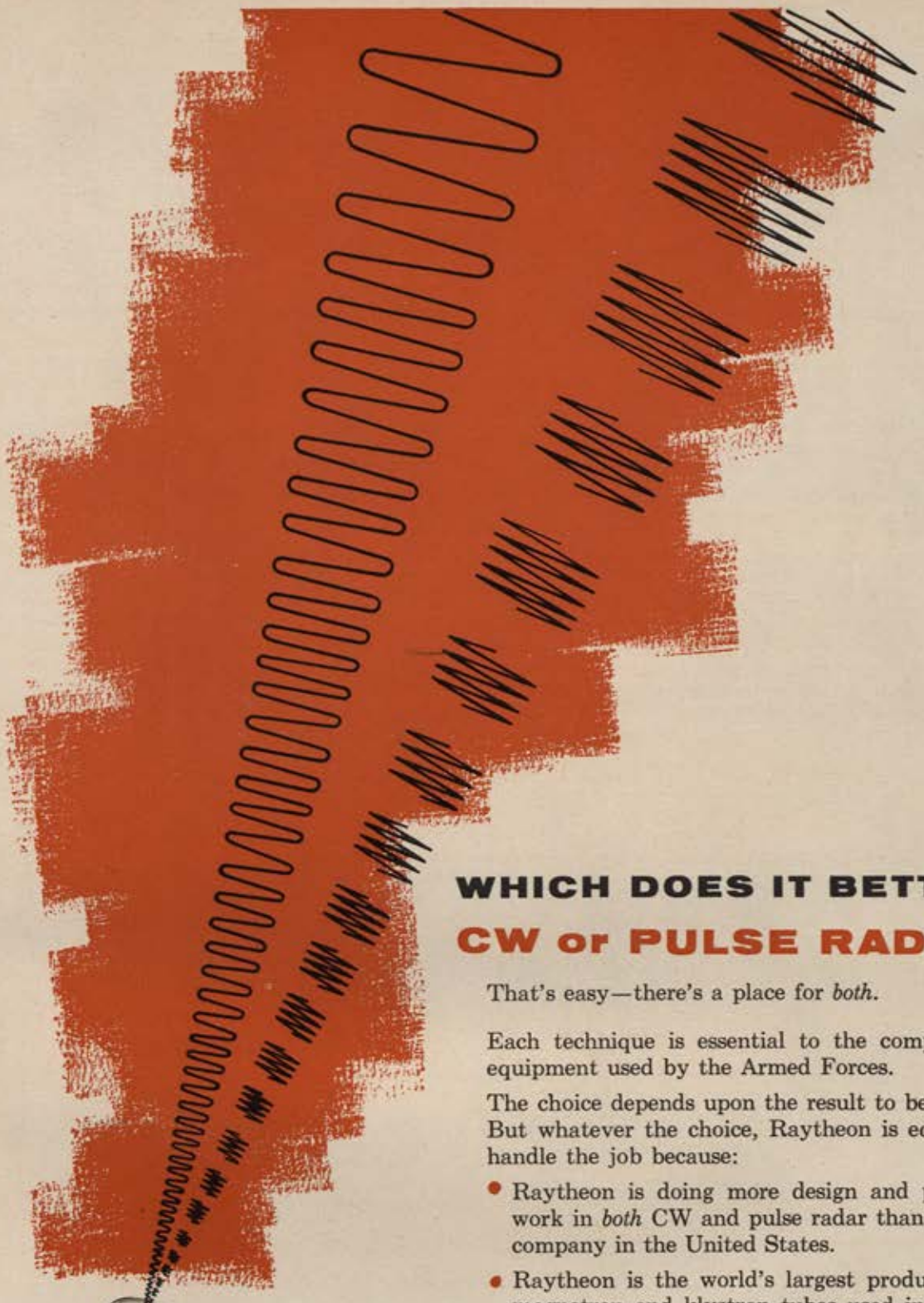

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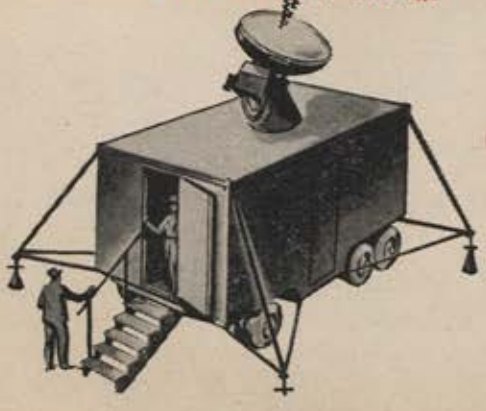

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awoke. The third was critically injured.

Dave himself escaped with minor injuries but with a conscience that would tell him the rest of his life that his terrible mistake could have been prevented.

This is a true story. Similar tragedies occur over and over again, around the clock. Only the names and minor details change. But not the result: a heavy toll of deaths, painful injuries, enormous property damage, and loss of time and money to the individuals involved—and to the Air Force.

One startling statistic is that seventy-five percent of all Air Force deaths in 1955 resulted from automobile accidents, most of which were in privately owned vehicles. Such accidents killed 632 members of the USAF in 1955, with 5,528 other officers and airmen suffering disabling injuries. Figures for 1956 are incomplete, but are sure to top those of 1955.

An airman in Bolling's ground safety program posts a sign that makes sense.

What is the Air Force doing to bring this figure down?

The AF sponsors safe driving programs, Road-eos, and other accident-prevention campaigns directed at those who cause the mobile mayhem. The key figure in efforts to reduce the number of traffic mishaps is the base ground safety man. His job is staggering.

When AF Chief Gen. Nathan Twining recently took a look at the latest figures on traffic deaths in the Air Force he reacted as if all his B-47 and B-52 bombers had been grounded. He sent a letter to all AF units telling the commanders to get busy and do something about this very real threat to the well being of the Air Force. The actual job of doing falls to the ground safety people, both airmen and civilian employees of the AF.

These men "promote safety consciousness among personnel, analyze accident causes and trends, survey areas and activities to eliminate hazards, investigate accidents, and supervise ground safety activities." If they do a good job—and most of the men in this field are well trained and hard-working—they do all this, and more. Generally, the ground safety man has the strong backing of his commander, and is able to conduct effective accident-prevention programs. He has a good eye for the proper placement of traffic signs, signals, and markings. He investigates the cause of accidents and passes along his information to prevent recurrence.

At Sewart AFB, Tenn., airmen get a few common-sense tips on how the accident rate can be cut down. Here's a lecture where it really pays to pay attention.

Education-wise, the AF's ground safety people are well versed in the fundamentals of safety measures, industrial hygiene, accident prevention, and safety psychology. They know something about safety studies and are experienced in preparing materials for promoting safety consciousness. They watch for accident hazards. They can analyze accident causes and trends and come up with sound prevention methods.

On paper, it looks good. In practice, there's one thing to remember—the ground safety man has to deal with other human beings. This is where equations often bog down. The airman who piles up his car on a freeway with the loss of his and other lives has paid the highest price for his lack of attention at ground safety classes. The man who dreams of Marilyn Monroe while the instructor goes over his checklist of safety precautions may soon be seriously injured in an accident that could, perhaps, have been prevented.

Physiological testing plays an important part in the education of safe drivers.

Ground safety experts point out a fairly well-known fact: In the last forty years automobiles have killed more Americans than have died in *all* the wars our nation has fought. US traffic deaths totalled more than 40,000 in 1956.

The Air Force puzzles over the fact

(Continued on following page)

that its men are among the best trained in the world for warfare but not for a killer that proved to be more deadly than war itself—the modern motor vehicle.

AF ground safety programs ask offenders, however minor the accident may be, to take a mental and physical check of themselves. Did they allow enough time to make the trip at a safe speed? Was the vehicle checked, with special attention to brakes, tires, windshield wipers, lights, and clean glass all around? Were traffic regulations and signals obeyed? Did the driver observe the cardinal rule not to drink before and while driving? Did he avoid risky situations? If riding as a passenger, did he help the driver keep alert, point out route signs, and watch for other cars and road hazards?

Ground safety people say any one can learn to be a safe driver by following a few rules. Half-light time, or dusk, is the most dangerous driving period of all, as distances become deceiving, colors are dulled, and moving objects are indistinct. You should slow down. Slowing down before entering a curve cuts down a great many accidents. So does following other cars at a safe distance and being on the alert for whatever the other fellow may do, especially including the unexpected. By obeying traffic laws, signs, and signals the driver automatically becomes a better insurance risk.

One airman recently admitted that his accident—which fortunately wasn't too serious—occurred because a good-looking girl on foot distracted him. His commander advised him next time to pull over to the side, come to a full stop and take a good look. At least he figured that would prevent an accident.

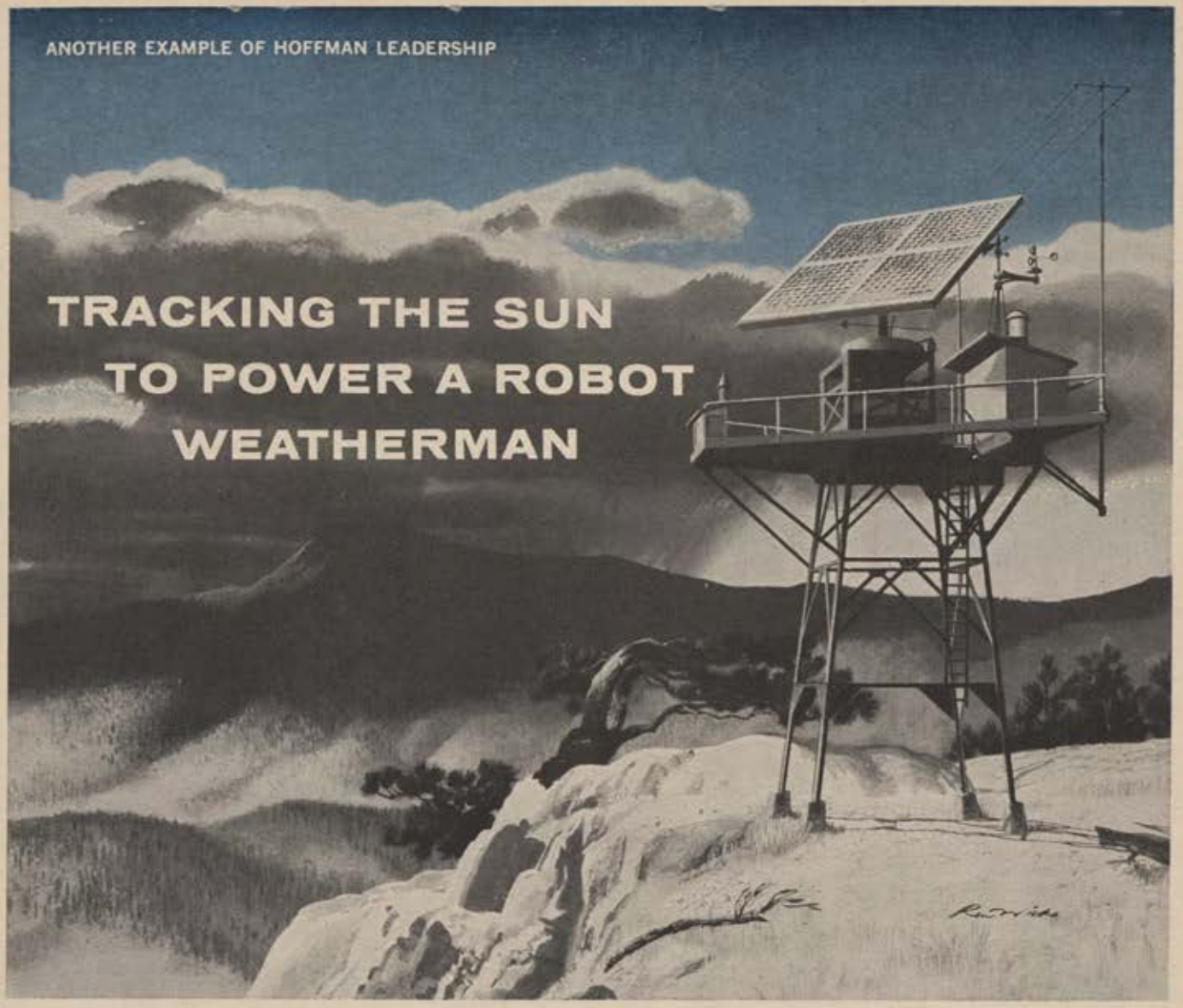
Ground safety men in the Air Force have found a powerful ally in President Eisenhower. In December he launched a nation-wide drive on automobile fatalities, with special emphasis on the armed forces. Called "Back the Attack on Traffic Accidents," it's scheduled to continue throughout 1957. The safety people are equipped and ready to do their part to make the campaign successful. But success or failure is up to the men and women behind the wheel. After all they have more to gain—or lose—than anyone else: their lives.—END

ABOUT THE AUTHOR

Flint O. DuPre, the author of this series on airman careers, is a civilian employee in the Office of Information Services, Hq., USAF. He's been connected with AF information, both in and out of service, since 1942. Born in Fort Worth, Tex., in 1909, Flint grew up in Dallas. He worked as a reporter for the Dallas Journal *and the* News *between 1928 and 1942, when he enlisted in the Air Force, and became an information officer.*

ANOTHER EXAMPLE OF HOFFMAN LEADERSHIP

TRACKING THE SUN TO POWER A ROBOT WEATHERMAN



The world's first experimental sun-tracking solar energy converter has been developed by Hoffman to "follow" the sun across the sky for maximum utilization of the sun's power. In a robot weather station, a solar energy unit could supply power for the automatic and continuous transmission of vital data to a distant Weather Central for analysis; would never require attention, except for periodic inspection.

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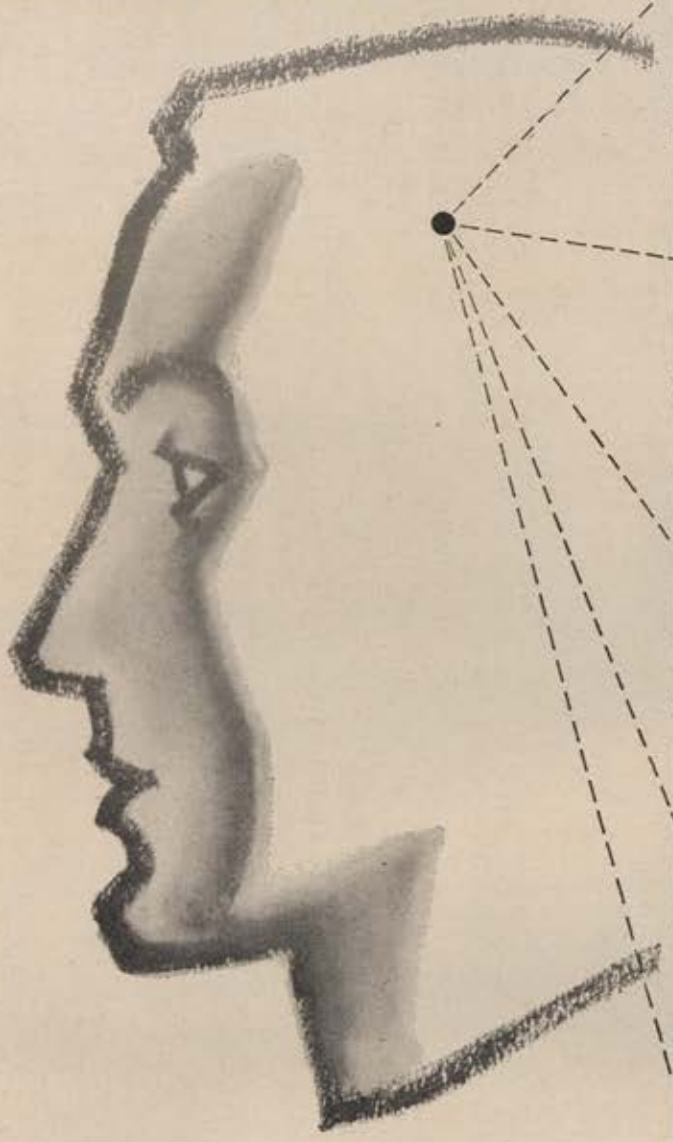
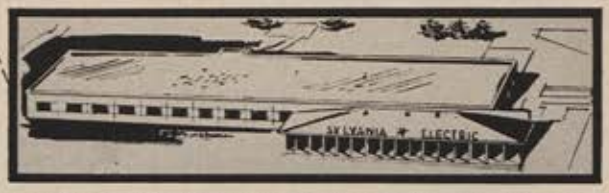


...to automated mass production

Headquarters for the Division, the Waltham Laboratories, in Waltham, Massachusetts, specialize in advanced systems related to guided missiles, avionics, radar, data processing and electronic warfare.

The Electronic Defense Laboratory, Mountain View, California, is a special development facility devoted to research, technical development and rapid fabrication of ground-based electronic warfare systems.

The Microwave Physics Laboratory, at Mountain View, California, is devoted to the investigation of new magnetic materials and ionized gaseous media for microwave control devices used in radar, communications and electronic countermeasures systems.



The Microwave Tube Laboratory, Mountain View, California, is engaged in developing and producing special tubes such as klystrons, traveling wave tubes, backward wave oscillators, and related devices.

Buffalo Engineering Laboratory and manufacturing facilities for the Division occupy some 170,000 square feet of floor space in this industrial center. The Laboratory specializes in the development of advanced communications techniques and equipments.

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The READY ROOM

RESERVE AND AIR GUARD NEWS

A recent estimate by Gen. Nathan F. Twining, Air Force Chief of Staff, predicted that in four years USAF's budget will be divided **equally between manned aircraft and missiles.** The prospect poses **innumerable problems** for the Reserve forces which are organized after the fashion of the Regular establishment, particularly for the **Air National Guard** which is primarily an air-defense force. For it is no secret that a high proportion of the effort being concentrated on missile development is in the area of those that are **basically defensive** in character.

A high-level board of **thirteen officers,** headed by **Lt. Gen. Charles B. Stone, III,** Commander of Continental Air Command, is currently attempting to weigh the **future of the Reserve forces** against new developments in both the fields of missiles and manned, supersonic aircraft. Another group looking into the same problems is the **Air National Guard Council** of the Air Force Association.

The AFA Council's most recent effort in this study of Air Guard manning of future weapons resulted in a briefing and conference at **Lackland AFB, Tex.,** with scientists of Air Research and Development Command's **Personnel and Training Research Center,** who are assessing the personnel requirements of new weapon systems.

The center at Lackland, one of ten research units belonging to ARDC, is charged with the responsibility of describing the **kinds of people who will be needed** to man the weapons of the future. It is possible that the Air Guard will be called upon to man aircraft and missile launching sites involving weapons that are currently in the planning stage. Hence, the mutual interest of the two groups.

The invitation to the Council was issued by **Col. Herbert N. Cowles,** Commander of the Center. **Col. Gilbert E. Teal,** Deputy Commander, discussed the Center's mission and introduced the briefing team, which included:

Capt. Albert R. Neville, Jr., of the Center's Operations Office; **Dr. Abraham Carp,** chief, Selection and Classification Branch, Personnel Laboratory; **Lt. Col. Carl R. Carlson,** deputy director, Operator Laboratory; and **Dr. Joseph Tucker, Jr.,** section chief of Operations, Maintenance Laboratory.

Following the formal – and classified – briefing, **Dr. Charles W. Bray,** deputy technical director, informally described the personnel and training requirements for several new missiles which ultimately might be operated by the Guard.

Council members also were shown **experimental equipment** developed by Center scientists to investigate human behavior. All of the equipment has been devised to simplify the task of finding the right kinds of people to man the weapons of the future.

The two-day session at Lackland with the research scientists brought to a close at least the first phase of the AFA Council's search for the answer to the question, "Can the Air National Guard, as presently constituted, operate efficiently and economically various modern and future weapon systems?"

Before the Lackland conference, the Council has studied the impact on the Guard structure of equipment acquired recently, such as the all-weather F-89s and F-86Ds. It has studied, too, the Century Series of fighter aircraft in terms of crew and maintenance requirements. The basic purpose of the studies was summed up best, perhaps, by **Robert D. Campbell** of Los Angeles, Council member who commands the 146th ANG Fighter Group at Van Nuys, Calif. "It becomes more and more apparent," he said, "that Air Guard employment must be considered **during the planning stage** of the weapon system if the Air Guard is to assume **a realistic role** as an integral part of the national defense picture."

At Nellis AFB, Donald J. Strait, USAF Deputy for Reserve and ROTC Affairs, prepares for his first flight in an F-100A. A member of AFA's ANG Council, Mr. Strait is the first Guardsman to be checked out in Century Series plane.

The Council is in accord with its California member. In its own analysis following the Lackland conference, the Council specifically concluded that the Personnel and Training Research Center is **the logical organization** to make an objective report on Air Guard capabilities in relation to new weapon systems and to **submit the initial plan** that would lead to effective achievement of these capabilities.

The Council suggested there is a need for **expanding the Research Center's studies** to include Air Guard potential in new weapon systems. To assist such studies, the Council further suggested that Air Guard experts from the National Guard Bureau and from field units make available to the Center complete data on Air National Guard personnel and unit operational capabilities.

The Center intends to look into the Guard's capability to man modern and future weapon systems. But to broaden and expedite this study, the AFA Council urged that **two qualified part-time Air Guardsmen** be made available to the Center along with **one Guardsman serving on active duty** in the training section of the National Guard Bureau.

The Council's recommendations have been made to **Maj. Gen. Winston P. Wilson,** Chief of the Air Force Division, National Guard Bureau, and to **Lt. Gen. Thomas S. Power,** Commander of Air Research and Development Command.

But whether the AFA Council's proposals that the Air Guard be considered as potential users at the time new weapon systems are devised will depend in large measure on **whether these proposals coincide** with the decisions reached by the board headed by General Stone. And these decisions are not expected for at least another month.

(Continued on following page)

At 10th AF, General Eaton and his training director, Lt. Col. Glennis Rhodes, discuss problems of Reserve centers.

Flight training begins at University of Alabama for AF-ROTC cadets. Above, school officials with PAS and cadets.

Tenth Air Force has undertaken a broad program aimed at **improving individual training,** consistently one of the knottiest problems in the Air Force Reserve.

The program was started last month when **Maj. Gen. Robert E. L. Eaton,** Tenth Air Force commander, called a three-day conference of twenty-six training officers from the **eighteen Reserve centers** in the Tenth.

The conference, *(see cut)* held at Tenth Air Force headquarters, stressed the need for **speeding readiness of individual Reservists** in the light of M-Day commitments and for standardizing training supervision.

The Tenth Air Force program is in line with proposals made by a **Continental Air Command board** which urged that individual training be improved in order that Reservists might be trained to meet mobilization requirements by skill and grade.

The board found that existing courses are **not adequate** to provide the command and staff type training required of offices in higher ranks and proposed that new courses be developed. It also recommended that twenty-four **leadership courses** be made available to Reserve airmen training in centers, and comparable courses for those in the extension study program.

The board also found that Air Force currently has **no courses** available for individual skill training of airmen and warrant officers in **177 specialty codes.** Yet **US Armed Forces Institute** has correspondence courses in all 177 specialties, which are available to officers and warrant officers on active duty. The board proposed that reserve airmen and warrant officers be permitted to enroll in these USAFI courses. As a further step toward raising the skill level of airmen and warrant officers, the board recommended that they be permitted to enroll in courses at civilian schools with the Air Force Reserve paying for tuition, books, and course materials.

To provide the best possible instruction in the centers throughout the country, the board recommended that **qualified instructors** who hold mobilization assignments be authorized an additional twenty-four paid training periods a year. This would give these Reservists forty-eight pay periods each year, equal to the number authorized for Reservists training with flying units.

In his Tenth Air Force conference, General Eaton, who was chairman of the ConAC Board, reviewed the recommendations which have been forwarded to Headquarters, USAF for final action.

The University of Alabama, *(see cut)*, has begun its **Air Force ROTC flying instruction** program, authorized by Congress last summer.

The University is one of **forty-three educational institutions** selected by the Air Force to begin the program in this academic school year. **Another 137 colleges and universities** which have ROTC units will be added progressively until the whole program is in full swing **by September 1958.**

The program, which was sponsored by the **Air Force Association,** will consist of thirty-five hours of light-plane flying. Designed to motivate more ROTC cadets to an Air Force career and to permit early assessing of adaptability for flying, the program will be offered at no expense to the student.

When the program reaches its maximum level, it is expected to cost the Air Force about **$1,850,000 a year** and produce **about 4,300 cadets** equipped with private pilots' licenses.

° ° °

Two **Massachusetts Air National Guard** units have devised jet test equipment that is expected to reduce maintenance costs and time and contribute to flying safety.

Two pieces of equipment have been developed by the **131st Fighter-Interceptor Squadron** at Barnes Field. One unit, which weighs only ten pounds, checks all electrical circuits on the J-33 engine and afterburner, including the continuity of wiring. The second unit, made from scrap metal and water-filled glass tubes, checks afterburner pressure regulators for proper mating.

The **101st Fighter-Interceptor Squadron** at Logan Field in Boston has developed a simplified test stand for the hydraulic system and gear retraction mechanism on T-33 and F-94 aircraft. This test unit can be used in most cases for trouble-shooting hydraulic pump leaks and pressure output.

° ° °

The **National Guard Bureau** has announced several changes in the rules for selecting the ANG squadron which will receive **the Bureau's Spaatz Trophy.** One change will require tactical pilots to complete **125 flying hours per year.** Another will lower the high-altitude air-to-air gunnery level **from 30,000 to 25,000 feet.** A third change will **delete radar bombing and navigation** for tactical bomb units and substitute GCA or ILS approaches. This change was made because tactical bomb aircraft are not equipped for radar bombing and navigation.—EDMUND F. HOGAN

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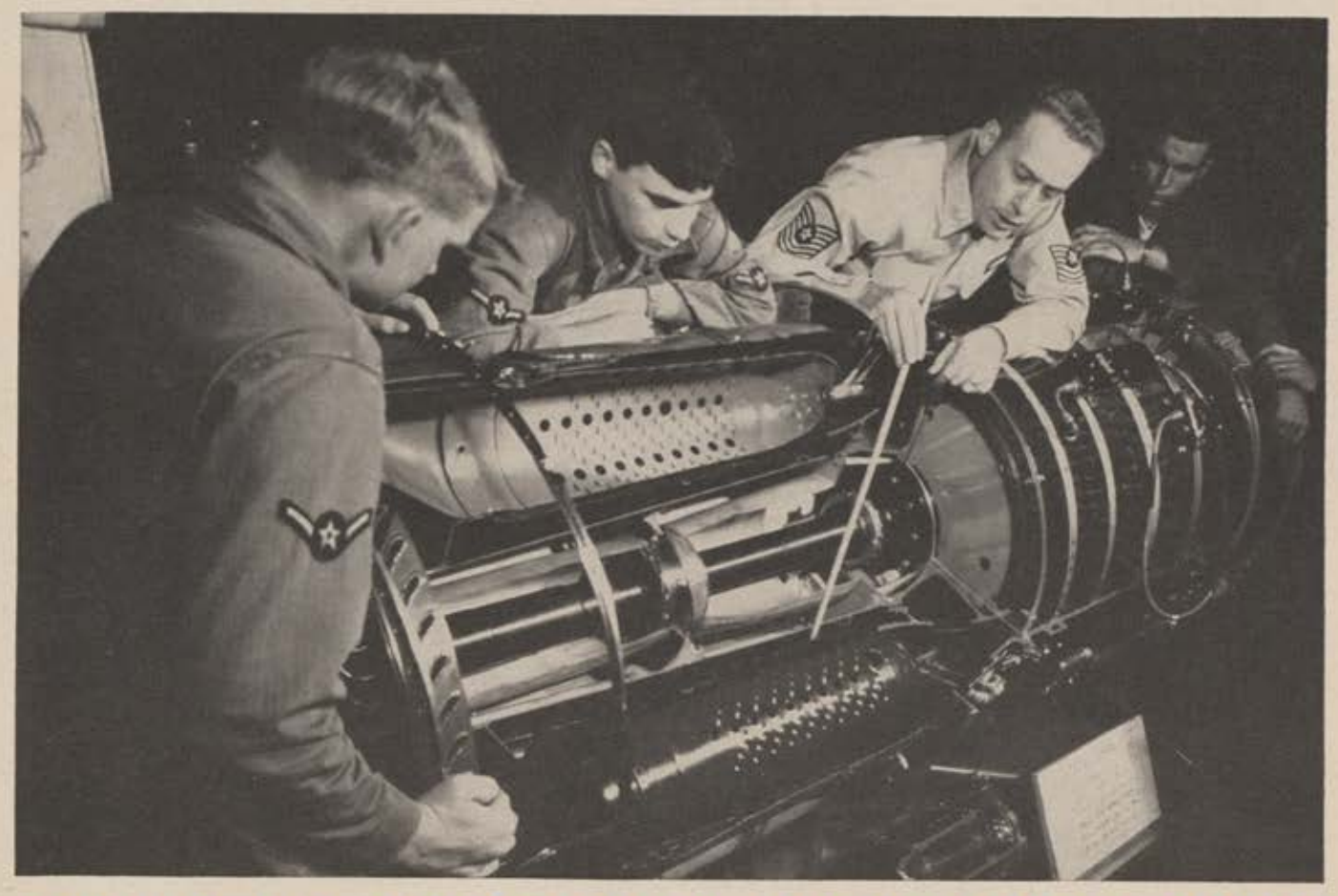
back in service



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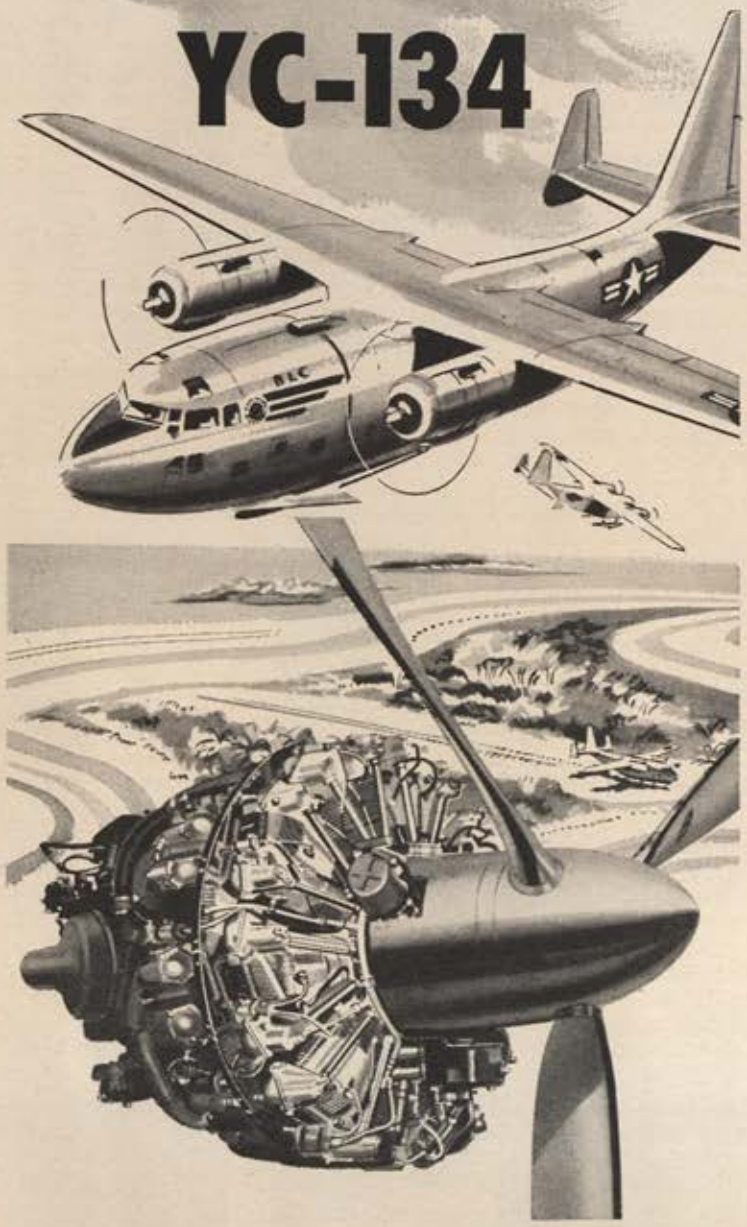

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The Turbo Compound is the ideal powerplant for this high-performance addition to the assault and logistics strategy of the USAF. Built to take the punishment of roughest day-in, day-out operation, the Turbo Compound also provides the power necessary for the YC-134's extremely short take-off, heavy lift performance . . . plus the fuel economy for extended range operations.

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Tech Talk

By Bob Strobell

An Air Force officer has reached an altitude of 198,770 feet—nearly thirty-eight miles—in an aero-medical altitude chamber test. It is the highest simulated altitude ever reached by man.

Maj. Arnold I. Beck, USAF, reached the near vacuum in an **altitude chamber** at ARDC's Wright Air Development Center, Dayton, Ohio, **while testing a new partial pressure suit and pressure helmet.** Without this equipment a man would die from exposure to the low pressures encountered above 50,000 feet. Major Beck had attempted to reach 200,000 feet earlier, but each time he exhaled, his breath counteracted the near vacuum even though the chamber's exhaust system was working at full power. He was unable to go above 155,000 feet. For this latest test, a hose was run from his helmet's exhaust valve into an adjoining chamber, where the air he breathed out was dissipated. With this arrangement the chamber's mercury gauge was brought down to 0.250 millimeters (an atmospheric pressure of only 0.0048 pounds per square inch) before evaporation of his perspiration halted the chamber's ascent.

Major Beck was wearing **the new MC-4 partial pressure suit** *(see cut)*, and pressure helmet to protect him during his record ascent. This same type of suit was used by Air Force pilots flying the Bell X-2 rocket research airplane to altitudes never before reached by man. This new suit permits **almost normal breathing.** The old **T-1 suit** required airmen to exhale forcibly while the oxygen system forced his inhalations. The MC-4 suit is produced by the Berger Brothers Company, Inc., New Haven, Conn.

A new **high-speed target-tow reel system,** called the "Bee-Jay," designed for use in **gunnery and rocketry training by supersonic jet aircraft,** has been developed jointly by the Air Force and Northrop Aircraft, Inc., Hawthorne, Calif. Primary advantages of the new reel and target device *(see cut)*, are its easy adaptability for installation on almost any operational jet airplane, and its ability to trail a **Fibreglas target five miles behind the tow plane.** Power for the Bee-Jay's reel is furnished solely by the aircraft slip stream driving against a turbine wheel. Turbine wheel power is transmitted to clamshell doors in the forward portion of the reel unit to open and close the doors and to reel the

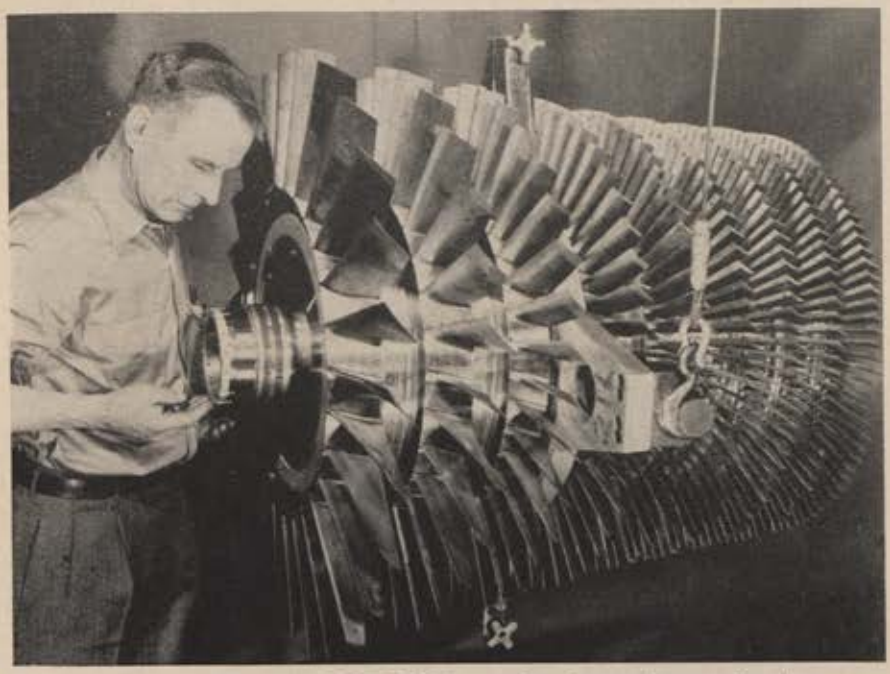
(Continued on following page)

Convair's B-58 Hustler is America's first supersonic bomber. Its wing span is fifty-five feet, length ninety-five feet, and it carries a three-man crew.

The B-58 Hustler is powered by four General Electric J-79 turbojets which thrust the delta-wing bomber along at supersonic speeds above 50,000 feet.

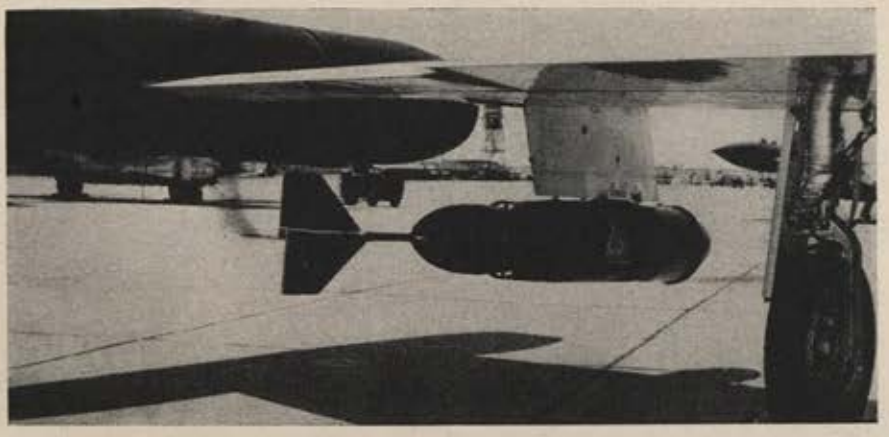
Maj. Arnold I. Beck reached a record altitude of 198,770 feet in an aero-medical altitude chamber test wearing the new MC-4 partial pressure suit and pressure helmet designed for the Air Force. Record was made at ARDC's Wright Air Development Center, Ohio.

Air Force's newest assault transport, the Stroukoff YC-134, shown here on its initial flight demonstration, is designed to operate in rough Arctic terrain.



All titanium compressor for P&W J-57 jet engine is a good example of progress made in developing this new metal by the six-year-old titanium metal industry.

"Cyrano-Bomber" is a modified Martin B-57 Canberra jet bomber with a special nose cone which will flight test guidance systems for Boeing's Bomarc missile.



Northrop's target-tow reel system mounted under the wing of a Northrop F-89. Target is trailed on five miles of cable, a safe distance for rocket practice.

target and cable out and in. The jettisonable reel system weighs only 290 pounds including its steel cable. The **reel has a cable capacity of more than 25,000 feet.** A torpedo-shaped, frangible target spins rapidly for stabilization in flight and to reflect radar pulses. The **target shatters instantly** upon receiving a direct hit.

Transparent rubber is being tested by the Air Force as a way to beat the **heat on airplane windshields.** The rubber will be used as an **inter-layer in windshield glass** of new supersonic AF aircraft, according to word from the Air Research and Development Command. Since airplanes have surpassed the speed of sound, surface temperatures have greatly increased. **Frictional heat** can reach such intensity that the flexible, transparent plastic now used as a windshield interlayer softens and begins to lose strength. When its strength is gone, the interlayer is unable to prevent the glass from shattering if cracked. The new rubber inter-layer is being developed for ARDC by the Dow Corning Corp., Midland, Mich.

The Sperry Gyroscope Co., Great Neck, N. Y., will go into large-scale production on the Sperry **electronic engine analyzer** for use at Air Force bases around the world. Sperry announced the contract with the USAF, which calls for **portable systems incorporating large five-inch oscilloscopes.** The compact, lightweight equipment provides a picture of what is happening in the inner mechanical recesses and complex electrical systems of engines, while the engine is running. The analyzer is expected to contribute extensively toward the attainment of new, **high levels of aircraft safety and performance.**

An aggressive, confident pilot is better able to withstand the forces acting upon him in high-speed flight maneuvers than a pilot suffering from despondency, anxiety, or fear, the Air Research and Development Command has learned. Studies that support this conclusion have been made on eighty-five individuals at ARDC's Wright Air Development Center, Dayton, Ohio. Volunteers were **subjected to rides on the human centrifuge** which produces sufficient G forces to cause blackouts. All volunteers were studied and interviewed with special attention paid to their **mental attitudes and body chemistry.** It became apparent that normally aggressive pilots have a higher tolerance to G forces.—END

An Air Force specialist installing Aeroquip Hose Lines on a jet engine. Note Aeroquip 601 Lightweight Engine Hose at left.

For quick on-the-spot assembly this specialist uses an Aeroquip Hose Assembly Machine.

Local Assembly of Hose Lines Speeds Maintenance at Selfridge AFB

Assembly Facilities Provide Replacement Hose Lines in Minutes for Selfridge's Maintenance Technicians

Air defense of the important Detroit industrial area calls for 'round-the-clock preparedness of the famous 1st Fighter Group at Selfridge Air Force Base. To keep jets ready for "scramble" take off, Maintenance Technicians rely heavily on "local assembly"—the strategy of assembling replacement parts right on the base.

Ideally suited to on-the-spot assembly are Aeroquip Bulk Hose and Reusable Fittings. With Aeroquip, replacement hose lines for low and medium pressure fluid line applications are made in minutes, as needed. It is unnecessary to maintain a large stock of factory-assembled hose lines.

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AFA NEWS

SQUADRON OF THE MONTH

CAPITAL CITY SQUADRON, SACRAMENTO, CALIF.

cited for its outstanding contributions to a better community understanding of the role of airpower, and its sponsorship of programs designed to further develop AFA in the area.

Shown during AF-ROTC Conference at Maxwell AFB (see text) are, from left: Donald Strait, Ass't AF Sec'y; Lt. Gen. Dean Strother, Air University Commandant; AFA President John Henebry; AF-ROTC's Brig. Gen. Turner Rogers.

James Trail, left, welcomes participants in Boise Jet Age Conference. Left to right are Col. Robert Dake, Civil Aeronautics Administration; Gen. George C. Kenny; John R. Alison; and Bob Love, Korean jet ace and Northrop test pilot.

Participants in Pittsburgh Conference include, seated from left, Col. Harry Shoup; Carl Long; Joseph Blatt; Col. Joe McNay. Standing are Cliff Ball; John Grove; Jim Straubel; Maj. Sam Pesacreta; and Chester Richardson.

Paul H. Poberezny, a captain in the 128th Air Defense Wing, Wisconsin Air National Guard, has been awarded the first annual **Billy Mitchell Memorial Plaque** by Milwaukee's Billy Mitchell Memorial Squadron of AFA, for his "outstanding aviation achievements in 1956."

The award went to Captain Poberezny both for his service in the **ANG unit** and in recognition of his activities as President of the **Experimental Aircraft Association,** an organization formed to encourage private flying and the ownership of private aircraft.

Elmer Petrie, Billy Mitchell Squadron Commander, served as Toastmaster at the dinner meeting on December 6, in the Viscount Room at Gen. Billy Mitchell Field, where the plaque was presented.

In presenting the plaque to Captain Poberezny, **Mrs. Martin Fladoes,** a sister of Billy Mitchell said, "Nothing could have pleased my brother more than having this Squadron named in his honor, and he would have been happy to know that such a person as Paul Poberezny is receiving this plaque."

Captain Poberezny had figured earlier in the fall in another squadron program, when he demonstrated the **flying capabilities of the F-89.** This demonstration was at an **AFA-sponsored model airplane meet** which attracted more than 200 youngsters as participants. The meet was designed to stimulate interest in aviation among the young people of Milwaukee. Contestants were limited to eight to fourteen years. **Five classes of competition** were set up, and each first place winner received a trophy and a free airplane ride, through the courtesy of the **Gran-Aire Aviation Company.**

Sacramento's Capital City Squadron, chartered just a little over a year ago, is going ahead on all fronts, and holds promise of becoming one of the best units in AFA.

Since a number of squadron members are well acquainted at both **McClellan and Mather AFBs,** one of the first projects of the outfit was to bring the word on AFA's new **Flight Pay**

(Continued on page 99)

In the Nation's Capital...

AFA's 1957

National Convention

and

Airpower Panorama

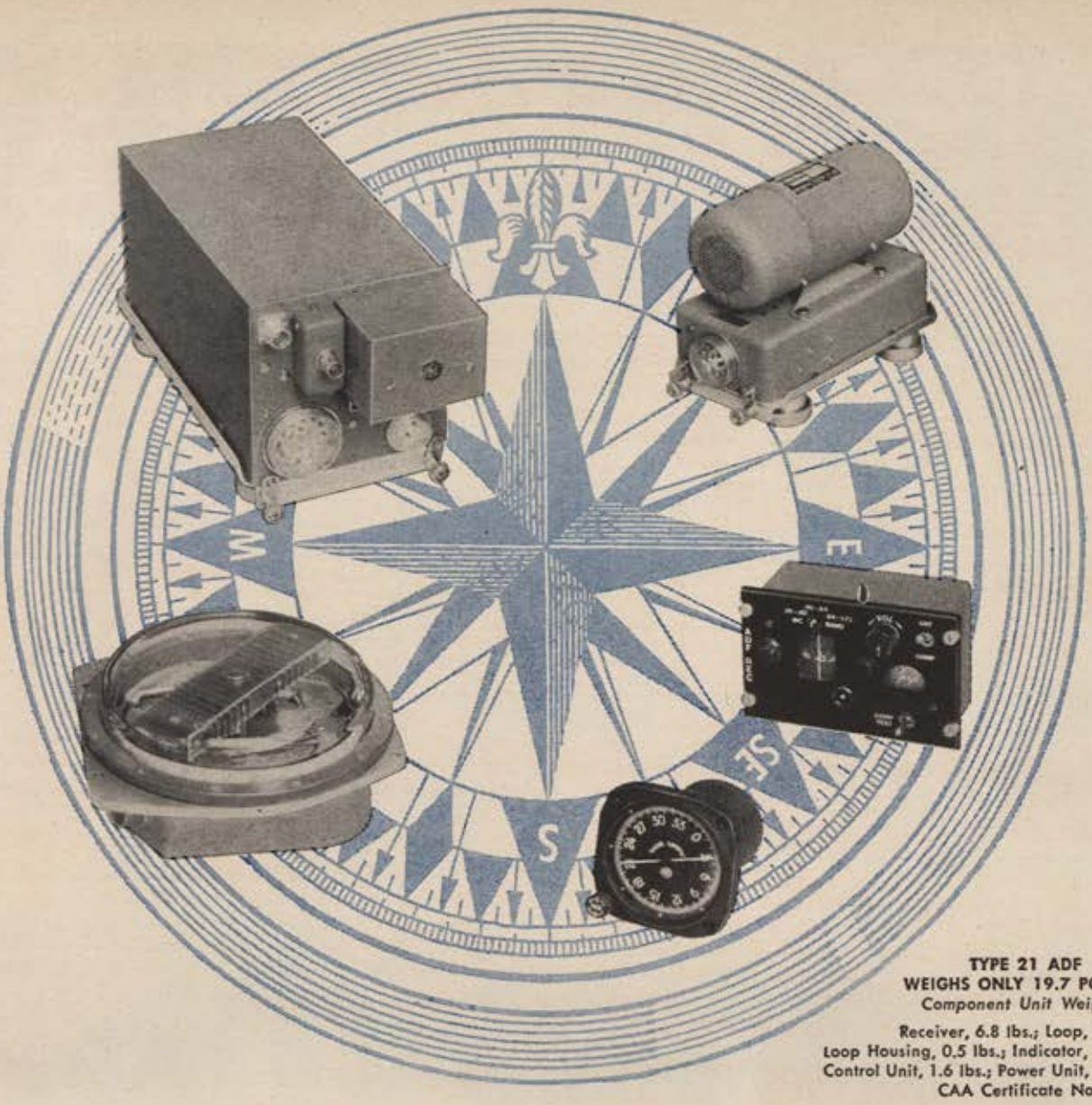
July 30-August 4

Reservations are pouring in for the Air Force Association's 1957 National Convention in Washington, D. C., the nation's capital and the center of the national and international news and events. It will mark the most historic occasion in AFA's eleven-year history—the Golden Anniversary of the United States Air Force. The theme of the five-day Convention will tell this important story. Some 3,000 air-conditioned rooms in twelve hotels have been set aside for Convention delegates, participants, and guests. The combination of beautiful Washington, the Golden Anniversary Celebration, and something for everyone to see and do, makes this a must for the family's summer plans.

HEADQUARTERS
Sheraton-Park and Shoreham Hotels

Celebrating the
GOLDEN ANNIVERSARY
of the United States Air Force

SEE PAGE 15 FOR HOTEL RESERVATIONS



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Protection plan to the rated personnel there. Some **200 new members** in the Association have been signed up as a result.

Meanwhile, **Clive Davis,** a member of the Squadron's Executive Council, in his **weekly radio program** has been spotlighting various phases of Air Force life, through interviews, on-the-spot broadcasts, and in various other ways.

Recently the Squadron played host to **Executive Director James H. Straubel,** who was on a two-day tour to explain the objectives of the Association to a number of local groups. The Squadron is also cooperating with the recently reactivated Sacramento Squadron #1, in setting up an Airpower Council.

Its latest, and to date most ambitious, plan centers around the sponsorship of a **Jet Age Conference** on March 2. **Commander Harvey McKay** and other members of the Squadron got the idea last year when they flew to Salt Lake City to attend the first Utah Symposium. Most of the details are now settled, and the plans seem to indicate that the Squadron will have another success on its hands come March 2.

For these reasons, the unit is honored as **"AFA's Squadron of the Month"** for February.

Lt. Col. James Frazer speaks at the Mobile Squadron lunch at Maxwell AFB. At left, Will Ross, Sqdn. Commander.

Elmer Petrie gives first-place trophy to winner Robert Fletcher in the Billy Mitchell Squadron model meet.

AFA President John P. Henebry was the principal speaker in December at a banquet held at Maxwell AFB, which opened a four-day conference on AF-ROTC matters. The banquet was attended by more than 250 **Professors of Air Science,** as well as representatives from schools without the ROTC program. More than 180 of the nation's colleges were represented at the conference.

Explaining the objectives of AFA, Mr. Henebry said that while AFA is a strong supporter of the Air Force, "the Association reserves the right to criticize and disagree when we think it is justified."

Among the honored guests were **Donald Strait,** Assistant Secretary of the AF for Reserve Affairs; **Dr. Theodore Wright,** Vice President of Cornell University; **Lt. Gen. Dean Strother,** Commandant of the Air University; **Brig. Gen. Turner Rogers,** AF-ROTC Commandant; **Maj. Gen. J. P. McConnell,** from SAC headquarters; and **Maj. Gen. W. S. Stone,** Deputy Director of Planning, USAF.

Arnold Air Society, an AFA affiliate, was represented at the conference by **Lt. Col. Louis Ciccoli** (USAF, Ret.), Executive Secretary of the organization.

George Edgcumbe, airport operator who received an AFA award in New Orleans, has moved his operations from the Elmhurst Airport to **Elgin, Ill.** To welcome him to the community, the Elgin AFA Flight sponsored a dinner for him, attended by forty-six representatives of the City Council, the Chamber of Commerce, aviation interests, and AFA members.

Among the honored guests at the meeting were **Mayor Orlo Salisbury,** City Manager **Raymond Botch,** Councilmen **Abbott, Johnston, and Gavlek; Ray Pearsall,** Association of Commerce President; **Dan Smith,** representing the Illinois Department of Aeronautics; and two AFA National Directors, **George A. Anderl and Morry Worshill.**

Ray McGaughey and **Bruce Rice,** of the AFA Flight, were co-chairmen.

As this issue went to press, three AFA Wings had announced dates and cities of their respective **1957 Wing Conventions.** They are: **California**—San Diego, April 26-28; **Illinois**—Chicago, April 27; and **Ohio**—Akron, May 26-26. Details on the functions are not yet available, but may be obtained by contacting the Wing Commanders.

(Continued on page 101)

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1199 Mile World's Distance Record for Helicopters, August 11, 1956

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World's Speed Record for 100, 500 and 1000 Kilometers, July 12, 1956

The two craft shown here use Vickers pumps, motors and valves for a variety of important operations.

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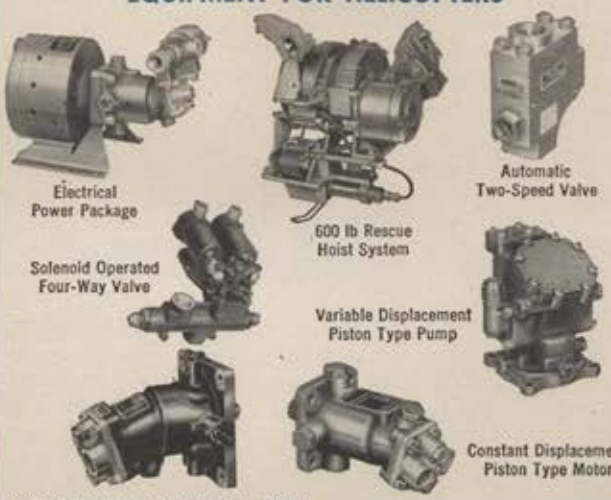

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ENGINEERS AND BUILDERS OF OIL HYDRAULIC EQUIPMENT SINCE 1921

Shown at dinner meeting in Elgin, Ill., seated, Mayor Orlo Salisbury; George Edgcumbe, for whom dinner was held; Ray Pearsall, Association of Commerce. Standing are Don Clute, Elgin Flight; Dan Smith, Illinois Aeronautics Department; and AFA Directors George Anderl and Morry Worshill *(see text)*.

We are happy to recognize California's **Sacramento Squadron #1,** once again as an active group. Once rated among the top AFA units in the country, the Squadron had been inactive for the past couple of years.

The officers are **Frank L. Grow,** 3841 El Ricon Way, Commander; **Don Lackey,** Vice Commander; **Hernley Madeira,** Secretary; **F. W. Navickas,** Treasurer; and **F. W. Distler** and **W. J. Broderick,** Councilmen.

One of the Squadron's first projects is the establishment of a close liaison with the Capital City unit, also located in Sacramento, and then cooperating in the formation of an **Airpower Council** in the community.

Last fall, **Curt Christensen,** California Wing Commander, appointed **Joseph D. Myers,** an old workhorse of the Santa Monica Squadron, Chairman of the new **Reserve Affairs Committee** of the Wing.

In this capacity, he has to date appeared before more than **500 Reservists** in half a dozen different Reserve units, explaining the mission of AFA to them, using brochures, films, talks, and whatever else he could find. It then becomes the task of the local AFA Squadron Commander to follow up on these appearances and discuss membership and participation with the Reservists.

CROSS COUNTRY . . . California's **Air Harbor Squadron** sponsored this year's **"Operation Holiday,"** which is the Greater Los Angeles Group's annual Christmas party. About 300 attended the event, making it the most successful to date. . . . **New York City's WAF Squadron** will be holding its Tenth Anniversary Dinner at the Sheraton-Russell Hotel about the time this is being read—January 26. AFA has developed a lot since this group was chartered as the **first squadron** in New York City. . . . **Miss Joanne Alford, AFA's Miss Airpower,** was all set to leave on another tour speaking to high schools, when she was suddenly stricken with meningitis. The doctors say it is a rather mild case, and we know that all the Association joins in wishing her a complete and speedy recovery. . . . **Pittsburgh Squadron** gave a Christmas party for non-coms at Greater Pittsburgh AB, with the fine cooperation of **Col. Joe McNay,** Base Commander. . . . **Col. Francis S. "Gabby" Gabreski,** the AF's top living ace and Honorary Lifetime Commander of the **San Francisco AFA Squadron,** has been named Commander of the 345th Day-Fighter Wing, flying F-100s, at Myrtle Beach AFB. . . . When Board Chairman **Gill Robb Wilson** broke the news to the Dallas Chamber of Commerce annual dinner that their city was selected for the 1958 AFA convention, it marked the first time in ten years that the dinner group had had a speaker. **Al Harting** of Southwest Airmotive Company had made the arrangements. The following night Mr. Wilson spoke to an audience celebrating the twenty-fifth anniversary of Southwest Airmotive.—END

The Man Who Gave Ivan The Bird

By Lt. Col. Howard R. Jarrell

From the three AAF B-29s that ran out of gas and landed at Vladivostok in 1944, plus another that crash-landed in Siberia, Soviet aircraft designer A. N. Tupolev was able to perform his now-famous redesign and come up with the TU-4, long the mainstay of the Red long-range bomber fleet. The first of these '29s was piloted by Colonel (then Captain) Jarrell, who tells his story here. The other pilots were Wes Price, Bill Mickish, and Dick McGlinn.

ON JULY 30, 1944, the Soviet Union was a big, cold country, full of wild-haired Bolsheviks who liked to shoot each other and throw bombs. At least, that was what I thought at the time. The next day, I found I was right, for that was the day I landed my B-29 in Russia.

July 31 began with a 1:00 a.m. call from the squadron operations officer to get up and come to the briefing room. Our target was the Japanese steel mill at Anshan, Manchuria, some 1,650 miles across China from Chengtu, where our air base was located. The 58th Wing was scheduled for its first daylight strike against the Japs. "Ramp Tramp," our B-29, was assigned the number four slot behind Lt. Col. Alfred F. Kalberer (now a brigadier general), who was leading the 462d Bomb Group (VHB). More than 100 B-29s were to strike Anshan in flights of four. The day was clear, the track fast, and everything went like clockwork—until time to start engines. Our number four engine wouldn't budge. We had to give up our position on the taxi strip and taxi "Ramp Tramp" to the abort area. There we worked like mad on the engine, and finally found it was okay. The putt-putt wasn't producing any current, and the battery had been run down starting the first three engines. We got it fixed about five minutes after the last bird took off and decided that we could catch the formation. It took two hours, but we finally made it into the slot of the last formation.

Over the target, we got one flak burst, but didn't notice any damage until power was reduced for the descent from bombing altitude. As soon as I touched the prop switches, number three engine ran away and couldn't be feathered. With all power off, number three slowed down to about 2,700 rpm, but the old bird came downhill so fast that in no time at all we were all alone and getting more so. At the terrific power setting it took to keep "Ramp Tramp" in the air, we had three or maybe four hours of flying time left—just enough to let us bail out over the Japanese Army. Not wishing to fight the rest of the war from Tokyo, we decided to head for the nearest Russian territory as directed in the emergency procedures briefing. Since then, I have been known as "the guy who gave Ivan the bird."

My Russian education began when we arrived over Vladivostok Bay and started looking for a place to set "Ramp Tramp" down before she quit. Keeping out of what we hoped was anti-aircraft range, we began our letdown. About three minutes later, a squadron of fighters took off from a grass field and headed our way. They didn't look friendly, but then fighter planes never do. However, we had great big USA insignia all over the plane so there was nothing to worry about. We were allies, comrades in arms—or so we thought. If their intention was to shoot us down, they failed. If it was to scare eleven Americans

(Continued on page 105)

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silly and make them mad as hell, they succeeded.

There we were, going around in a big circle with fourteen fighters taking turns being the cat, and us being a big lumbering mouse. In the hope that this was all just a game, I ordered the gunners not to shoot back unless we were hit. About this time, we noticed one more fighter coming up. Instead of shooting, he called the other planes off. He then eased up alongside us and pointed down toward Mother Russia. With sighs of relief we headed for a concrete strip about ten miles away. This evidentally wasn't what he meant because the shooting started all over again, but stopped when we turned back out to sea. Again the squadron leader flew up alongside and pointed down. Finally it dawned on me. He wanted us to land on the same grass field that he had taken off from. He was really going to bring home the bacon, and "Ramp Tramp" was it.

The little field was at the extreme northern tip of Vladivostok Bay. It had a row of low hills, a road, and a fence to the north, and ended at the water's edge on the south. It looked no more than 2,500 feet long, but we had no choice. At 1,200 feet over the Bay we lowered the gear for landing and fired the first of our psychological blockbusters—a two-mile-long string of confetti. While tooling across Manchuria we'd torn up every placard, every manual, every flimsy, and every sheet of operating instructions in the airplane and placed the pieces in the nose wheel well. When the gear came down, the fighter jockeys must have thought it was some kind of secret weapon because they scattered like quail and didn't come back until we had landed.

Slowing down until we were hanging on the props, we came over the fence at ninety miles an hour, chopped the throttles, touched down, hit the brakes, and slid almost to the water's edge. After taxiing off the landing area, we shut down the engines. And there we were! When he could move again, the co-pilot pushed the two little red buttons that were supposed to blow up the secret radio equipment. Nothing happened. And we had guarded those darn buttons for six months.

After a moment or two, the fighters landed. The first one down was our old friend, the squadron leader. He taxied toward the hangar, stopped, got in a waiting staff car, and pulled up in front in a cloud of dust. I ordered the rest of the crew to stay in the aircraft, to let no one aboard, and to remain there until I got back. Hopping out, I asked our friend if he spoke English and he promptly replied, *"Kak vasha sdrovia,"* smiled, nodded, and motioned me into his car. We drove to the headquarters building at the edge of the field where he put in what must have been a person-to-person call to Joe Stalin. He was rough as hell on all the telephone operators but as soon as he got his party, his face broke out in that old pre-promotion smile, and he gave about a one-minute synopsis of what had happened. For the next fifteen minutes, the only word he said was "Da, da, da, da, da, da, da, da, da, da, da, da." I thought at first he was talking in code but I found out later (when I got back home and asked a guy who knew) that the word means "yes." That was almost the only time I heard the word from a Russian in seven months of conversation.

My host and I sat staring at each other for about ten more minutes, when a young naval officer walked into the room. He talked to old "Da Da" for a minute, then walked over to me, stuck out his hand, and said, "I speak English." He did, too. I happily shook his hand and asked him to get the American consul on the telephone. However, his English was rather limited. The only English he knew was "I speak English."

We tried for some time to find enough mutual words to converse, but finally gave up. I did learn that the squadron leader was a may-*yore* (major) and they found out that I was a cap-e-*tahn*. With that, I was ushered back to the automobile. We drove to a low frame building, got out, and entered what was apparently the Officers' Mess. About thirty seconds later, a bus drove up and out stepped the rest of the crew! All ten of them. With them were two Russian officers who spoke some English. I jumped all over the co-pilot for leaving the plane, but he said, "These two

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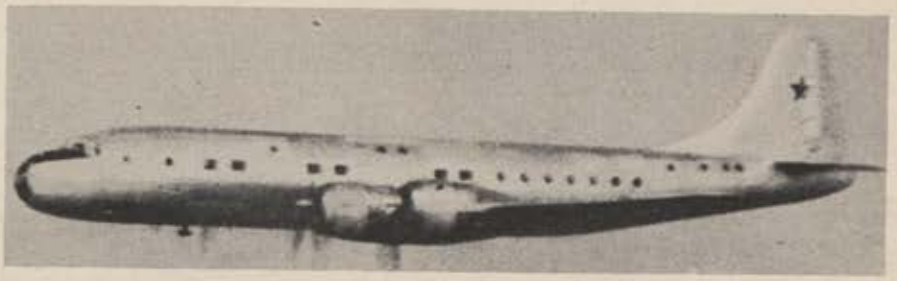
Superfort. The Reds had their copy of the B-29 in production by March 1945.



TU-70. Transport version of TU-4 shows familiar lines of the Boeing B-29.

ABOUT THE AUTHOR

This is Colonel Jarrell's first appearance as one of our authors. Now an instructor at the Air Command and Staff School, he was born in 1920 in Oklahoma where, he says, his boyhood was "abetted by bird-dogs, red worms, pigeons, the World Book, *an unspared rod, a horse or two, and a countryside unobstructed by 'Keep-Out' signs." He attended the University of Oklahoma for two years and one year at Central State Teachers College before becoming an aviation cadet. After graduation he instructed for eighteen months before joining the B-29 wing with the results told on these pages. Since the war he's attended the Air Tactical School, the Special Weapons School, and the Air Command and Staff College. He has served as a SAC operations officer and a squadron commander in B-29 and B-36 units.*

guys drove up in the bus and said that you wanted us to come up here and here we are." We never did see our old bird again.

Our crew officers were led to a small dining room and the enlisted men were seated in an adjoining area with one of the semi-conversationalists sitting with each group. A jug of wine was on the table and somebody said, "I wonder if that's vodka?" At the word "vodka" the may-*yore's* ears picked up, he smiled a great big smile, and shouted, "Vodka," at the top of his lungs. It was all of ten seconds before a girl in army uniform walked in with a bottle of the stuff for each table. The may-*yore* poured each of us a shot, raised his glass, and said, "Something – something – something – Staleen!" There was no doubting that last word. We drank the toast and when the glasses were reloaded I stood up and said, "To President Roosevelt," at which one and all gulped it down. Another toast to somebody we didn't know. Then it was my turn again. I raised my glass, "To the American consul in Vladivostok." The Russians drank the toast but didn't take the hint. That finished the vodka and while the may-*yore* was pouring a round of wine, our meal was served. First was a bowl of surprisingly good cabbage soup followed by what was called "biffstek" with a fried egg on top. A boiled potato and white bread completed the meal.

As we finished eating, my flight engineer burst through the curtain that separated the two rooms. His face was flushed and his fists were clenched. He said, "Sir, did you tell this SOB I'd show him how to start the engines?" When assured I hadn't, he calmed down a little. It turned out that one of the Russkies sitting with the enlisted men was an aeronautical engineer and also a pilot with considerable test-flying experience. He had tried to get the crewmen to go flying with him in our bird!

That broke up the party. As best as I could, I thanked the Russians for the fine food and asked that we be taken to the American consul so we could get the wheels moving. We felt that with a new prop governor and some gasoline we could get home in a hurry. With all joviality gone, we were ushered back to the bus and driven to a barracks where two rooms had been prepared. The sacks looked so inviting that we decided we could worry about the consul tomorrow.

Close-up of a Russian TU-70—the transport version of the redesigned B-29. For his work in copying the American Superfort, Tupolev won a Stalin Prize.

No sooner had my head touched the pillow than I felt someone shaking my shoulder and a strange voice saying, "Wake up, Mister Captain, come with me." My visitor explained that he was a Russian lieutenant and that there was a general, some colonels, and some "political persons" who wanted to talk to me. Boy, what action! I say I want to talk to the American consul and they get me General Deane and all the politicians this side of the Volga. But it wasn't General Deane, and the politicians weren't the kind I was used to. It looked like a convention of hanging judges who had just learned they had all been fired. I was seated in the center of the U-shaped area formed by the tables of the judges—I mean Russians—and the prosecutor—oops, interpreter—began asking questions.

Q. "What kind of airplane is that?"

A. "A B-29."

Q. "Where did you come from?"

A. "Western China."

Q. "Why did you land here?"

A. "I didn't have enough gasoline to get back to my base."

Q. "Where did you bomb?"

A. "Near Mukden, Manchuria."

Q. "How many airplanes like this do you have in China?"

A. "That's secret—I can't say."

Q. "How many were on the raid with you?"

A. "That's secret."

Q. "How fast does it fly?"

A. "I can't tell you that. It's secret."

Not a smile in the room. After each question the interpreter would repeat to the court what I had said. They weren't pleased.

Q. "The general wants to know what that smoke was that came out of the airplane when you put your wheels down."

A. "That wasn't smoke. That was confetti."

Q. "What kind of confetti? What's that?"

A. "Well, when we found out we weren't going to get back home, we destroyed all of the operating manuals and charts and wiring diagrams and also our maps and mission instructions. Because the airplane is pressurized, we waited until we got low enough to put the pieces in the nose wheel well and when the wheel came down, the pieces of paper came out."

This caused some conversation among my host and then the interpreter asked,

Q. "Why did you tear those things up?"

A. "They were secret and we couldn't burn them."

Q. "Didn't you know you were going to land in Russia?"

A. "I hoped to land in Russia but we had to fly over a lot of Japanese territory. We couldn't take a chance."

After some more chit-chat the interpreter said,

Q. "The general wants to know how many of these planes you have."

A. "That's secret."

More "heads-together" talk. More black looks.

Q. "How many bombs does it carry?"

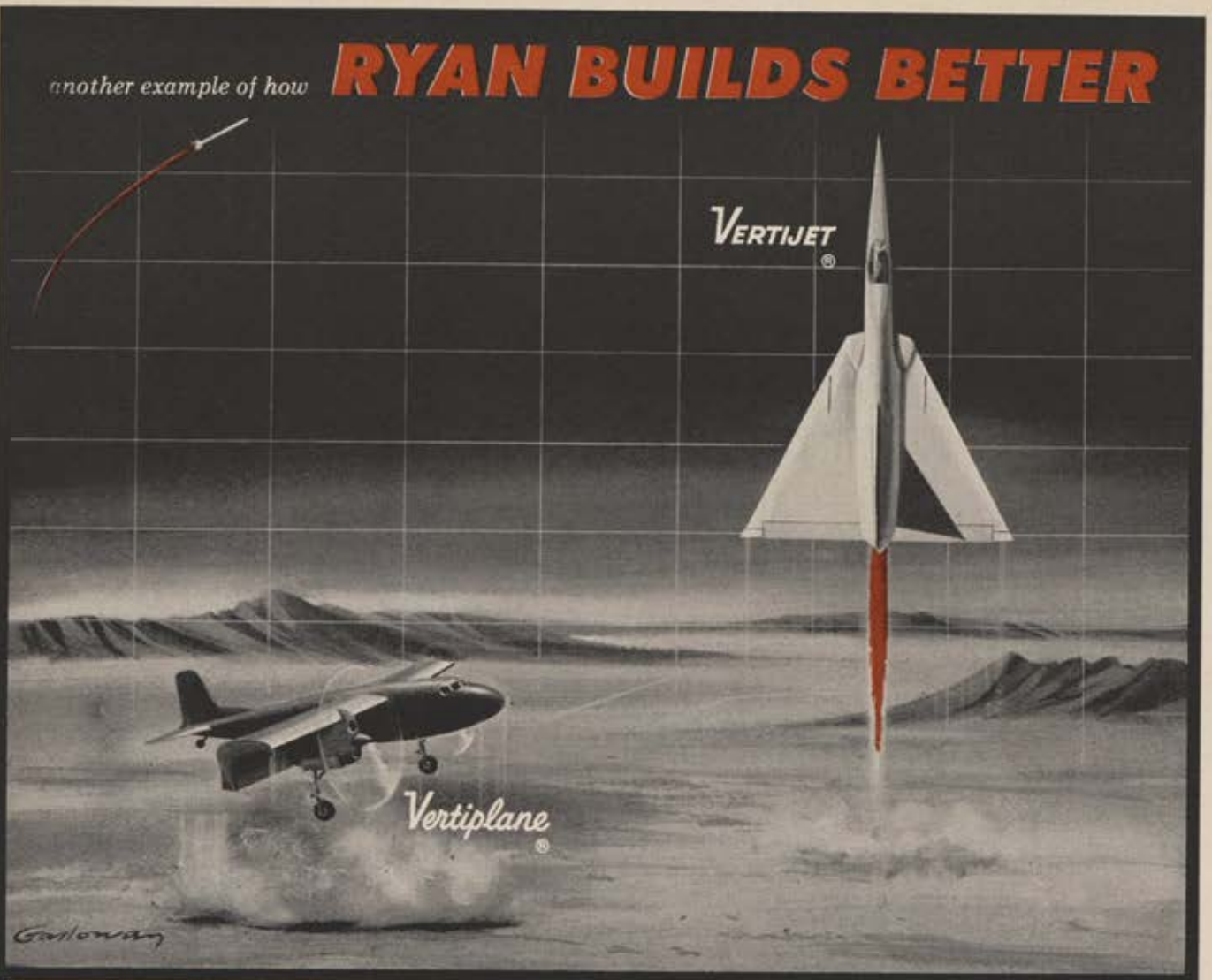
A. "That's secret."

Q. "The general wants to know! How many?"

A. "You tell the general that all these things he wants to know are secret and I can't tell him. You tell him that if he wants to know any more, he will have to get me permis-

(Continued on page 109)

another example of how **RYAN BUILDS BETTER**



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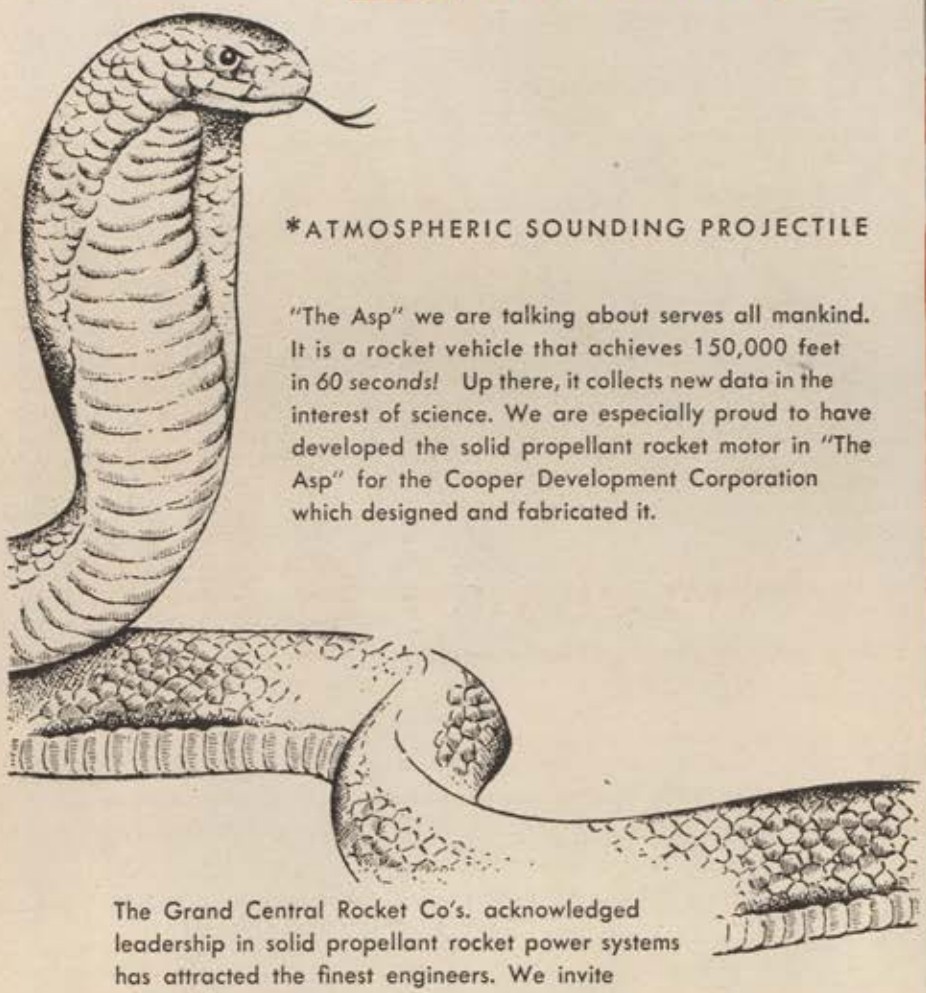

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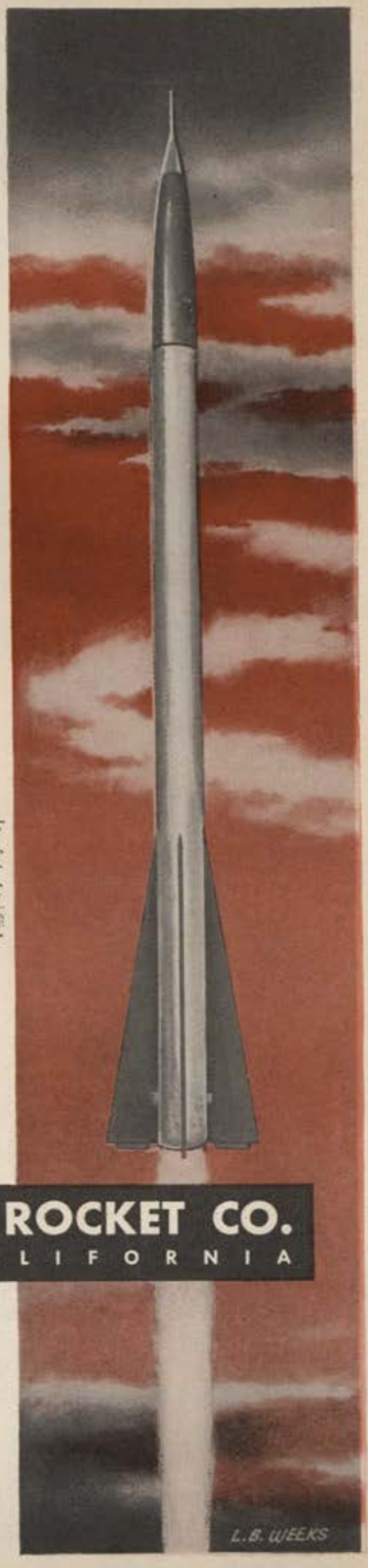

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sion from the military attaché in Moscow, but till then, I can't tell him any more. I want to see the American consul and I will not talk an any subject until I do."

When this was interpreted, the general jumped to his feet and glared, but then a grin slowly spread across his face. He walked around the table, looked at me, laughed, slapped me on the back, and walked out, followed by the entire party. I never did see any of them again.

Thus ended our first day in Russia. It was not to be our last.

Morning came and with it a new batch of Russkies. This new group didn't seem to have much to do except just sort of hang around. They were no more communicative than the last but didn't look nearly so forbidding. There was a small library in the barracks, and the librarian was the only one who could (or would) speak English. She was pleasant enough but every conversation seemed to drift toward our airplane. All attempts toward contacting the consul were futile, so after two more days of diplomacy, we held the first strike known in Russia since the Revolution. It was a "no-talk" strike. I directed the crew to be absolutely silent to the Russians. No "good mornings," no "nice days," no smiles, no nothing. We were going to ignore our hosts completely. This silent treatment lasted a full week.

On the eleventh morning after landing, we were awakened by the sound of a bus stopping outside our window. A Russian lieutenant we hadn't seen before stepped off the bus and into the barracks. "Mister Captain," he said, "have your men get dressed. I'm taking you to see the American consul."

The thirty-mile ride into Vladivostok was just the first leg of our 10,000-mile trip home—a trip that took two hundred and ten days. We stayed in Vladivostok for one month, then were flown in a Russian Gooney Bird to Tashkent, 4,000 miles away. The pilot flew on the deck, following the iron compass most of the way, pulling up from time to time to let the Siberian Express go through. At Tashkent, we joined another group of AAF and Navy air crews who'd landed in Russia, and were later joined by Capt. Weston Price, Lt. William Mickish, and Maj. Richard McGlinn, and their crews—all three of whom had "given" B-29s to the Russkies after we had. We spent most of the winter at Tashkent and finally got home, 120 strong, via train, truck, plane, and boat. But that's another story.—END

THIS IS AFA

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