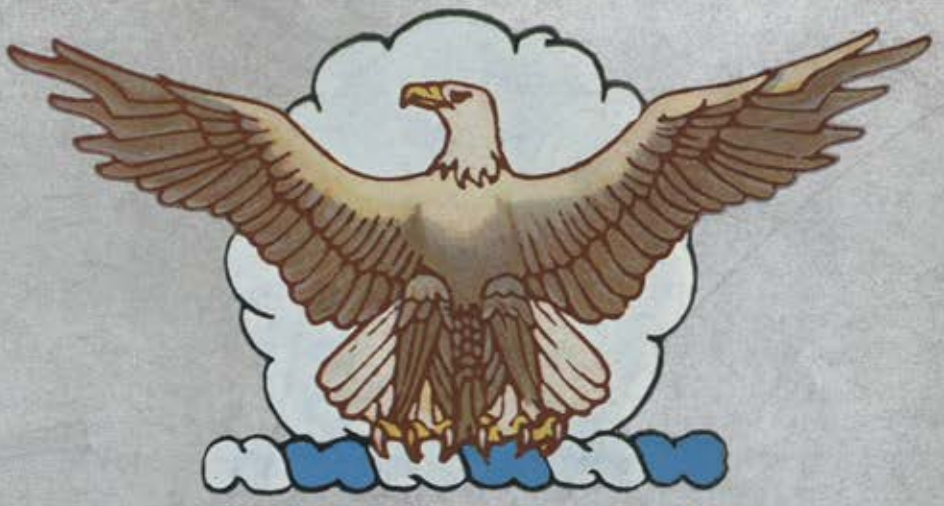
EPTEMBER 1954 • THIRTY-FIVE CENTS

AIR FORCE

THE MAGAZINE OF AMERICAN AIRPOWER



Anniversary Issue

"four-pound pilot"

A four-pound proven, rugged and reliable gyro—laboratory accuracy on a production basis—is the key to the Arma Inertial Navigation System. This completely self-contained guidance system will be another significant contribution by Arma to pilotless aircraft and missiles operating in the tactical range. Arma Corporation, Brooklyn, N. Y.; Garden City, N. Y. Subsidiary of the American Bosch Corporation.

ARMA ADVANCED ELECTRONICS FOR CONTROL

ENGINEERS—write or visit Arma for complete information on challenging opportunities in our engineering division.

TEN TIMES STRONGER THAN TRUCK WHEELS OF SAME WEIGHT!

Once an airplane touches the ground, it is out of its element. That is where its wheels take over a task which is truly Herculean, when one considers the forces encountered.

Airplane wheels must withstand pressures of 1000 pounds per square inch—and more—in order to qualify for this exacting service.

Compounding the problem is the fact that the rotating disc of the brake mechanism is geared to the wheel structure. So the wheel must transmit the torque generated by the retarding action of the brake.

Moreover, the wheel must be able to withstand the tremendous demands of tire pressure, shock loading, static loading, side loading and torque loading—often in simultaneous combination.

All this must be engineered into the airplane wheel—*a structure which must, above all, be exceedingly light for its size and capacity!*

In the past ten years, Goodyear research has advanced the design of airplane wheels from 190 pounds average load capacity per pound of wheel *to 250 pound capacity*. It has pioneered the "wave-type" design which is easier to cast and machine—has utilized strain gauge, stress coat, load machines, burst and flight tests—constantly researching and *finding* new ways to improve upon one of man's oldest inventions—the wheel—for the betterment of aviation progress.

GOODYEAR
AVIATION
PRODUCTS

Goodyear, Aviation Products Division
Akron 16, Ohio or Los Angeles 54, California

FACILITIES + ABILITIES = EXTRA *plus* IN PERFORMANCE

LONDON—Sabena Belgian Airlines recently linked England with Europe by an experimental helicopter flight, first ever made from the center of Brussels to the center of London. One of the airlines' Sikorsky S-55 passenger helicopters flew the cross-channel route in 2 hours 45 minutes, landing at London's South Bank heliport.

ANTARCTIC—Flying over ice-choked seas, S-55 helicopters from the Argentine Navy recently rescued 20 men virtually marooned for the past two years on Graham Land peninsula. The Sikorskys, operated from the deck of an Argentine transport vessel, made six round trips to bring the stranded men to safety.

AROUND THE WORLD WITH SIKORSKY HELICOPTERS

JAPAN—One of eleven Sikorsky S-55 helicopters built for Japan is pictured above being test flown with new flotation gear. This model is for Japan's official Maritime Safety Agency. Other Sikorsky S-55s are being delivered for service with air and ground branches of that country's National Safety Agency and Maritime Safety Agency.

INDIA—Civil purposes such as crop dusting or spraying, illustrated above, will be one major mission of three Sikorsky S-55 helicopters being delivered to the Indian Air Force. Because of their rugged dependability and large cargo capacity, versatile Sikorskys are in wide use for military and commercial purposes around the world.

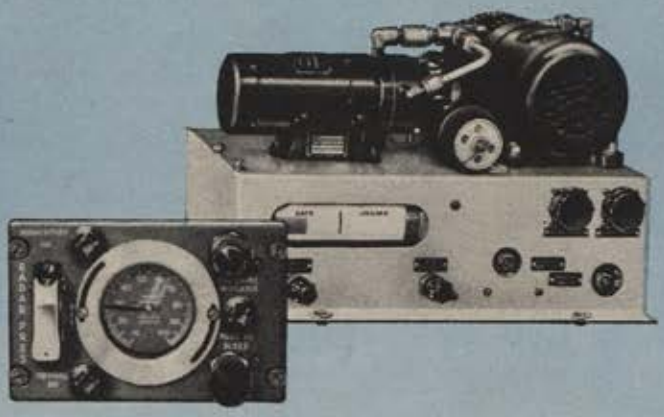
TEXAS—Once more relief and rescue from flood hazards came with the whirling rotors of Sikorsky helicopters, this time during early summer floods along the Rio Grande River in southwest Texas. In one big airlift alone, thirteen H-19s from Gary Air Force Base at San Marcos, carried 266 passengers from a railroad train stranded by the flood at Langtry. They flew precious drinking water and vital supplies to isolated areas, lifted victims from the torrent and marooned people to safety.

SIKORSKY AIRCRAFT

BRIDGEPORT, CONNECTICUT

One of the Divisions of United Aircraft Corporation

Sea-level pressure at 50,000 feet for airborne electronic equipment



DEPENDABLE, constant sea-level pressure for airborne antenna wave guides and electronic equipment is provided by the Lear-Romec RR-10200B Pressurizing Kit – even when jets zoom to 50,000 feet and higher, where ambient pressures hover close to zero.

The exceptional performance of this high-precision system is achieved by means of two-stage compression, provided by dual, oil-free, rotary-vane pumps, USAF types MA-1 and MA-2. These pumps start readily and run normally at temperatures as low as –85° F. A silica gel dehydrator dries and cleans inlet air under conditions of ambient relative humidity up to 95%. A remote panel, accessible to crew, includes pressure indicator light, pressure gauge, system bleed control button, and pump switch for preflight system testing. Pressurizing unit can be located anywhere in the aircraft. Fully automatic, the RR-10200B is designed to operate over extended periods of time without attention.

Chosen for first-line military aircraft such as the Boeing B-47E, the RR-10200B reflects typical Lear-Romec advanced design and quality construction. Send for product data sheets. Lear Inc., Lear-Romec Division, Abbe Road, Elyria, Ohio.

RO-7

LEAR **LEAR-ROMEC DIVISION**

AIR MAIL

POW's Responsibility

Gentlemen: I hope that I am the first to offer my most reverent and most sincere congratulations to Maj. David F. MacGhee. His "A POW's War Is Never Over" is the most inspiring article of the philosophy of good and evil that I have ever read which was written by a layman.

May I submit that the responsibility for any lack of such an ethic in our armed services does not fall upon the military, but rather falls upon those persons responsible for the parental, primary school, and secondary school environment of the children of our nation. Would that we had many more parents and teachers like the major!

"Off hats" to a great officer—a great leader—a great MAN.

Joseph B. Griesacker, Jr.
Baltimore, Md.

Gentlemen: David MacGhee's story in the July issue of the magazine turned out quite well. I was happy to see you pick it up and have it published. He has hit the heart of the problem, as to air crew conduct in the event of capture, and coming from such a valid source, it should cause a great number of Air Force personnel to pause and think seriously about this subject.

Col. James W. Anderson, Jr.
Griffiss AFB, N.Y.

Gentlemen: With reference to Major MacGhee's article in the July issue of AIR FORCE Magazine, I think it is the best article on the subject I have ever read. The essence of it is that if a guy is willing to sacrifice his life in the trenches or in the air for some principle, *i.e.*, his country, why shouldn't he do the same in prison. I would like to see this article in the hands of every member of the Air Force.

Maj. Gen. Clements McMullen
USAF, Ret.
San Antonio, Tex.

Value to Industry

Gentlemen: This will confirm my telephone call of last week in which I requested that you mail thirty-five copies of the July 1954 issue of AIR FORCE to Mr. William F. Ogden, Manager of Product Planning, General Electric Company, 570 Lexington Ave., New York, N.Y.

Your superb article entitled "Old Jobs—New Tools," concerning the revolution in tactical atomic airpower, came to Mr. Ogden's attention recently. We were both so impressed with your treatment of this important and fast-changing field of military operations that we felt it would be valuable background information for our military product planning people throughout the company.

I know of no other recently published and generally available study which equals yours in penetrating analysis and comprehensive treatment of the long-neglected field of tactical airpower. The case you make for the employment of superior air atomic technology to balance the numerically superior Soviet and satellite hordes is logical and compelling. My colleagues and I sincerely hope that your article correctly reflects current Air Force top policy in this field of operations.

We will continue to look forward to timely and meaningful staff studies of this sort. They are of great value to us, as an industrial organization, in putting into proper perspective the bits and pieces of information about military trends which we are able to acquire. All best wishes for your continued success.

P. J. Schenk
Electronics Division
General Electric Company
Syracuse, N.Y.

Cargo Carrier

Gentlemen: "On Time With Enough" gives excellent coverage to a subject of immense importance not only to military logistics organizations but to Lockheed as well. Our management people here in Georgia have read Edmund F. Hogan's article in the June issue of AIR FORCE Magazine with great interest. Interest generated on one hand by our own thinking on problems of air logistics and on the other by a desire to bring to your attention some facts about our C-130A transport.

Lockheed designed its C-130A transport to be the "right kind of carrier" to fit into a concept of air logistics such as is set forth in this article. In view of the increasingly significant part played by an airlift within over-all military logistics problems, we agree that the air carrier must be the strongest link in this phase of the movement of personnel and materiel.

Our prime consideration in the design of the C-130A was to provide a cargo area incorporating the optimum features of aircraft loadability, i.e., (1) accessibility affording flexibility in loading, (2) size and shape of main cargo hold, (3) airplane balance, and (4) rugged floor design.

Specific performance data on the C-130A airplane is necessarily classified information. We can speak in general terms about some of the performance characteristics. Crew compartment and cargo compartment are completely pressurized and air conditioned. Four turboprop power plants will provide excellent block to block speeds, safety, maneuverability and a wide range of missions. The aircraft is capable of taking off and landing in short, rough fields. At the same time, range is sufficient to undertake long range air logistics missions.

The prototypes of this airplane are now undergoing tests at our California Division. The production model is well under way here at our Georgia Division.

Again, let me say that we have read and talked about your fine article.

R. I. Mitchell
Lockheed Aircraft Corporation,
Georgia Division
Marietta, Ga.

Fine Reporting

Gentlemen: I've just read Ed Hogan's articles in AIR FORCE "On Time With Enough" (June) and "Thule" (July). Let me congratulate him on some very fine reporting! I've read some of Hogan's other articles and they also were good, but these were exceptional. Keep up the good work.

Capt. Eugene M. Beard
San Bernardino, Calif.

Toilers and Laggards

Gentlemen: Today I am renewing my membership in AFA, as I believe the magazine alone is worth the cost of membership.

I am wondering if there are not many other Associate members who, like me, would like to be told how we can help to

(Continued on following page)

AIR FORCE Magazine is published monthly by the Air Force Association. Printed in U.S.A. Re-entered as second class matter, December 11, 1947, at the post office at Dayton, Ohio, under the act of March 3, 1879. **EDITORIAL CORRESPONDENCE AND SUBSCRIPTION** should be addressed to Air Force Association, Mills Building, Washington 6, D. C. Telephone, Sterling 3-2305. Publisher assumes no responsibility for unsolicited material. **CHANGE OF ADDRESS:** Send old address *and* new address (with zone number, if any) to Mills Building, Washington 6, D. C. Allow six weeks for change of address. **SUBSCRIPTION RATES:** $4.00 per year, $5.00 per year foreign. Single copy, 35 cents. Association membership includes one-year subscription: $5.00 per year (Cadet, Service, and Associate membership also available). **ADVERTISING CORRESPONDENCE** should be addressed to Sanford A. Wolf, Advertising Director, 114 East 40th St., New York 16, N. Y. (MUrray Hill 9-3817. Midwest office: Urben Farley & Company, 120 S. LaSalle St., Chicago 3, Ill. (Financial 6-3074). West Coast Office: Hugh K. Myers, Manager, 623 West 5th St., Los Angeles 17, Calif. (MAdison 9-1841). **TRADEMARK** registered by the Air Force Association.

obtain for our country the world's best Air Force. Naturally we believe this is very important; that is why we are AFA members. General Kenney has said, "Airpower is like poker. A second-best hand is like none at all—it will cost you dough and win you nothing." That is the way most of us feel, but what can the average person do about it?

I should like to see your magazine publish, from time to time, the names of Senators and Representatives who have vigorously and consistently worked for a stronger Air Force. It wouldn't do any harm to publish the names of those who have dragged their feet, too. It seems to me that this would be a big help to us in deciding which candidates to support in this very important election year.

It would also be helpful to publish just how and when so many fringe benefits have been taken from the Air Force men and their families, and which legislators voted for and against these cuts. I am a Republican, but I would not hesitate to vote against anyone, regardless of party, who has not placed our security above all else. I am sure many other voters feel the same way.

Best wishes to our wonderful organization and very fine magazine.

Nellie May Korf
Riverside, Calif.

Leadership

Gentlemen: May I congratulate Mr. J. E. Schaefer on his article about "fringe benefits" in the June issue of AIR FORCE.

Nothing was mentioned, however, about the thousands of intelligent officers who left the service when they failed to find effective leadership in the Air Force. There are hundreds of cases to my personal knowledge that were recalled for the Korean fighting, and found such a decline in leadership that they foresee decay within the ranks.

It is with regret that I must remind my readers that China became communistic through ineffective leadership, and that we too may fall when poor leadership dominates our Armed Forces. The Air Force has recently attempted to weed out its less effective officers, and in so doing they have failed to cut deep enough. From an economical standpoint, the Korean war cost unnecessary billions and remedy; being, of course, effective management and foolish contracts. This happens in every war and it is generating government economic stress.

In summary, there is only one answer and remedy; being of course, effective leadership from the head of each directorate to the lowest rank within its command.

James G. Force
Laramie, Wyo.

A Place for Old-Timers

Gentlemen: I am a World War II AAF veteran who belongs to the Air Force Association, and after reading the July issue of AIR FORCE Magazine and the article "The Air Force's $2,000,000,000 Headache," it set me to wondering.

I have been trying to reenlist in the Air Force for active duty, either as a Regular or as a Reservist. In the AAF I attained the following Military Occupational Specialties of airplane mechanic, MOS #008; armorer, MOS #551, and power turret and gunsight mechanic, MOS #678. I was inducted April 28, 1942, and honorably separated as a corporal, September 1945. I was forty-seven years old on June 25.

After reading AIR FORCE's article, I do not understand why the Air Force does not waive the age limit or extend the age limit up to fifty-five so that we WW II and Korean veterans could reenlist again. I am willing to start either as a private or as a pfc. There are many of us veterans who hold skilled specialties, but we cannot get back in because of the age limit. I even requested permission to take the Airman's Qualification Examination, which has not been granted. By taking back us skilled veterans this would act as a tonic towards the AF training situation. The young airmen in now, when they see us veterans coming back in, may not be apt to want to get out into the cold civilian life. These young airmen will think it over carefully before wanting to leave the Air Force. I think it will be a big morale booster by taking veterans back into the Air Force.

George Leo Resh
New Orleans, La.

European Interest

Gentlemen: This office has been requested by the editor of ALI, Italian weekly aviation publication, to obtain permission for the use of the following material, originally published by your company:

"The New Look," AIR FORCE, April '54.

"Weapons We Must Use," AIR FORCE, March '54.

Lt. Col. Joseph A. Woida
Office of the Air Attache
American Embassy
Rome, Italy

Gentlemen: We are honored to ask you for authorization to reprint in *Forces Aériennes Françaises,* the monthly magazine of the French Air arm, translations of two very interesting articles appearing in AIR FORCE of May 1954.

It involves the article of T. F. Walkowicz and John F. Loosbrock entitled "How To Live With the H-Bomb," and that of Sir John C. Slessor, "Has the H-Bomb Abolished Total War?

It is understood that we will tell our readers that these two articles have been extracted from AIR FORCE.

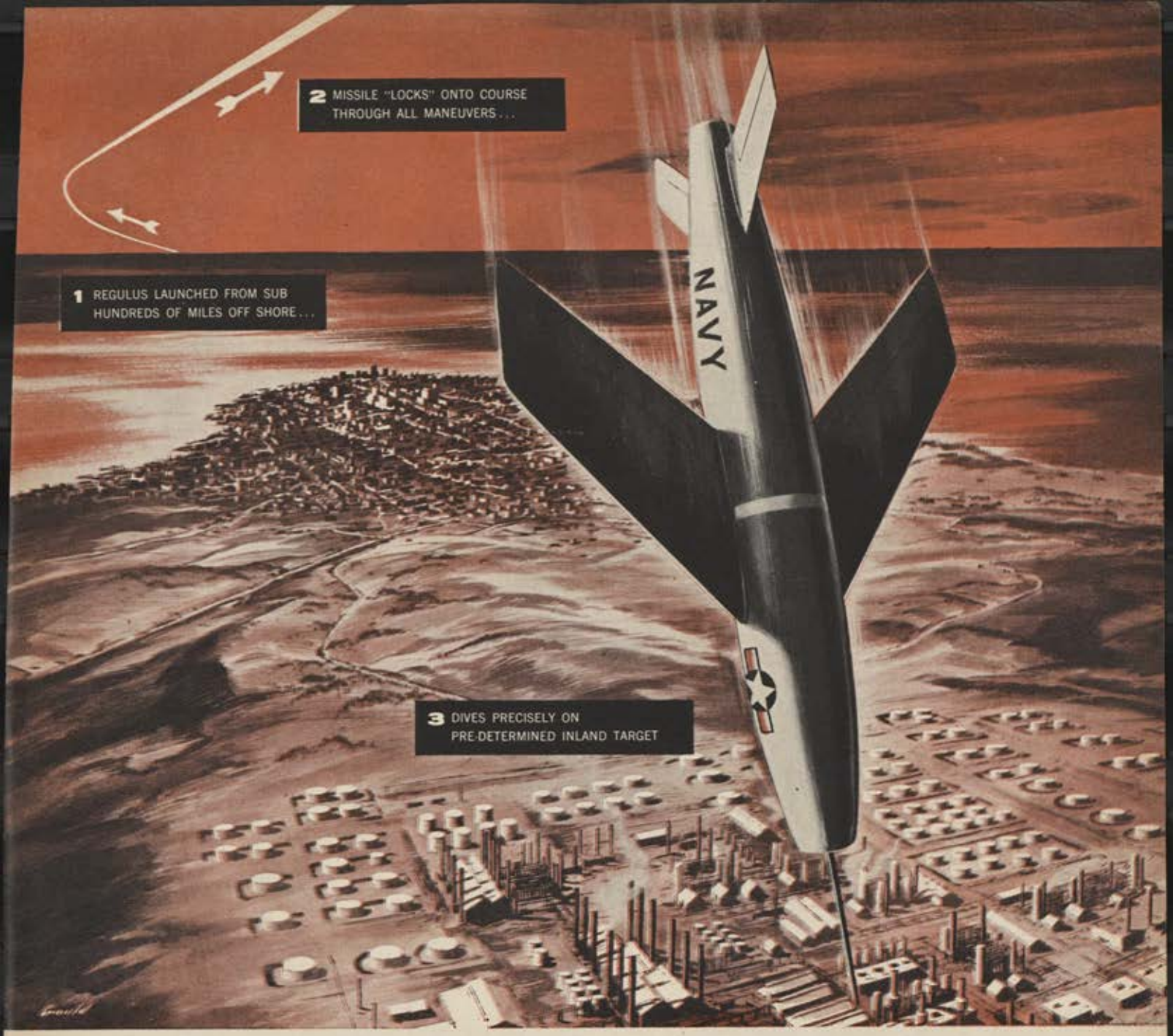
Commandant Pierre Langlais
Forces Aériennes Françaises
Paris, France

• *Permissions granted.—The Editors.*

Another Pix Vote

Gentlemen: I have talked to several readers of air magazines. These men cannot recognize many of our military planes. I suggest that you show more pictures

(Continued on page 9)



Sub-Launched Missile Gives Navy New Striking Power

CONTROL OF REGULUS HELD "UNCANNY"..."BIRDS" CAN BE RETRIEVED DURING TESTS

THE STORY BEHIND THE STORY:

■ When a guided missile launched from a submarine hundreds of miles off shore can be held to an accurate course at speeds approaching Mach 1, and precisely aimed at a specific inland target—that's news, *bad* news for a possible enemy. And, when costly models of the missile can be recovered and re-used time after time for evaluation and training, that's news, too—*good* news for American taxpayers.

■ On both counts, the Navy's Regulus, developed by Chance Vought Aircraft, Inc., is constantly in the headlines.

■ Providing the stability that holds Regulus on its course with a vise-like grip—and assuring recovery during tests—is a specially-designed Automatic Pilot, created by Sperry. Like its relative, the famous Sperry Gyropilot® Flight Control favored by the military and leading airlines, this electronic "brain" is sensitive to the slightest signal change in the flight path. Under its command, powerful servos or "muscles" of the control system make instant corrections—fly Regulus unfailingly through intricate maneuvers at all speeds and at all altitudes.

■ There's a mighty difference between the automatic controls created by Sperry for this newest guided missile of the Navy, and those provided by Sperry for the Navy's first guided missile back in World War I days. But they're alike in this respect: Both resulted from an unmatched combination of skillful engineering *plus* specialized experience in electronics and gyroscopics, and precision in production.

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A-20

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and data about our aircraft. By showing the might of our planes, you can further the doctrine of airpower.

More coverage on the Navy's planes would be appreciated also.

Robert Esposito
Philadelphia, Penna.

RENDEZVOUS

Where the Gang gets together

414TH BOMB SQDN. REUNION: The 414th Bomb Sqdn., 97th Bomb Group, is holding a reunion October 1 through 3 at the Jung Hotel, New Orleans, La. Details from *Joseph A. Dornier, Convent, La.*

96TH BOMB GROUP (H): Does anyone know if a history of the 96th Bomb Group (H), 3d Air Division, 8th AF, has ever been written? *John T. Cramer, 20 North Ave., Newark, Ohio.*

ANYBODY SEEN ERNIE?: I would like to locate an old buddy of mine, Ernest Haley, who was a staff sergeant stationed at Sioux City Air Base, Iowa. His address before entering the service was 115 D St., S. E., Washington, D. C. *Leo K. Henry, Sevierville, Tenn.*

PAUL T. BARKER: Paul and I were in the AAF ATC during the years of 1942-46. Since then I've lost track of him. Does anyone know his present whereabouts? *Albert Baston, 119 8th Ave., Dayton, Ky.*

WHERE'S BOB? I have been trying to locate Robert Hamilton Monroe, a World War II friend of mine. At the close of the war he was a lieutenant colonel with the Air Force in the ETO. Anyone know his whereabouts? *Ernest J. Dreshar, 2162 South Millard Ave., Chicago 23, Ill.*

453D GRP. & 2D BOMB WING: Has a history been written concerning the 453d Group and/or the 2d Bomb Wing of the 2d Air Division, 8th Air Force? If so, where can I obtain one? *Robert S. Ayers, 837 Spitzer Bldg., Toledo 4, Ohio.*

86TH COMBAT MAPPING SQDN.: I would like to hear from anyone who was with the 86th Combat Mapping Sqdn. stationed at Wheeler Field and Kahuka Point, Oahu, T.H. *Capt. Irving Pearlman, 3758 10th Ave., New York, N. Y.*

To be sure your Rendezvous item appears in the November issue, we should have your request by September 15.—THE EDITORS.

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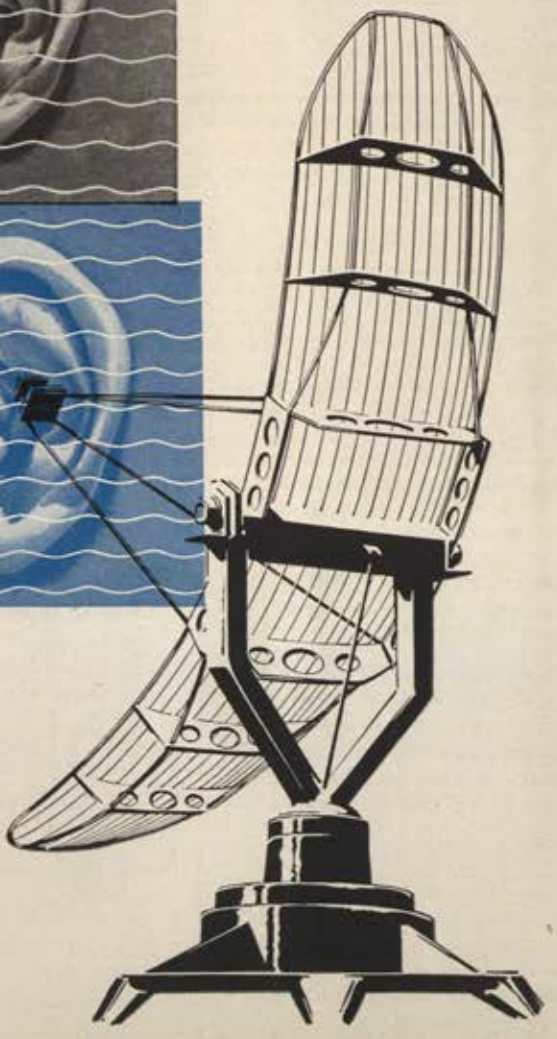

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Shooting the Breeze

THIS is the fourth year that the Air Force seal has appeared on the cover of the September issue of AIR FORCE—the issue we traditionally dedicate to the men and women of the active establishment. Up to now we've never said much about the meaning of the seal, which actually tells quite a story.

The eagle at the top symbolizes both the United States and the striking power of modern airpower. Poised for flight, the eagle looks to his right, facing toward the enemy. The cloud behind the eagle, says the Air Force, depicts the "creation of a new firmament." Beneath the eagle is what in heraldry is called a wreath, composed of alternate folds of silver and blue—the basic colors of the shield design below.

The shield is divided by what heraldic specialists call a "nebuly" line, which indicates clouds. The blue is sky, the area of the AF's mission. Inside it is the heraldic representation of Jupiter's (or Jove's) thunderbolt, which the mythological god of the heavens used to hurl from the skies to blister his enemies. The bolt, with flaming tips and including the lightning darts and the pair of wings, symbolizes the swiftness and power of the Air Force.

This basic design, when used on Air Force flags, is surrounded by a circle of thirteen stars, for the original colonies, and as the Great Seal of the Department of the Air Force, is surrounded by the stars and a band inscribed "Department of the Air Force" and "United States of America."—END

AIR FORCE

THE MAGAZINE OF AMERICAN AIRPOWER

Vol. 37, No. 9 — ANNIVERSARY ISSUE — September 1954

FEATURES

DEPARTMENTS

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MEMBERSHIP IN AFA

AIR FORCE Magazine is mailed monthly to all members of the Air Force Association. There are several ways you can become a member. If you were in the Air Force or its predecessor services, you're eligible. The $5 yearly dues include the magazine. Or if now on active duty, you can be a Service Member. Those interested in airpower can become Associate Members for $5 per year. The cost for CAP and AF-ROTC cadets is $3 per year. Details of membership in AFA on page 148.

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The Extra Engineer—When Pacitron fuel gage system provides fuel management as well as fuel measurement.

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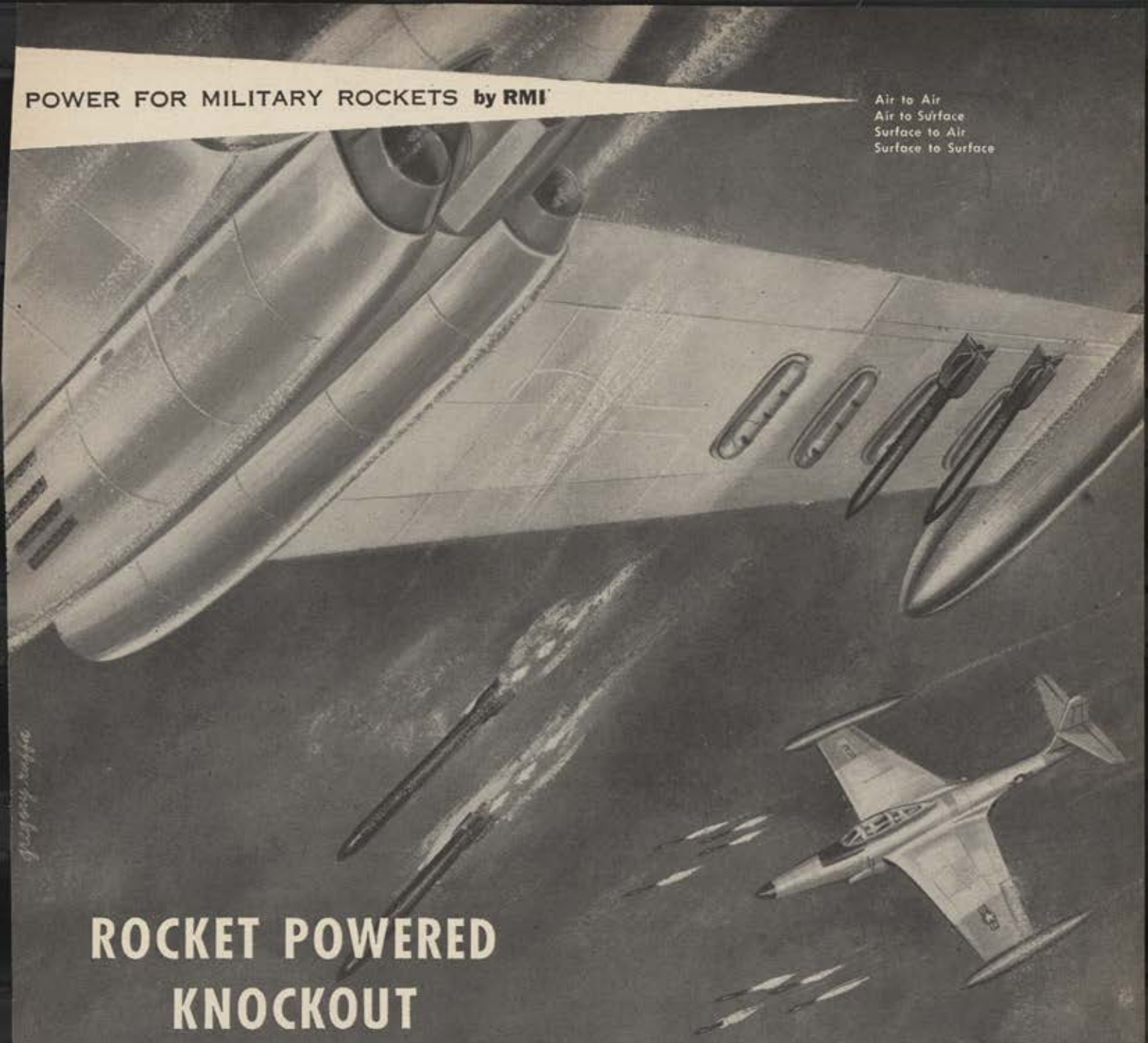

ROCKET POWERED KNOCKOUT

Military rockets must provide unfailing defense at supersonic speeds. RMI rocket propulsion can provide high performance meeting established military requirements.

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wing tips

By Wilfred Owen

The trip from New York to Los Angeles is 628 miles shorter by air than by rail.

° ° °

The International Baseball League, with hometowns in Canada, Cuba, and the US, uses air travel almost exclusively to cover distances as great as 1,500 miles between cities.

° ° °

The Air Coordinating Committee recently estimated that by 1970 there will be 74,000,000 people riding the airlines

annually. That would be more than double the record 34,000,000 airline passengers carried in 1953.

° ° °

A total of 634,000 Americans hold civilian pilot certificates.

° ° °

In March 1954, an American Airlines flight from New York to Boston marked the one-millionth take-off for the Convair.

° ° °

American Airlines serves 1,400 gallons of coffee per day.

° ° °

In one late model transport there are twenty-seven miles of electrical wiring. But it comes in 7,224 individual pieces.

° ° °

Animal passengers have become so numerous on KLM, the Royal Dutch Airlines, that an animal hotel has been established at Amsterdam's Schiphol Airport. The hotel is a stopping-off place for elephants, pythons, tigers, monkeys, tropical fish, and birds en route from Asia to North America.

° ° °

According to KLM's manual on the transportation of live animals, monkeys like to be talked to while traveling by air.

° ° °

Airline passengers hold a good many air speed records they don't even know about. Sixty people recently crossed the United States in a record five hours, 51 minutes. Others have flown from Miami to New York in two hours, 45 minutes; from St. Louis to New York in two hours, 35 minutes; and from Chicago to Newark in one hour, 50 minutes.

° ° °

Of the thirty-nine scheduled airlines in the US having no fatal accidents last year (including trunk, territorial, and local service lines), twenty-four have never had a fatal accident.

before you pierce the sound barrier

you have to get it off the ground

Supersonic planes and guided missiles make new demands on ground support equipment. Starting, servicing, testing, and towing requirements present complex problems today. Auxiliary power may be electric, pneumatic, or hydraulic . . . or all in various combinations. All must be supplied by fast, compact, durable equipment.

Consolidated's answer to these problems is an extensive line of test stands, and single or multi-purpose starting, servicing, and test units. All are available in stationary, mobile or self-propelled types.

A typical Consolidated all-purpose unit now in universal military service:

A.C.—400 cycle 3 phase and 1 phase

D.C.—28.5 V., up to 2250 amp.

Hydraulic—up to 5000 psi.

Pneumatic—compressor, up to 3500 psi, 13.5 cfm, 1000 cu. in. reservoir

Towing—mechanical or torque converter transmission, tows aircraft up to 60,000 lbs.

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. . . yet at better accuracy and comparable price

Designed and produced by the same engineering team which built the original high precision synchro, this new series is a further step in the line of synchro development.

Full engineering information, drawings, electrical characteristics of these and our size 11 and size 15 series are available. We are also producers of miniature A.C. servo and D.C. motors for industry and the government.

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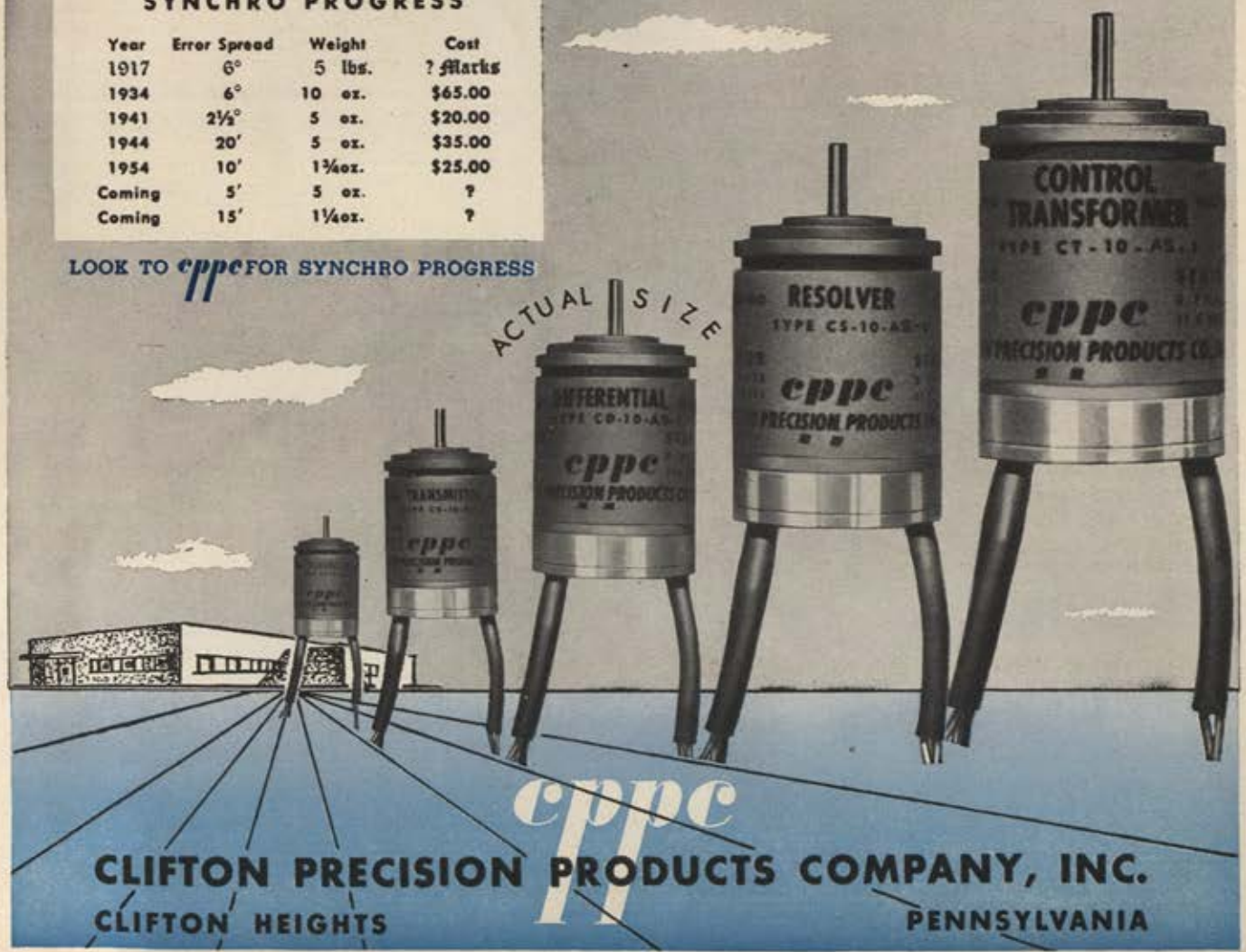
SYNCHRO PROGRESS

Year	Error Spread	Weight	Cost
1917	6°	5 lbs.	? Marks
1934	6°	10 oz.	$65.00
1941	2½°	5 oz.	$20.00
1944	20′	5 oz.	$35.00
1954	10′	1¾oz.	$25.00
Coming	5′	5 oz.	?
Coming	15′	1¼oz.	?

LOOK TO cppc FOR SYNCHRO PROGRESS



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CLIFTON HEIGHTS PENNSYLVANIA

"O.K... You're on your own"

Moments ago his instructor said, "Good luck son. Now you try it alone." And as the young cadet turns to his plane he feels a sudden thrill run through him. He is sure he's ready... after those long months of tough, hard training. And he *is* ready. He'll win his wings, because those who chose him know he has the qualities a pilot must possess.

You too can know the same thrill that young man feels now... if you have the stuff in you to become an aviation cadet. Ahead of you lies a great adventure... flying with the U. S. Navy or Air Force in the planes that guard our nation's shores.

You'll meet them all. Planes like this T-28, North American's trainer for the Navy and Air Force, that outflies many World War II fighters. And when you've won *your* wings you may graduate to a squadron that flies FJ-3 Fury Jets, Korea-famed F-86 Sabre Jets... or America's fastest production jet fighter, the supersonic F-100 Super Sabre.

Yes, there's high adventure ahead for you, if you take the challenge a flying career in the services offers now... if you're ready to be on your own.

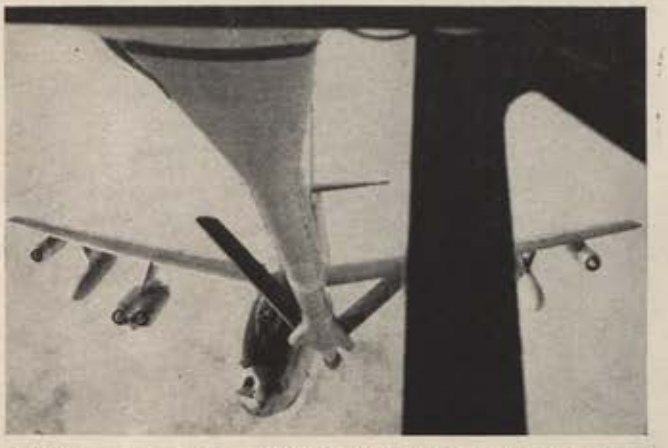
organization, facilities and experience keep

North American Aviation, Inc.

years ahead in aircraft... atomic energy... electronics... guided missiles... research and development.

AIR POWER IN THE NEWS

■ Secretary of Defense **Charles Wilson** announced in August that a new command, the Continental Air Defense Command, had been established and would become operational early in September. **Air Force Gen. Benjamin W. Chidlaw** will head the new command while still retaining his present job as Commander, ADC. In a set-up administratively similar to that of the Alaskan Air Command, the new command, with **headquarters at Colorado Springs,** will place the air defenses of the continental US under **one central coordinating authority.** Working with General Chidlaw will be **Lt. Gen. John Lewis,** chief of the Army's Anti-Aircraft Command, and a **Navy admiral,** still unnamed at presstime. The announcement said that "the advent of new weapons and increased forces available for continental air defense have made advisable a closer-knit organization with central direction." Asked to clarify this at a press conference, Wilson said new scientific technical developments in supersonic



A B-47 noses up to a KC-97 for in-flight refueling. One tanker squadron has delivered 3,000,000 gallons this way.

planes, radio, and radar had created a need for a command to coordinate and take advantage of the new developments. Wilson explained that the "increased forces" mentioned in the original release did not mean an increase in the Air Force's 137-wing goal. Unfortunately, General Chidlaw will not have operational control over Army and Navy units but will have to depend on cooperation, rather than command control, to settle problems ("see "Why Is Everybody So Happy?" on page 32).

■ The man chiefly responsible for the development of the transistor, **Dr. William Shockley** of the **Bell Telephone Laboratories,** has been made research director of the Weapons Systems Evaluation Group. The Defense Department agency works with the Joint Chiefs of Staff to determine present and future weapons policies. Dr. Shockley received an **AFA Citation** of Honor for Outstanding Public Service in 1951. (See AIR FORCE, October '51.)

■ The tremendous expansion of the USAF in a short time—it grew 2½ times during the Korean war—has created problems, including that of **health.** However, a report from the Directorate of Plans & Hospitalization, AFCSG, indicates that big strides have been made in solving this problem. The report states that emphasis on **preventive medicine, selection of personnel,** and **maintenance of health standards, immunizations,** and stress on **out-patient treatment** have all resulted in keeping more men effective on the job and conserving medical personnel and facilities. Between 1948 and 1953, the admission rate for all causes **decreased** by about ten percent. In addition, the average duration of illness decreased so that the proportion of persons not available for duty on an average day showed an even greater decrease. The decrease in the proportion of Air Force patients occupying beds in non-Air Force hospitals from **fifty-six percent** in July 1950 to **nineteen percent** in January 1954 is indicative of the growing capability of the AF to provide for its own patients in its own facilities.

■ Disbursements for the **Air Material Command** for Fiscal 1954 reached an **all-time high** of **$11,042,000,000**—an increase of $502 million over the preceding year. AMC also announced a saving of $2 million by paying bills promptly to earn a record high of 99.26 percent of every cash discount dollar offered by industry.

■ On August 1, the Defense Department announced that the US and Great Britain have joined in a program of **guided missile development.** The program, according to authorities, should speed the development of missiles by at least two years. Previously, the countries have been working separately on improving missiles from designs captured from the Germans in WW II. Before the announcement, it had been disclosed that American missiles might be tested in Australia as a result of the policy for **greater US-British cooperation.**

■ The Air Force recently said that its **Boeing KC-97** tankers make contacts with other airplanes for aerial refueling on an average of **every fifteen minutes** of each day. One of the Air Refueling Squadrons—the 305th, based at MacDill AFB, Fla.—recently hooked up with a B-47 and passed the **3,000,000th gallon mark** of fuel delivered by the unit. The squadron has logged more than **15,000 hook-ups** to date—mostly with Republic F-84s and Boeing B-47s (see cut at left).

■ Former Secretary of the Air Force, **Sen. Stuart Symington,** Democrat of Missouri, said that **"the US is in grave danger**—and that danger is growing rapidly," in a speech in the Senate recently. Criticizing the missile development program of the US, he said that "each day that goes by sees the relative military strength of the US and its allies becoming weaker as against the growing strength of the Communists." Since we can never match the military advantage that they have in their complete disregard for human life, Symington said it was **imperative** that we maintain our weapons superiority, and called it "dangerous" to our national security that we have not followed the Communists in concentrating on improvement of the missiles. Since prototypes of long-range missiles capable of carrying atomic warheads now exist, according to Symington, he called our radar warning systems "utterly useless" as a defense against them. He called for US development of superior guided missiles "as soon as possible."

Senator Stuart Symington

■ Several days before Symington's Senate speech, Brig. Gen. Charles A. Lindbergh also issued a warning of our **national peril** in a magazine article. (*Saturday Evening Post,* July 17.) He said that we must have the "unquestioned ability to retaliate against any enemy that attacks us or our allies." He listed the following requirements for this retaliatory ability:

1. A fleet of the most modern aircraft—able to take off with atom bombs **within minutes after an alarm is sounded.**

2. Research, development, and industrial-decentralization programs that will **improve the effectiveness** of our future weapons and reduce our vulnerability.

3. Emphasis on the **development of the human element** in

(Continued on page 24)

Making it easy for the men in the "greenhouse"!

With their job becoming more and more complex, today's pilots need—and get—a helping hand in the form of new and more efficient assemblies. Such is the challenge Foote Bros. is meeting with their precision-made aircraft products . . . gears, actuators and mechanical drives. By combining well trained, experienced technicians with the finest facilities, Foote Bros. has been able to achieve a pinnacle of precision in the design, engineering and manufacture of its products. So, remember when it comes to aircraft power transmission, come to Foote Bros.

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Better Power Transmission Through Better Gears

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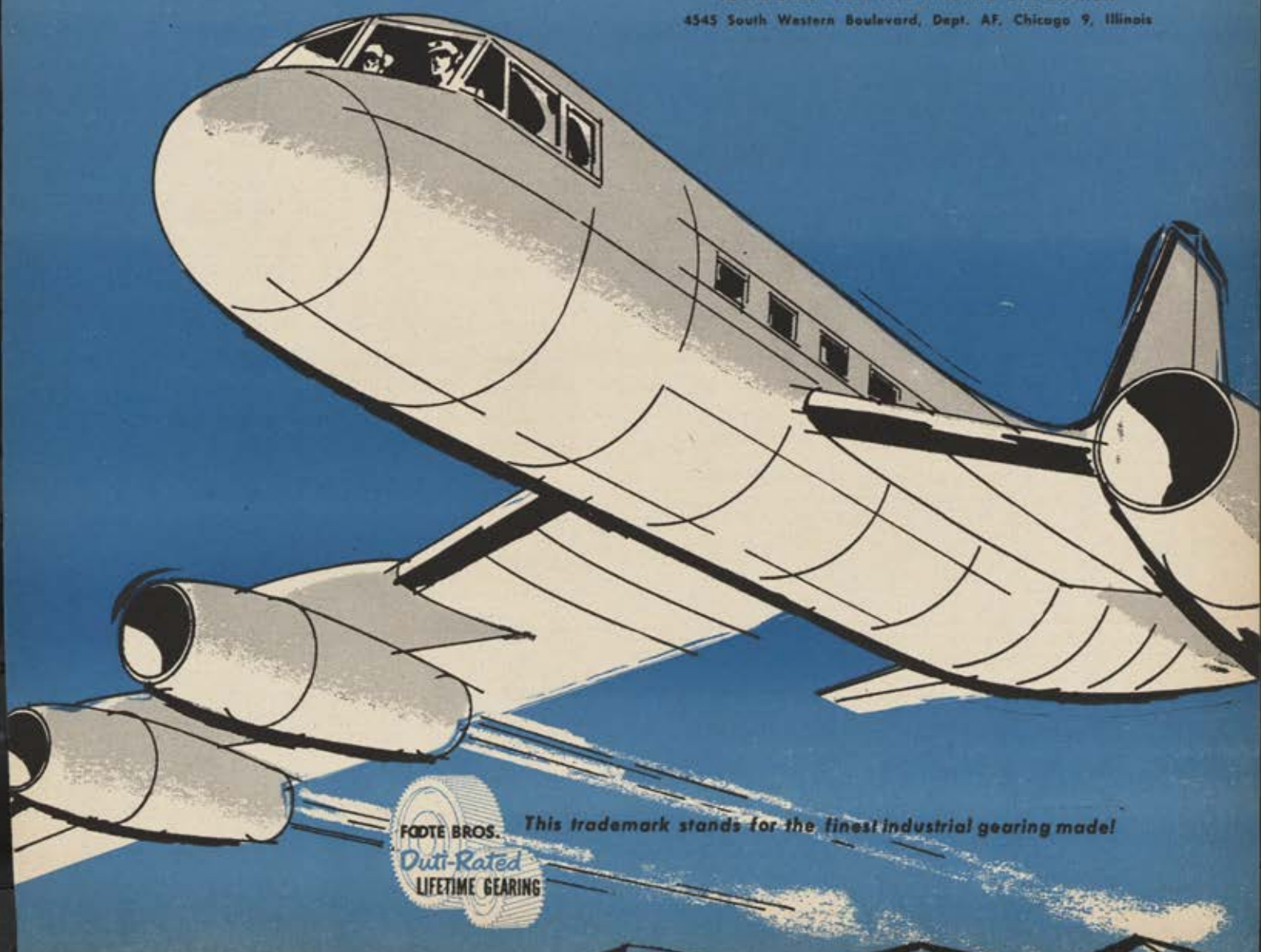

FOOTE BROS. Duti-Rated LIFETIME GEARING

This trademark stands for the finest industrial gearing made!

150 mph in 175 feet!

That is the speed at which the latest steam catapult launches a jet fighter. Such speed requires precision and split-second action to control the temperature and pressure of the steam which drives the catapult. Hagan Automatic Control has been chosen for this important function.

This is just one of the many specialized applications for which versatile Hagan control systems are ideally suited. A few recent applications of Hagan Automatic Control to aeronautical and automotive test facilities are listed below.

- Automatic control systems for subsonic and supersonic wind tunnels.
- Automatic control systems for accessory and component test facilities.
- Automatic control systems for steady state, blowdown and trajectory tests in turbojet, turboprop and ram jet test facilities.
- Automatic control systems for burner stands.
- Automatic control systems for parallel and/or series operation of blowers and exhausters.
- Programmed control systems for simulated flight conditions and trajectory tests.
- Automatic controls for gas turbines.
- Automatic control of pressure, pressure ratio, temperature and mass flow.
- Direct reading mass flow meters for both air and fuel, with automatic correction for variable pressure, temperature and density.
- Automatic resolution of multiple wide range correction factors into a single correcting signal.
- Measurement and control of gas flow, with automatic correction for pressure and temperature variation.
- Jet engine and rocket thrust measurement.
- Portable thrust stands for aircraft thrust measurement.

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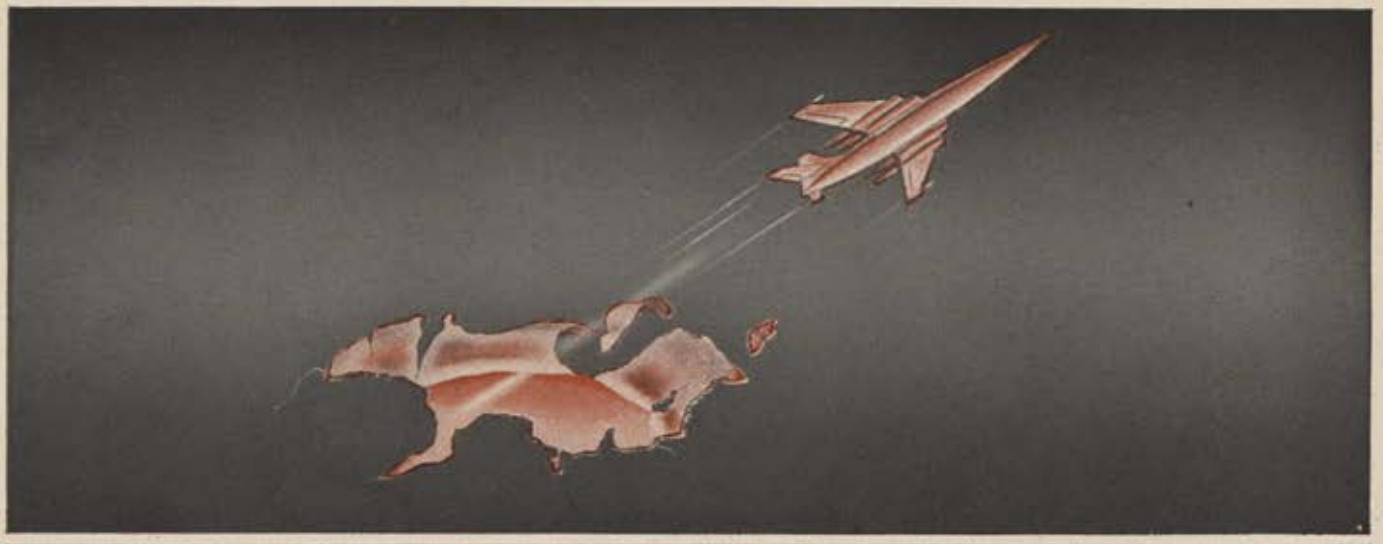

STRATOPOWER Is Ready for the Planes Which Will Break Through Today's Ceilings

The modern STRATOPOWER Hydraulic Pumps are ready and able to perform efficiently well beyond heights penetrated by piloted aircraft. They've proved it! In Rockets, Guided Missiles and under the simulated conditions of the ionosphere STRATOPOWER Pumps pump! They are built to perform at full efficiency and with complete dependability under the extreme conditions and variables imposed by projected speeds and service ceilings.

STRATOPOWER Pumps draw fluid from unpressurized reservoirs to sustain system pressure at altitudes where other pumps, dependent upon pressurized reservoirs, would be unable to supply system demands. Thus, they afford that vital added safety factor for high altitude operation . . . system actuation is assured, even though reservoir pressure may be lost.

SERIES 66W

PRESSURE COMPENSATED HYDRAULIC PUMPS

Designed to simplify hydraulic systems and to render the exacting control of such circuits more dependable. The range of models in these variable delivery pumps includes sizes delivering from 2 to 10 gpm at 1500 rpm with operating pressures to 3000 psi and speeds to 4500 rpm.

There is a STRATOPOWER Hydraulic Pump to provide the efficient source of fluid power for your requirement. Write for full information today.

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Aerial view of nation's biggest integrated aircraft manufacturing plant in Marietta, Georgia.

ALL THESE FACILITIES

UNDER ONE ROOF MEAN GREATER PRODUCTION

ECONOMY AND EFFICIENCY!

In Marietta, Georgia, the nation's biggest integrated aircraft plant has never missed a delivery schedule.

Government Plant No. 6, operated by Lockheed Aircraft Corporation.

B-47 Multi-Jet Bombers on Marietta flight line before joining U.S. Air Force.

The minute you step inside Lockheed's Marietta, Georgia, factory, you are impressed with the overwhelming size—seemingly endless production lines integrating every conceivable facility for making all types of aircraft. This plant is particularly suited for the largest airplanes—bombers, tankers and transports.

The main assembly building covers 47 acres *under one roof*. The final assembly area alone is nearly half a mile long. In this giant structure are the newest automatic machines to form, mill and turn steel, aluminum and heavy alloys. The Onsrud Spar Mills can mill in one operation a 48-foot aluminum alloy plate weighing a full ton into an integrally-stiffened wing panel. Overhead cranes for lifting such huge units are completely radio-controlled.

This bigness saves *you* money because it means more efficient, more economical aircraft production. It provides maximum flexibility in production planning. Consequently, with minimum effort, the Marietta factory can be arranged to handle any design or any type of aircraft, guaranteeing a continuous flow of material from the raw state to the completed airplane. Today, more than 45,000 different parts are being manufactured at Marietta.

That's why the U.S. Air Force selected the Marietta factory to build multi-engined B-47 Jet Bombers and C-130 Turbo-Prop Combat Cargo Planes. In the more than three years under Lockheed management, this Marietta plant has never missed a delivery schedule. And today, new cost and performance records are winning additional commendations from the USAF.

Look to

LOCKHEED

for Leadership

LOCKHEED AIRCRAFT CORPORATION
MARIETTA, GEORGIA, AND BURBANK, CALIFORNIA

AIRPOWER IN THE NEWS——CONTINUED

our military forces fully as much as we emphasize the development of material elements. (He cites the fact that thousands of expert airmen leave the service for better jobs on the outside. Lindbergh urged that long years of expensive training be followed by opportunities in pay and conditions to encourage people to remain in the careers they were trained for.)

■ An **aviation pioneer** who built a wind tunnel on the campus of Notre Dame while still an undergraduate, twenty years before the Wright Brothers' first flight, died in the infirmary at Notre Dame on July 23. He was **Dr. Albert Zahm,** 92. Dr. Zahm's interest in aviation dated back to his school days. While at Notre Dame he suspended himself on a rope from the ceiling of the old Science Hall to test his theories of flight. His footprints high on the walls puzzled those who didn't know what he had been doing. After he received his Ph.D. from Johns Hopkins in 1898, Dr. Zahm operated the world's **first full-size wind tunnel.** He worked as research engineer for the Curtiss Aeroplane Co. and was director of the **Navy Aerodynamic Laboratory** before taking over as chief of the Division of Aeronautics for the **Library of Congress** in 1929. He remained at that post until 1946. He learned to fly before WW I at the Curtiss School in Hammondsport, L.I., and is credited with many aviation inventions.

■ **Paramount Studio** announced recently that production on a movie based on the book **"Global Mission,"** by the late **Gen. H. H. "Hap" Arnold** will start this fall.

■ The **XC-99** is the world's largest operational transport—and is the only one of its kind in existence. The cargo-version of the **Convair B-36,** the XC-99 made news recently when it neared its **500th flight** since being assigned in September 1950 to Kelly AFB, Tex. Averaging sixteen flights a month (and thirty-five tons of cargo per flight), the unique plane has transported **35 million pounds** of cargo to date.

■ The first **AFA Ricks Memorial Trophy** will be presented to **1st Lt. Charles J. Young** at AFA's Convention in Omaha. Lieutenant Young, of the N.J. ANG, flew his North American F-86 from Ontario, Calif., to Detroit, Mich., in three hours, twenty-seven minutes, and thirteen seconds to set a new speed record of 560.438 mph in the first AFA-sponsored **Ricks Memorial Trophy race** in July. He broke Brig. Gen. Keith Compton's average of 553.7 mph in the California-Detroit Bendix race three years ago. Second and third in the memorial to Maj. Gen. Earl T. Ricks, former chief of the AF Division, National Guard Bureau, were **Capt. Robert A. Johnson** and **Col. Willard Millikan.** Johnson, of the S.C. ANG, averaged 557.36 mph and Millikan, of the D.C. ANG, averaged 555.08.

■ Now that the Air Force's **recruiting sergeants** are no longer under the supervision of the Army, several of them have come up with various "gimmicks" to **boost enlistments.** One recruiter in the New York City area has offered prospective recruits a **free ride** from their homes to the recruiting office and return in his own car—to get them to come in for an interview. Two Air Force recruiters in Brooklyn capitalized on "Gone With the Wind" at a local theater where they appeared dressed up in **Civil War uniforms** to appeal to young men. This prompted several youngsters to inquire about the role of the AF in the Civil War.

■ In July, the Department of Defense announced it had approved "a new and additional military assistance program" to improve **Thailand's** position as a **defense against Communism** in Southeast Asia. The program was announced after fourteen days of talks in Washington with Thai military officials. The new plan calls for a two-fold increase in officer and non-com trainees and shipment of jets, tanks, small arms, and artillery to the Thai forces from the US. Since 1949 the US has spent **$28 million** for technical assistance to Thailand.

■ July 13 marked the second anniversary of the **Ground Observer Corps.** During the time "Operation Skywatch" has

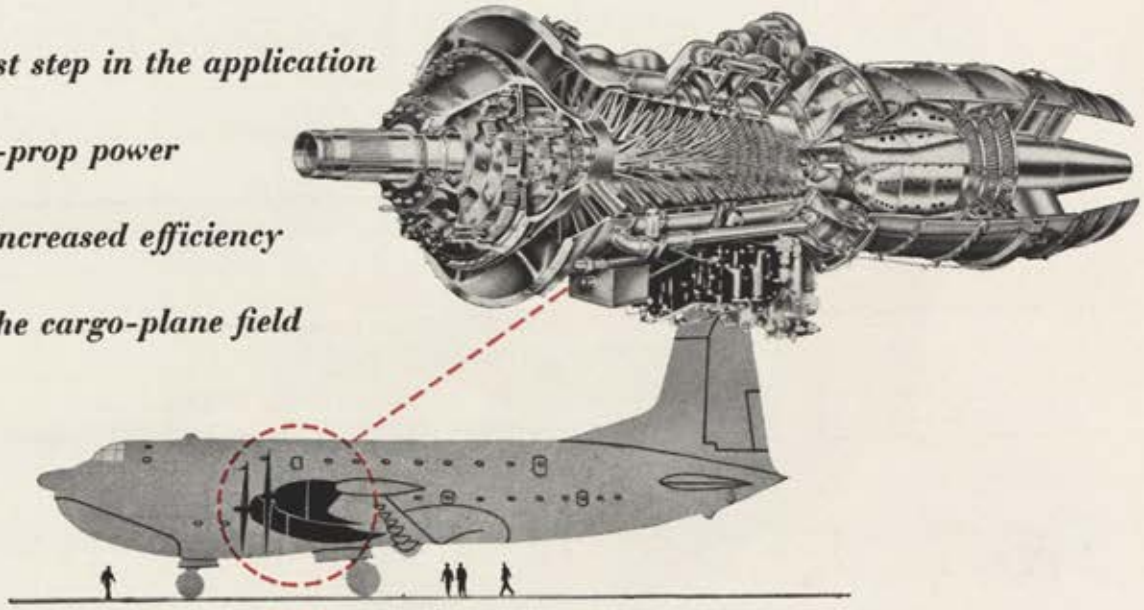
(Continued on page 27)

First step in the application

of turbo-prop power

brings increased efficiency

to the cargo-plane field



— the DOUGLAS YC-124B

Recently the flight of a 200,000-pound sky giant expanded air logistics horizons. Here, utilizing turbo-prop power was the Douglas YC-124B Globemaster.

Powered with four P&W engines—22,000 h.p. in all—its most effective operating altitude is *six miles up*. Pressurized quarters for crew and attending engineers let them study engine performance and flight characteristics in comfort. Facts gathered to date include an over-all efficiency gain in terms of power, range, and lift per pound of fuel, and point the way to larger, faster and more efficient cargo-carrying aircraft.

This new and advanced application of turbo-prop power is still further evidence of Douglas leadership in aviation. Planes that can fly faster and farther with a bigger payload are a basic rule of Douglas design.

Enlist to fly in the U. S. Air Force

Depend on *DOUGLAS* **First in Aviation**

SHIELD FOR A HERITAGE

This emblem, significant of America's first line of defense, identifies pilots and planes of the Strategic Air Command, hosts for the 1954 Air Force Association Convention. ➢ ➢ Today . . SAC is strengthened more than ever by the operation in active service of more and more of Republic's powerful ***F-84F THUNDERSTREAKS*** *now establishing their role as rugged versatile vehicles with unusual mobile characteristics for the use of strategic air power.*

CEILING UNLIMITED *for the young ambitious man . . new vistas of education, travel and security . . . all these are available to career airmen in the U.S.A.F. Every day you're in brings you greater satisfaction in the knowledge that yours is a vital and rewarding service to your country . . to yourself.*

REPUBLIC AVIATION

FARMINGDALE, LONG ISLAND, N. Y.

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

AIRPOWER IN THE NEWS—CONTINUED

been in existence, almost 350,000 men and women have scanned the skies around-the-clock and reported aircraft sightings. As Skywatch begins its third year, officials report they are still unable to recruit the large amounts of volunteers needed to carry on the program. Even with the announcement that many new radar posts are to be established, many of our high-ranking military officials believe that the human skywatchers will remain an important part in the over-all defense set-up for an indefinite period.

■ The 1954 Harmon Trophy winner, **Maj. Charles E. "Chuck" Yeager,** test pilot at Edwards AFB, has been reassigned to **12th Air Force** headquarters, Germany, reporting October 3.

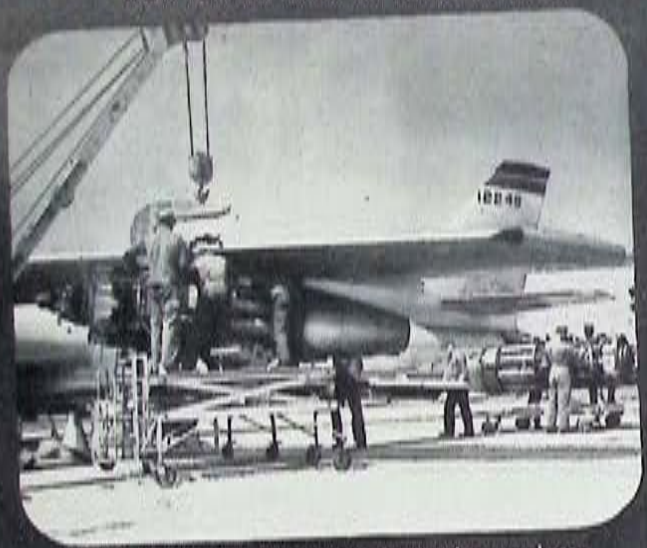
■ **AWARDS**—**Maj. Gen. Harry C. Armstrong,** former USAF Surgeon General, was recently awarded the Distinguished Service Medal by USAF Chief of Staff Gen. Nathan F. Twining . . . In Boston recently, **Adm. Richard E. Byrd** received an award in the form of a gold watch, "for expanding the horizons of aviation," from a committee representing the **International Aviation Trade Show** . . . The **Air Force Flight Safety Award** was recently presented to the **1st Weather Wing** of the USAF **Air Weather Service (MATS)** and its three reconnaissance squadrons recently at Hickam AFB in Hawaii. The wing received the award for flying **3½ million accident-free miles**—equivalent to 150 flights around the world.

■ **Lyle S. Garlock** was nominated by President Eisenhower on July 28 to the post of **Assistant Secretary of the AF for Management.** Garlock has been Deputy Defense Department Comptroller for the Budget.

■ **STAFF** . . . As predicted in AIR FORCE last month, **Lt. Gen. Hubert R. Harmon** has been named superintendent of the **Air Force Academy.** He will direct the start of the new Academy from its temporary headquarters at Lowry Field, Denver, Colo. . . . Early in August, AF Secretary Harold E. Talbott named **Brig. Gen. Zon Z. Zimmerman** as dean of the faculty and **Col. Robert M. Stillman** as commandant of cadets at the Academy . . . **Brig. Gen. Leighton I. Davis** has replaced **Col. Donald Ostrander** as commander of the Holloman Air Development Center, Alamogordo, N. M. Colonel Ostrander will take over General Davis' old job as Director of Development at Hq., ARDC . . . Also going to Hq. ARDC is **Brig. Gen. Marvin C. Demler,** former Vice Commander of the Wright Air Development Center. General Demler's new job is Assistant Deputy Commander for Technical Operations. He will be assistant to newly promoted **Maj. Gen. Floyd B. Wood** (see below) . . . In another ARDC change, **Brig. Gen. Howell Estes** leaves his post as commander of Task Group 7.4, Air Force Special Weapons Center, Kirtland AFB, to become Director of Weapon Systems Operations at Wright Air Development Center. **Col. Homer A. Boushey,** former Director, has been assigned as deputy to General Estes . . . The new commander of the Northeast Air Command, **Glenn O. Barcus** ("Airpower in the News," Aug. '54), was recently promoted to three-star rank . . . New commander of CADF is **Maj. Gen. Jarred V. Crabb,** replacing **Maj. Gen. Delmar I. Spivey** . . . **Maj. Gen. Edward H. Underhill** becomes Vice Commander of ATRC under General Myers on September 1 (see "Airpower in the News," Aug. '54) . . . Also early this month, **Maj. Gen. E. Blair Garland** replaces **Maj. Gen. Francis L. Ankenbrandt** as Chief of Communications, SHAPE. General Ankenbrandt will become AACS Commander, MATS . . . **Maj. Gen. Charles R. Landon,** director of Air Force Statistical Services, retired early in August after thirty-six years of military service. He began his career as a Marine Corps private in 1918 . . . **PROMOTIONS**—To **major general:** George F. Smith; John W. Sessums, Jr., Wycliffe E. Steele; Floyd B. Wood; Thetus C. Odom; Millard Lewis; Joe W. Kelly; To **brigadier general:** James K. DeArmond; John G. Fowler; Norman D. Sillin; James P. Newberry; Donald L. Hardy; Laurence B. Kelley; Harley S. Jones; Lester W. Light; Jermain F. Rodenhauser; Jack Roberts; Noel F. Parrish; Charles M. McCorkle; Bertram C. Harrison; Edwin S. Chickering; Harold E. Watson; Kenneth H. Gibson; Keith K. Compton.—END

0900 Stepping up on their work stands, line crew removes outboard engine cowlings.

0906 Quick-disconnects of J47 electrical, fuel, and oil lines are completed.



0911 Crane car lifts engine forward as replacement unit rolls into background.

0914 Engine is swung away from wing as new J47 is pulled into position.

0919 New engine hoisted up while crew installs J47 fuel, oil, and electrical lines.

0924 Aluminum "bullet nose" and cowlings are clamped on just before running engine up.

G-E ENGINES POWER S.A.C. OPERATIONAL MULTI-JET BOMBERS

Simple design of G-E J47 helps S.A.C. crew make

25 MINUTE ENGINE CHANGE!

MacDill AFB photos show how G-E engines, Boeing wing pods, and S.A.C. ground crews have cut bomber maintenance time and costs

A Strategic Air Command B-47 ground crew recently changed a G-E J47 jet engine in 25 minutes. We mention this for two reasons: twenty-five minutes is about *one-eighth* the time it used to take to change a WW II bomber engine. And the 25-minute change is typical of the ways in which the J47's clean design and durability help S.A.C. save time and money.

Good design: Easy maintenance

The J47's relatively simple construction makes the engine very easy to maintain, compared to other types of powerplants. For example at MacDill AFB, S.A.C. crews get up to 600 hours from J47's before minor repair. This is nearly twice the minor repair average of S.A.C. piston engines. And naturally the cost of J47 maintenance—and the human effort involved—is less.

Good design: Long operating life

Proof of the J47's durability lies in the fact that B-47's attached to the 306th Bombardment Wing have gone more than 600 hours *without a single engine change.* That's the equivalent of 15 nonstop globe encircling flights. A Tampa newspaper has quoted a B-47 ground crew as calling their J47's, "The engines that never quit."

Facts like these illustrate the J47's contribution to the Strategic Air Command. *Section 232-2, General Electric Company, Schenectady 5, N. Y.*

Progress Is Our Most Important Product

GENERAL ELECTRIC

EASE OF J47 MAINTENANCE is illustrated by this photo of a S.A.C. B-36 outboard wing pod. J47 installation can be removed quickly for minor repair and overhaul.

LONG J47 OPERATING TIME BETWEEN OVERHAULS is typified by B-47 No. 12234 of S.A.C. 306th Bombardment Wing. Aircraft flew more than 600 hours without a single engine change.

Sundstrand announces new Aviation Division

SUNDSTRAND AVIATION has been set up as a separate division of Sundstrand Machine Tool Company. This move represents another progressive step by Sundstrand toward its goal of establishing adequate production capacity for Constant Speed Drives and other specialized accessories for the Air Force, the Bureau of Aeronautics, and engine and airframe manufacturers.

The former Hydraulic Division of the parent company has been divided into two completely segregated entities, the Aviation Division and the Industrial Division. The Aviation Division will occupy the entire 250,000 square-foot plant shown above, which has heretofore been shared with the Industrial Division. All products of the Industrial Division will be manufactured in a new plant now under construction.

SUNDSTRAND AVIATION is now in a better position to serve the aviation industry. In addition to its doubled production capacity for Constant Speed Drives, it has its own management, sales, engineering, and service facilities. Please feel free to call upon us whenever you need help in solving an a-c power generation problem.

(Left) **"Package-Type" Drive** — can be strut or bracket mounted in line with power take-off pad.

(Right) **"Sandwich-Type" Drive** —extremely compact for mounting in nose cone, or other available pad.

(Left) **"Cartridge-Type" Drive**— mounts within engine gear box.

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CONSTANT SPEED DRIVES • AIRCRAFT ACCESSORIES

AIR FORCE

MAGAZINE

PROUDLY PRESENTS

ITS ANNUAL

Anniversary Issue

DEDICATED

TO THE MEN AND

WOMEN OF THE

UNITED STATES

AIR FORCE

★

Why is everybody so happy?

By James H. Straubel

THE $29 billion defense budget for the new fiscal year passed the Senate in a casual manner, by voice vote, with about fifteen Senators on the floor. Discussion was half-hearted, to say the least. The only serious argument involved the size of the Army. Airpower was never mentioned in the final debate.

To be sure, the McCarthy hearings which commanded both public and legislative attention at the time, probably prevented a verbal scrap. Sen. Stuart Symington (D-Mo.) was tied down to the McCarthy committee room during the two days of Senate debate on the defense bill, and with him Sen. Henry M. Jackson (D-Wash.), both strong critics of the current defense program. Senator Symington, at least, was known to be prepared for an attack on the airpower provisions of the new budget.

Nonetheless, the atmosphere in the Senate was in marked contrast to that of a year before. Then, before a packed chamber, Senators had argued vigorously over the $5 billion Air Force cut in the Eisenhower Administration's first budget (AIR FORCE, September '53). Then, of course, the late Gen. Hoyt S. Vandenberg had touched off the debate with his open revolt against the slash in Air Force funds. And in the middle of the Great Debate, Gen. Omar Bradley had said, "I know of no intelligence which reveals any change of attitude on the part of the Soviet Union or which would give us any reason to diminish, slow down, or stretch out our preparedness effort."

If, in the meanwhile, any intelligence information had accumulated to reflect a change in the Russian attitude toward world domination, it was not revealed to support the defense budget for the 1955 fiscal year. Indeed, even a casual reading of the newspapers told a depressing story of the Red bloc translating its "attitude" into continued successful aggression against the Free World.

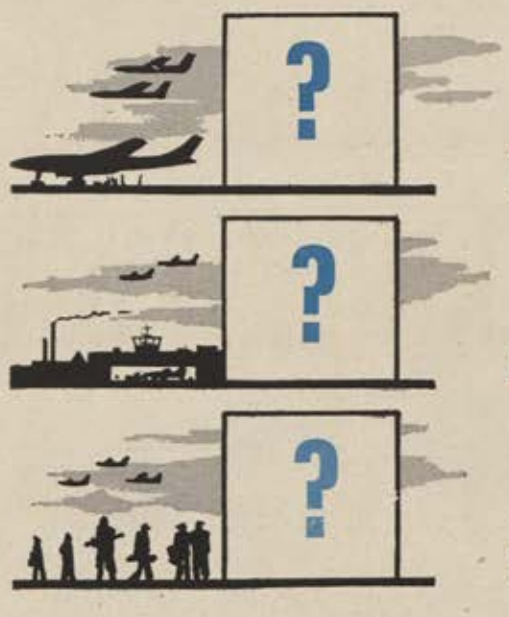
No one in high authority, moreover, strongly disagreed with the view that the Communist axis was gaining in the arms race—admittedly the key to diplomatic and military action. In fact, as the Senate considered the new defense budget. Donald A. Quarles, Assistant Secretary of Defense for Research and Development, was quoted as saying "our technical position *vis-à-vis* the Soviets is less than it was a year ago." Defense Secretary Charles E. Wilson, in an apparent effort to tone down this statement, hardly convinced anyone that the military gap hadn't narrowed. A year before, the Quarles' statement would have been a significant if not a determining factor in the Great Debate. This year it was virtually ignored (although mentioned by Senator Symington) in Congressional discussions.

Nor was there much question that the Air Force buildup had been stretched out some twenty-four months, a bitterly contested point in last year's debate. There was still argument over the practicality of the 1955 delivery date programmed for the old 143-wing program. But the stretch-out—now known as "strength for the long pull"—had become an accepted fact, and such terms as "build-down" and "deobligations" had been used to help describe Air Force buying activity of the past year. That Soviet Russia obviously was compressing, rather than stretching out, its airpower development did not seem to be of particular importance.

In fact, only paradoxes result when we attempt to relate the world balance of air-atomic power to budget decisions over the past three years. In 1952, for example, our atomic superiority was considered tremendous, and the hydrogen bomb only a dream. Our air defense was admittedly weak, but we worried publicly only about one-way "suicide" bombing missions by relatively slow propeller-driven aircraft of World War II vintage. Our growing ring of overseas bases seemed relatively secure for our own bombers, and the vulnerability of our intercontinental B-36s was not a disturbing issue. Yet, that year Congress approved appropriations for an Air Force buildup to 143 wings by late 1955, and with no real argument about it (the Senate vote was 79 to 0).

By 1953 we had gained new respect for the atomic strength of the Soviets, and were admitting that our stockpile margin was far less than we had assumed a year before. Our own hydrogen bomb development had produced a few published warnings (see AIR FORCE, June '52) that Russian H-bombs might be in the offing. Our air defense weaknesses, thanks to a series of studies by experts, had been accentuated in the public mind and, supposedly, in the Congressional mind, and there had been reports of Russian progress in intercontinental bombers. Congress had become more concerned over the position of our bomber-base allies. Russian progress in an air defense network had made our B-36s appear more vulnerable to interception. Yet, last year Congress stopped its financing of the 143-wing program and instead, approved a $5 billion cut in funds for the Air Force and a stretched-out

will the 137-WING PROGRAM meet its goals...



MODERN AIRCRAFT

ADEQUATE BASES

TRAINED PEOPLE

delivery program for an undetermined number of wings.

This year, at budget time, it was generally recognized that the atomic stockpile of Russia was rapidly growing into a major threat and, beefed up by its hydrogen-bomb program, had been magnified in potential destructive power by fantastic proportions. This year our leaders, for the most part, had given up hope of preventing, through air defense, gigantic destruction, should this nation be attacked by air-atomic power. This year the intercontinental jet bomber development of the Soviet had been officially recognized and reported to Congress. Meanwhile, our B-36s, still our only operational long-range bomber, had become older and more obsolescent by another year. Our medium-ranged bomber fleet of B-47s had become a mature force, but our relations with our bomber-base allies—on whom we would have to depend for the employment of this weapon—had hit a new low. And this year the reports had persisted that the Communists might well be ahead of us in the development of intercontinental ballistic missiles—against which no air defense measures are known. Yet, to complete the paradox, this year Congress had cut the Air Force appropriation below last year's slashed budget, even below the Administration's requested figure, and had placed its formal stamp of approval on a 137-wing program for the Air Force, stretched out for delivery and modernity to July 1, 1957.

Indeed, as the airpower threat has increased, our airpower budget has decreased—an interesting note for the historians, if they survive a D-Day.

This year, in the House of Representatives, which debated the defense budget somewhat more vigorously (although voting less money for it) than the Senate, Rep. John W. McCormack (D-Mass.) attempted to draw out Rep. Dewey Short (R-Mo.), Chairman of the House Armed Services Committee, on the nature of the threat.

"Does the gentleman think," asked Representative McCormack, "we are strong enough so that the Soviet Union will be afraid to carry out a sneak attack on us militarily?"

"I do not think," replied Representative Short, "that Soviet Russia dares attack us today. She does not have an adequate supply of steel, rubber, oil, or transportation system to fight successfully a prolonged global conflict."

That an all-out surprise attack on the US with nuclear weapons would necessarily become global or prolonged is highly questionable. That superior supplies of vital materials, (or superior plant capacity) would play a decisive role in the Hydrogen Age is equally questionable. Yet, these World War II axioms still dominate much of our official thinking, and obviously influence budget decisions.

In a recent discussion with a Navy friend, now assigned to a top policy-making job in the Pentagon, I expressed the belief that airpower would be decisive in any future all-out-war. 'I can't buy that," he said. "Remember Germany at the end of World War II? Despite all our air attacks, she was producing more planes than at the beginning of the war." I recalled a recent comment by Gen. Curt LeMay, boss of the Strategic Air Command. "It's been reported that the city of Omaha could be destroyed by one of the new bombs," he said. "That's not true. Omaha could be vaporized by one of them." I asked my Navy friend, "How will you rebuild aircraft factories out of vapor?" He didn't have an answer, nor did he, on second thought, question the ability of modern air-atomic power to vaporize.

Vapor is a flimsy thing, difficult to describe and understand, especially when it is generated out of the solids we know as the homes and the factories and the flesh of cities. We pray it will never be experienced in this or any country. Yet, to ignore vaporizing and its consequences and come to conclusions based on World War II weapons, is not only the height of folly; it is tragic error.

More significant, however, to an understanding of the recent defense budget decisions is the economy argument. As Representative Short stated in the House debate, "Oh, of course I wish we were stronger. We are as strong as our economy will allow us to be." That probably represents, concisely, the feeling of the majority of our legislators.

What will the traffic bear in defense spending? Will our economy allow us to be any stronger, militarily, than we are now? There are widely divergent views of this subject, views held by equally qualified economists. The voter has heard various figures used as ceilings for military appropriations—above which the nation could not afford to go. In the regime of Louis Johnson as Secretary of Defense, it was something like $15 billion. We are still in business and operating at about double that figure today.

It would seem that an independent bipartisan study of the problem would be in the public interest.

Whatever the reasons, Congress quite happily—in an election year—approved a defense budget without a major headline struggle. What did Congress buy?

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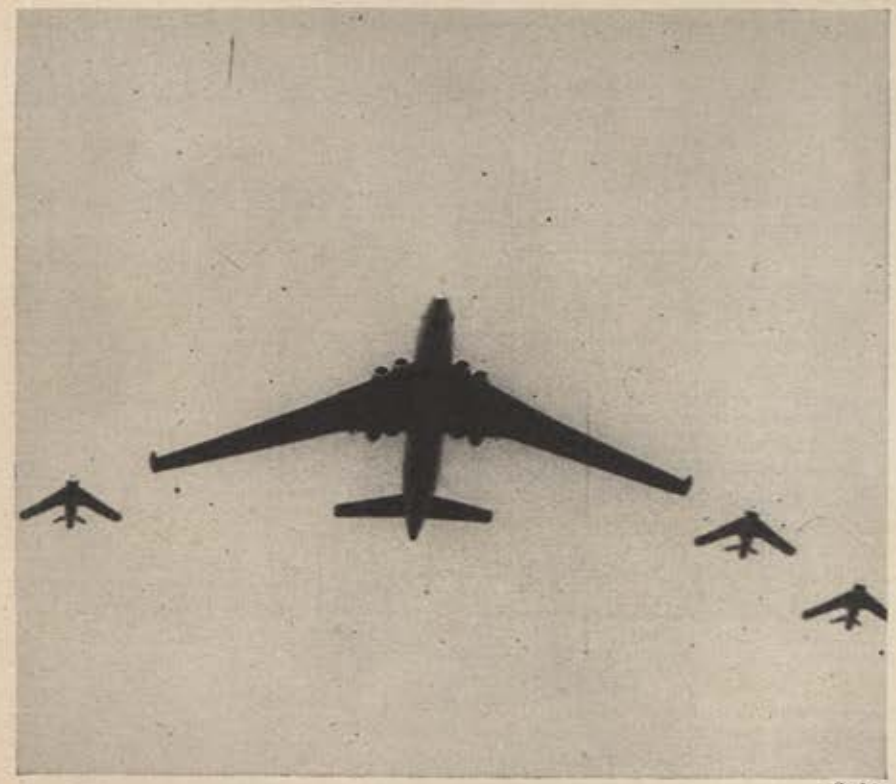


—Sovfoto

The combination of the two factors illustrated on this page, and the fact that they're known to be in Russian hands, makes this year's Air Force budget a little on the unrealistic side. The giant bomber at left, which West German sources report as outperforming our B-52, was publicly revealed in a May Day flyover above Red Square, Moscow. And almost exactly a year ago, it was announced that the Reds had exploded a "hydrogen device." The explosion of our own first H-bomb is shown below.

Here we can turn to Rep. Errett P. Scrivner (R-Kan.) who served as chairman of the subcommittee on Air Force appropriations within the House Committee on Appropriations. This subcommittee, in budget hearings this year, amassed testimony on the Air Force totaling more than 400,000 words. Representative Scrivner's evaluation of that material, as reported in his formal statement, probably was the most influential factor in House opinion on the Air Force budget.

In relation to the facts, Representative Scrivner got off to a bad start with what he called "two short references to the Soviet air potential."

For his authority on the relative numerical strength of the Soviet and US Air Forces he chose, for whatever reason, Gen. Lawton Collins, former Army Chief of Staff. Crediting General Collins, the Kansas legislator said:

"The Soviet Air Force has 20,000 planes, the US Air Force has more than 21,000 planes, and in addition thereto, as a potent part of our US airpower, we have the Navy and Marine planes of more than 10,000. We outnumber the Russians more than three to two. . . ."

Had Representative Scrivner selected the Chief of Staff of the Air Force as his authority for such a comparison, he obviously would have received quite a different answer. For General Twining was quoted a few days later on the floor of the Senate (by Sen. Burnet R. Maybank, D-S.C.) as follows:

"The principal problem of the US Air Force today," said General Twining, "is to stay ahead of the Soviet Air Force. The task becomes more difficult every day. The Soviet Air Force is advancing rapidly. It is by far the biggest air force in the world. In numbers of combat planes it far exceeds the US Air Force. In fact, the Reds have thousands more combat planes than the US Air Force, Navy, Marines, and Army combined."

General Collins, and with him Representative Scrivner, had fallen into the same trap which had ensnared the Truman Administration just two years before, and which this magazine exposed at the time (AIR FORCE, July '52). In both instances the *total* aircraft inventory of the US Air Force, which includes thousands of trainers, transports,

AIR FORCE BUDGET — BOX SCORE

Passed for Fiscal Year '54	$11,409,000,000
Requested for Fiscal Year '55	$11,200,000,000
Passed for Fiscal Year '55	$10,900,000,000

and other non-combat aircraft (including more than a few clunkers) was compared to only the aircraft *assigned to combat units* in the Soviet Air Force. Using this unrealistic comparison, you might arrive at the three-to-two ratio in favor of the US reported by Representative Scrivner. In terms of aircraft assigned to combat units, however, the score is closer to 20,000 planes for the Soviet Air Force and 12,000 planes for the US Air Force—about a five-to-three advantage for the Russians.

Representative Scrivner's second boner on the Soviet air potential was more pardonable, and can be chalked up as basically a case of bad timing. He chose to debunk reports of a new Soviet jet bomber on the premise that pictures of such a plane (published by *Aviation Week* magazine and widely distributed to Congressmen) were "phoneys," according to reliable intelligence sources. Regardless of whether these particular pictures were phoneys, as is possible, it was unfortunate for Representative Scrivner that, only three days after his remark, the Russians decided to show their new jet bomber in the May Day aerial parade over Moscow. This plane was officially reported to compare with our own B-52, still being test-flown. Commented General Twining, in remarks printed in the *Congressional Record*, "One American newspaper correspondent cabled that this bomber flew over Red Square at an altitude of only 250 feet. He said: 'It cast a shadow that seemed to extend from one side of the square to the other.' There is no question that the Reds were anxious for the representatives of other nations in Moscow to see their new bomber. . . . That they should expose their previously guarded secrets of aeronautical achievement at this time of international crisis is significant."

Manpower is a limiting factor of SAC

In his appraisal of the US Air Force, Representative Scrivner reported that his visits to SAC bases here and abroad had wiped out his previous skepticism of "the immediate striking power of our Strategic Air Command." This faith in SAC was a dominating factor in the apparent happiness of the Congress over the Air Force budget. No one will contest the point that SAC has great power and dynamic leadership. But even a casual inspection of SAC will reveal a frightening personnel problem which jeopardizes "immediate striking power." And the problem has been well publicized. As Francis and Katharine Drake reported in the July *Reader's Digest*, "The Strategic Air Command has lost 25,000 men and 4,500 officers this year, including some big atom-bomber crews. It is no secret that some of our newest planes have been grounded for lack of skilled mechanics to keep them in the air."

The Strategic Air Command can only be as powerful as it is combat-ready, and combat readiness is tied to experienced personnel, and therefore to the reenlistment rate. That rate is precariously low. SAC today is operating with a large number of recruits (including eighty percent apprentices in some career categories), and no military outfit —especially one dependent on technical skills—is really combat-ready when its ranks are filled with recruits.

"More defense for fewer dollars" was the order of the day in this session of Congress, although someone labeled it "less might for a mite less." Yet, the Air Force is on record that the high turnover of expensively trained personnel will cost the taxpayer more than $2 billion in the next year. The Air Force manpower problem—from the standpoint of both economy and security—might well have been an important defense issue before the Congress this year. Instead, it received almost casual attention, and many bills designed to improve the situation remain in the bottom drawers at the Capitol.

To be specific, the Congress raised the poundage ceiling on household goods which can be moved, at government expense, in a change of station; passed a reenlistment bonus; removed certain limitations on retirement rules; and provided for more family housing—all to the good. Lost in the shuffle were bills providing survivor's benefits, dependent medical care, dislocation pay, and, of course, an over-all pay raise for military personnel. And the family housing provided for the Air Force, although a step forward, fell ninety percent short of the military requirement.

Much was said during this session of Congress about the ability of the Air Force to achieve "increased fighting strength with fewer military personnel," as Representative Scrivner put it. Yet, H. Lee White, then Assistant Secre-

(Continued on following page)

tary of the Air Force for Management, stated the problem cogently, in testimony before the House Committee on Armed Services, when he said: "The Air Force cannot expand any faster than it can secure trained men in the hard-core skills. In other words, numbers of men is not the answer. We can only go as fast as our most short hard-core skills will let us. . . . The training pays off only if we can keep them beyond the first enlistment. Unfortunately, unless we do something to make the Air Force career more attractive, it does not appear that we will get enough enlisted men to reenlist to insure the quality that the Air Force needs."

Can the AF man those 137 wings by '57?

The reenlistment problem is such that, with the manpower ceilings projected, it is doubtful—certainly a question mark—whether the Air Force can retain enough trained airmen and train enough new men adequately to fill 137 wings with experienced personnel by the projected July 1, 1957, delivery date.

On the technical side of the airpower issue, it was reported, by Representative Scrivner and others, that the Air Force would be 100 percent modernized in aircraft by July 1, 1957. Air Force testimony before Representative Scrivner's subcommittee showed that "An aircraft is modern if it is capable of performing its assigned mission. It ceases to be modern if it is outmoded by the known advances of the enemy in aeronautical science, or if our advances present an airplane with a great increase in capability in its particular field."

On the average, military aircraft undergo a six-year obsolescence cycle. That is, a new plane purchased today can be expected to become obsolete during 1960. Aircraft considered "modern" at the beginning of the Korean war will no longer be modern on July 1, 1957. The Air Force program has been stretched out so much, by both Democratic and Republican Administrations, that at the projected production rate, many Korean vintage aircraft will still be in the Air Force inventory on that target date.

Lower production rates are now planned

The aircraft production rate established by appropriations of this Congress barely provided enough new planes to offset attrition and obsolescence factors and assure modernity in Air Force equipment. Lower production rates are now being planned (a twenty-five percent decrease from the present rate by August of 1955; a fifty percent decrease by February of 1956). Unless Defense Secretary Wilson fulfills his hints of increased defense appropriations for the 1956 fiscal year, the aircraft production rate will slip to the point where the Air Force will not be able to keep ahead of attrition and obsolescence, and will not be able to show that much talked of "100 percent modernity" on July 1, 1957.

So much for two of the basic elements of an Air Force—people and aircraft. The status of the third element—bases—is even more discouraging. Base construction for the 137-wing program, as testified to by both Air Force and Defense Department spokesmen before committees of the last Congress, has fallen far behind other major elements of the program. Considering the money available to the Air Force for its base structure, and the twenty-four-month construction lead time, this will be the situation on July 1, 1957:

Strategic Air Command will not have sufficient bases at home or abroad for adequate dispersal of its striking power to retaliate against attack. Air Defense Command will not have an adequate base structure to permit reasonable defense against attack. Tactical Air Command will lack both the bases at home and overseas to adequately support our surface forces in the event of war.

It is doubtful, at best, under present schedules, if the Air Force will have, by July 1, 1957, the base structure to adequately support its 137-wing program.

Yet, to those within earshot of Representative Scrivner's presentation to the House, it would have appeared that all was sweetness and light in the airpower arena.

In the effort, Representative Scrivner went overboard in an attempt to prove that "more emphasis has been placed this year on the defense of this continent."

He said: "The major portion of our protective and detective early warning radar net is completed. . . . Automatic radar stations in the far north are in operation. . . . The Air Defense Command—ADC—has a defensive network complete with communications, capable of locating approaching planes from any direction."

Yet, on August 4, Civil Defense Administrator Val Peterson told a Senate Committee it would be two years or more before a system of detecting enemy bombers would give "adequate warning time" to evacuate big cities.

Sprague Report urged more air defense

No responsible official has said that we can do better than down thirty percent of attacking aircraft—an impossible situation in atomic war. The Sprague Report to the Senate Armed Services Committee, presented in recent months, strongly recommended an increased investment for air defense. And its chairman, Robert C. Sprague, has since privately admitted his report underestimated the Russian attack capability.

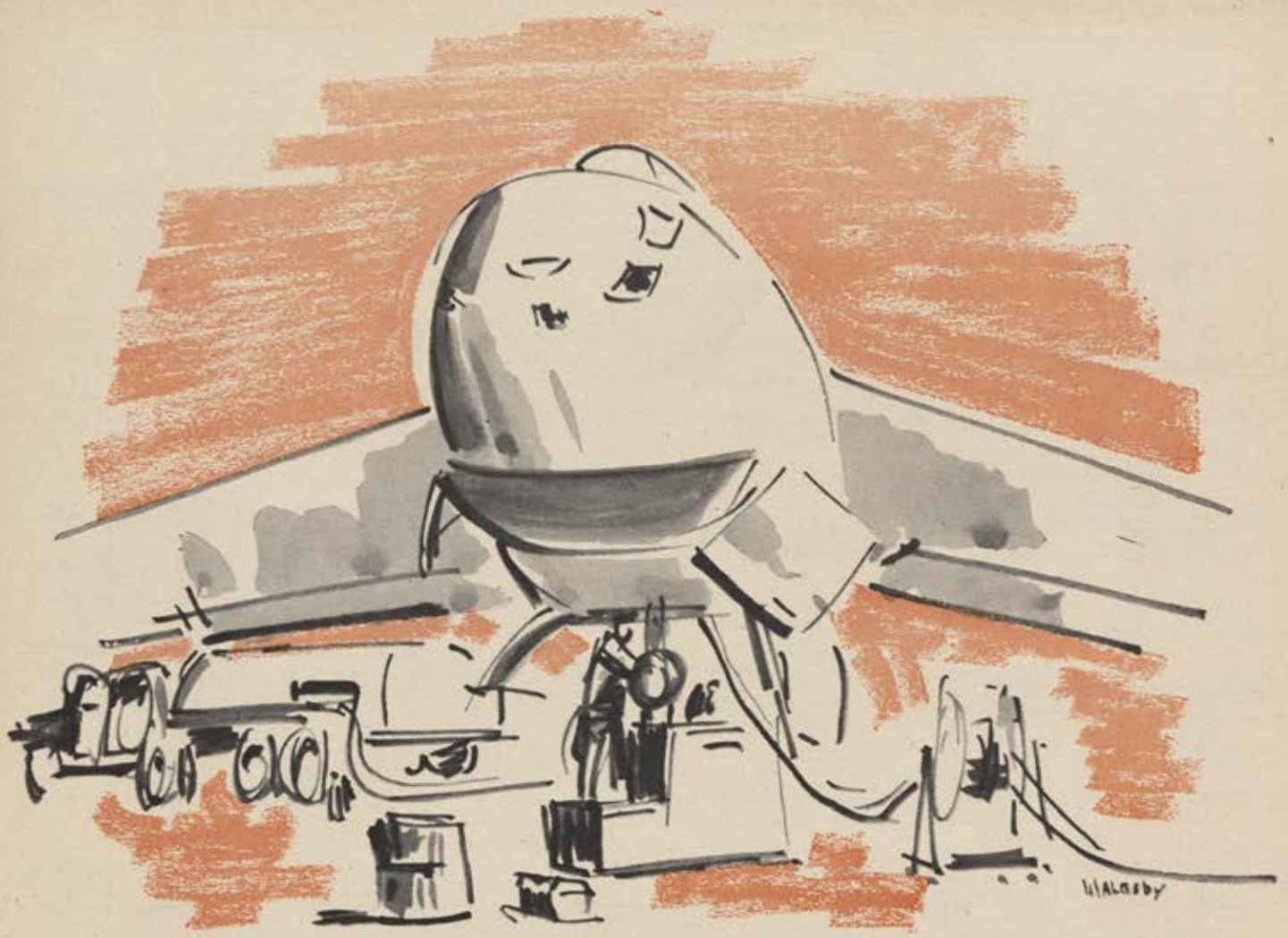
Establishment last month of the Continental Air Defense Command (under Gen. Benjamin W. Chidlaw, USAF) as an effort to unify our defense against enemy air attack was a long-overdue move. Yet, its effectiveness must come primarily through service cooperation since the Commander does not have command authority over the Army and Navy units assigned to his organization. This situation runs contrary to all principles of sound business management and sound military judgment.

For one reason or another, there was only token opposition to the Air Force budget in Congress this session. And there was happiness—in an election year—over the fact that a conversational brawl didn't develop. In fact, happiness was the order of the day.

Representative George H. Mahon (D-Tex.), explaining that the Army had expressed some unhappiness with its budget, but "like good soldiers, they have gone along with the team," summed it up like this:

"The fact is that generally speaking the services are happy about the budget submitted to the Congress this year. I cannot vouchsafe that the fact that the services are happy means that everything is just as it should be. It might very well be, if the services were quite unhappy, we might have a healthier and a better situation. I am not vouching for the interpretation that we should give to that situation. I say the services are happy."

The writer cannot vouchsafe, in the Congressman's language, that the services are happy with the new defense budget, but if so, it's worth noting that the men of the Kremlin also have reason to be happy these days.—END



There's much activity on the flight lines as the planes are prepared for the trip. Here, one of the B-47s gets ready to go.

TDY

JOIN SAC and see the world. H. Stokes Walesby didn't exactly join, but accompanied SAC—with his sketch pad—as the 305th Bomb Wing flew from the States last September for a ninety-day tour of TDY in England. The move, from MacDill AFB, Fla., to Brize Norton AB, England, was part of SAC's rotational training to accustom crews and support groups to varieties of climate and weather. Walesby, a staff artist for the Baltimore *News-Post*, here gives his impressions of the trip from MacDill to England. The 305th, commanded by Col. Elliott Vandevanter, Jr., made the move in Boeing B-47s and KC-97 tankers.

Moving a combat-ready bomb wing from one spot to another is an intricate job, involving many tons of cargo and thousands of men.

Reversing the usual procedure of bringing a bicycle back from England, these men are loading one aboard a B-47 jet before the trip. It will come in handy during the stay in Britain.

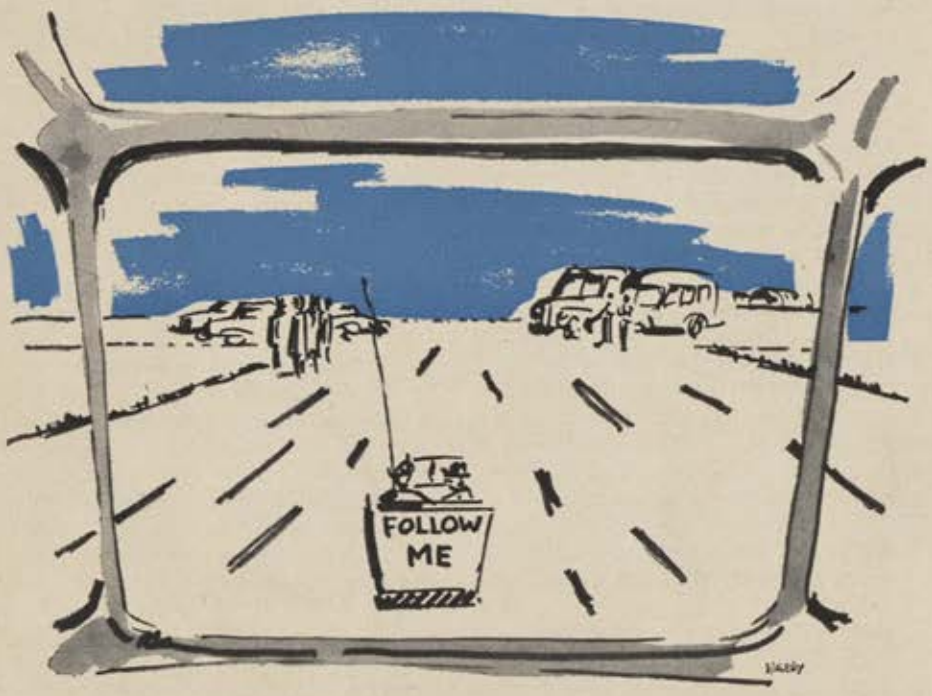
"Mae Wests" are standard issue on a long over-water flight. Here two crew members check theirs to see that the CO-2 supply is OK and that there are no leaks.

Each member of the flight received four "flight lunches" during the long trip. As usual, there were the normal likes and dislikes, so swapping became quite a pastime on the KC-97.

The heavily loaded and slower KC-97s took off many hours before the B-47s, but were still overtaken enroute and arrived at their destination in England much later.

The baggage-checker listens to many tales of woe, but each man is allowed to take just so much and that's it! In a movement as big as this, the pounds add up.

Enroute, the KC-97 flight engineer is the busiest man on the plane. As always, he keeps an eagle eye on all the flight instruments to see that all's going well.



The "follow me" jeep leads the plane to its assigned parking space and a welcome by British Customs and the AF reception team. The end of the trip, but not the end of TDY.

THEY ESCAPED FROM RED KOREA

The exclusive stories of two who got out

THIS magazine has published a number of articles by and about POWs in recent months, but not until now anything like the following two narratives, which the Air Force has just declassified. We felt the actual words of the escapees as they were debriefed by AF intelligence officers were more dramatic than anyone else's version, and for that reason we present the stories as they were first told.—The Editors.

The afternoon of April 24, 1951, a USAF B-26 left its target near Chorwon, North Korea, and headed for home. The pilot, Capt. William L. Cara, saw black smoke pour from his left engine. Then, with a loud explosion, the aft section of the engine nacelle blew open. Figuring the fuel tank had exploded, Cara performed his "engine-fire-in-flight" procedure and feathered the prop. When the fire got worse, he ordered the navigator, Capt. William R. Fitch, and the gunner to bail out, and followed them. Cara and Fitch were rescued by the same copter some hours later. At the time of their Escape and Evasion report, they had no word on the gunner. The following narrative is the navigator's account of his escape.

I HIT on a steep slope, at the end of a long oscillation, with great force. The force broke both bones of my left leg, halfway between the knee and ankle, and stunned me. Scrambling out of my chute, I crawled down the hill on my stomach for about thirty yards from the chute and hid in a ditch. Enemy voices came over the hill and I took out my .45 and waited for whatever might happen.

The pain of my broken leg was intense by now so I opened my first aid kit and took out the only morphine syrette that was in it. As I pulled the plastic cover off the needle of the syrette, the needle stuck in the plastic cover and pulled out of the tube. I lost about one-fourth of the tube before I could pull the needle out of the plastic and get it attached to the tube again. Finally succeeding, I pushed up the sleeve of my left forearm and gave myself what was left of the morphine. I then stuck the needle in the clothing on my shoulder, so that an American medic would know I had received a shot of morphine.

The enemy soldiers searched around and talked things over, but stayed hidden due to our aircraft coming into the area. The aircraft circled but did not strafe and the soldiers remained hidden or moved only when an aircraft was not approaching.

I took out my pilot's camera and discovered it was smashed so threw it aside. I found I still had my 16mm camera attached to my wrist so I took a few pictures of the area as I waited. I picked up a couple of our Psychological Warfare leaflets and read them to kill time. I was confident I would be picked up soon.

The aircraft continued orbiting so I took out my signal mirror and signaled a couple of them without apparent success. In between times I checked my evasion equipment.

At 1620 I checked my watch, finding I had been on the ground twenty minutes. My leg was still hurting a great deal so I propped it up, in several positions, to make it more comfortable, but with no success.

At 1645 a North Korean soldier surprised me by approaching from a direction I had not anticipated and aimed a PPHS machine gun at me. He spoke in English "Surrender—North Korea." I nodded my head "Yes." He appeared very young and wore a wool OD color uniform. He took my .45 pistol and, seeing my leg was broken, began to search my pockets.

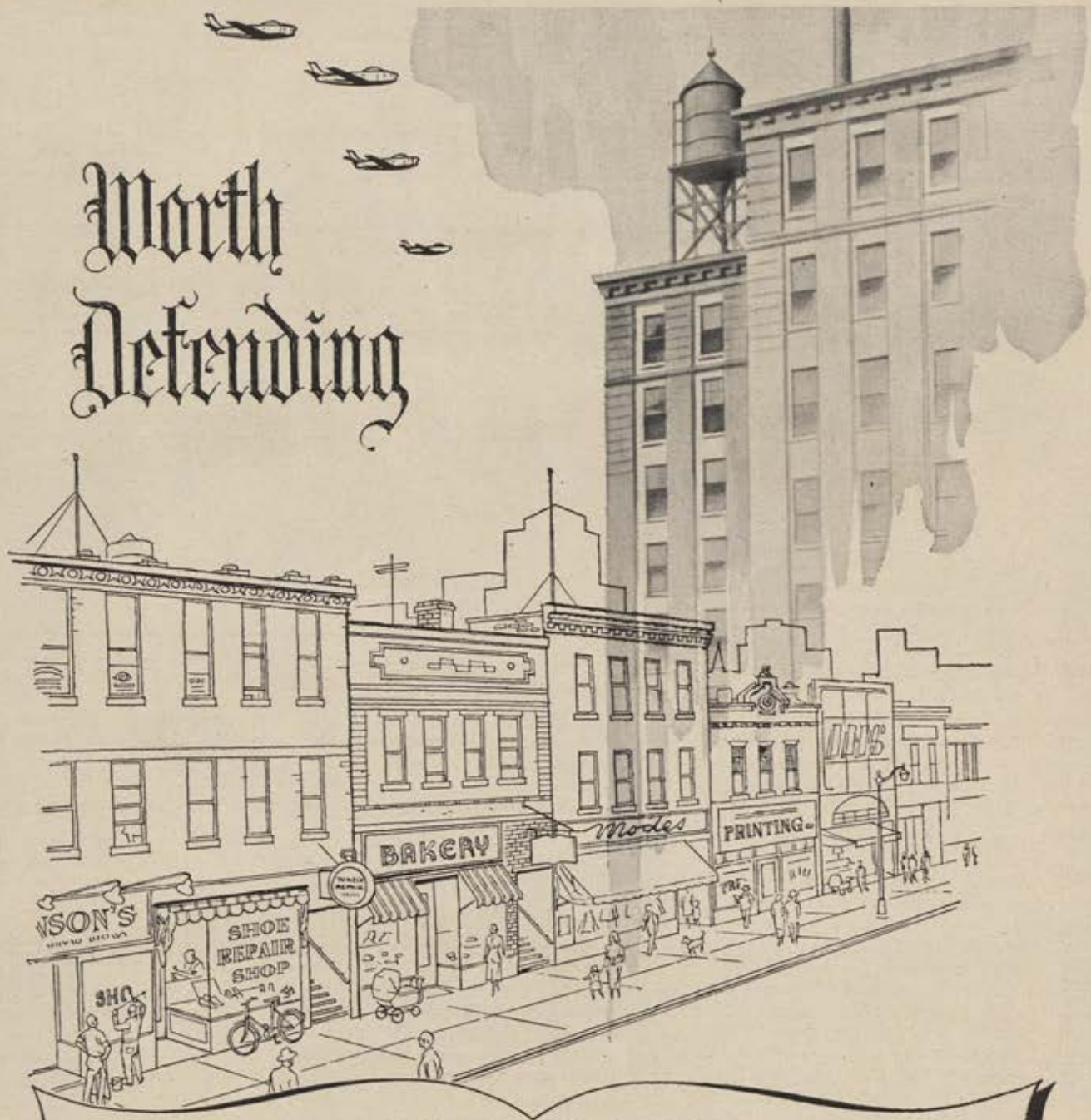
Two other soldiers appeared while he searched me. One was a North Korean officer about twenty-four years old and the other an enlisted man in his teens. All had PPHS machine guns. They searched my outer pockets only, taking both cameras, wrist watch, pistol, and shoulder holster, a can of "C" rations, Mae West, escape kit, plastic water bag, two first aid kits, and a shaving kit.

After the search they motioned me to follow them, which I attempted to do by crawling. The officer came back and hit me in the right thigh very hard with the butt of his machine gun trying to make me hurry. All three were extremely nervous and apprehensive of the aircraft, so the first one who had approached me remained with me and the other two went on up the hill. The one that was with me yelled something to the other two and they yelled back words which brought a very startled expression to his face. I was still crawling, trying to follow the soldier up the hill. The young Red soldier hesitated and then aimed the machine gun at me, hesitated again, shook his head and turned away.

The North Korean officer yelled again and then a third time, and the kid took aim at the middle of my fore-

(Continued on page 43)

Worth Defending



FREEDOM OF ENTERPRISE

In a free society a man may work for himself or work for others . . . own his own small shop . . . or build a factory.

In a totalitarian state he is a mere cog . . . a number on a card, slotted into a master-plan of iron control and regimentation.

Freedom of enterprise should be everyone's right . . . the right to choose the work one is best fitted to do . . . to benefit freely from the results of one's own creativeness . . . to reach toward the stars. Most assuredly, freedom of enterprise is *worth defending.*

CA54-17UST

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Here a Sperry Field Engineer checks with an Air Force Observer on the operation of the Sperry K Bombing Navigation System.

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head and mumbled something like an apology. At the same time I spoke very softly and slowly, "No—you do not want to do that." He was standing very close to me at this time and I kept looking at him straight in his eyes. At the same time I grabbed the gun barrel and yanked. This caught the boy by complete surprise and he fell on top of me into my lap. He did, however, hold onto the gun and succeeded in firing about twenty rounds into the ground beside me.

The other two came running back down the hill as he began screaming. When they were about ten feet away I aimed the gun at them, with the kid still holding onto it, and pulled the trigger, but it did not fire. It was jammed. I grabbed the bolt but the returning young Red soldier got to me before I could get a new shell into the chamber. He attempted to fire at me, but since I weigh 190 pounds and the boy I was wrestling with only weighed about ninety pounds, I could handle him easily, so I kept shoving him in line of fire. The soldier hesitated to fire at me for fear of hitting his buddy.

The soldier moved closer, trying to get a shot at me, and I soon had my chance, as he bent down, to kick him in the chin with my good foot. He fell on top of me, so I grabbed him with one arm and held the other one in my other arm. As they struggled to stand up I banged their heads together several times. They finally succeeded in pulling me and themselves into a standing position, but I held them, used them as a cover from the officer who came running down, holding my .45 pistol.

I kept watching the officer's eyes for indications as to when he would fire. Several times he took aim but each time I shifted one of the soldiers, who were very frightened and groggy from the head-butting and were offering lessening resistence, into his line of fire.

I realized this could not go on much longer and the officer finally fired at my head; I felt the bullet crease the top of my head as I attempted to duck. I figured I had better play dead so moaned loudly, dropped the two soldiers, grabbed my head with both my hands, and spun to the ground.

Just before I hit the ground the officer fired another shot. The bullet entered the left side of my electric flying suit, passed over the top of my chest and nicked the skin on my right shoulder, leaving only a superficial

(Continued on following page)

wound. I lay face down on the ground and played dead. I heard the Red soldiers leave hurriedly, apparently highly frightened at the low passes of the air cover, who were watching this scramble but could not fire.

After I was sure the soldiers were gone, I crawled down the hill to a ditch and followed the ditch down to a drainage wash that ran down the side of the hill. I rolled quickly over the ditch bank and crawled to the bottom of the hill. Above I could hear many rifle shots and at least one .30 caliber machine gun firing at the circling aircraft when they came within range. The Americans were not strafing the area as they had lost sight of me when I went down the hill.

I realized the copter could not land on the hill so I crawled over a dyke and into a rice paddy. I then hid behind the dyke, with the dyke between me and the hill from which the soldiers were firing.

After a short rest I decided to move out into the center of the rice paddy, so I lay on my back and pushed myself out into the middle. At this point an aircraft spotted me and made a pass. As it passed I pointed my arm to the hill.

Immediately four B-26s, followed by two F-80s, made passes at the top of the hill, strafing it heavily.

I had been on the ground an hour and a half total time, but only about five minutes in the field when I spotted the copter for the first time.

As the copter came over to land I waved him off as there was still some shooting on the ridge. The copter pulled out and four or five more passes were made on the ridge by my cover aircraft. The copter came back and settled down about ten feet from me and medical corpsmen jumped out and lifted me into the copter.

A real war broke at this time. Our aircraft were strafing every hill all around us and the enemy was firing at us like mad. The copter, however, did not get hit. There was a total of ten aircraft at this time strafing the area.

We were escorted back to a forward area hospital where the copter dropped me off about 1800 hours.

Harold B. Kinison, now an Eastern Airlines pilot who lives in Levittown, N. Y., was an AF 1st lieutenant and pilot the November 1950 day his F-51D was shot down by ground fire in North Korea. Hit after a dive-bombing mission on Kanggye Air Field, Kinison bailed out in the hills southwest of the target area. In his own words, here's what happened:

STILL oscillating, I struck the ground with great force, injuring my right leg, receiving numerous cuts on head and hands, and numerous bruises. Members of my flight later told me that I was unconscious on the ground for nearly an hour. I do not remember losing or gaining consciousness. The chute caught and collapsed against a small tree, but other flight members could easily see it from the air. It could be seen from the valley also. Occasionally someone would fire at the chute from the valley. Members of my flight said people were attempting to approach the area where the chute was located and they dived at them. The people scattered and hid and would not approach while planes were there. It could not be determined if these people were soldiers or not, however, with the occasional rifle fire at the chute it would indicate that soldiers were in the area.

After recovering I quickly released chute harness, checked condition of my gun, and ran as fast as my injured leg would allow, stopping to listen for pursuit every few minutes, for about an hour before stopping to rest. During this time I was always working higher up the hill.

Deciding I had worked high enough up the hill and away from immediate pursuit, I decided to rest and analyze the situation. A thorough check of my gun was made and I found dirt in the barrel. Wounds were checked over and I looked at my leg to see if it needed bandaging. Getting out compass and orienting myself, I decided to get out of the area as soon as possible. The heaviest wooded area was to the north on top of the mountain, so for best cover I headed in that direction. The next two hours were spent working cautiously up and over the mountain, where a wide firebreak ran along the top of the mountain. I ran across this and started working my way down into a wooded area along the other side of the mountain.

At this time I heard voices and shouts from search parties apparently coming up both sides of the mountain toward the crash. Realizing a search was being conducted I became even more cautious and continued traveling, seeking areas that afforded the best coverage. In doing so, my direction of travel was around the mountain north and down towards a river.

I was now on the opposite side of the mountain from where the parachute and crashed plane were located. Upon several occasions I was forced to travel through heavy grasses and scrub brush where I took the precaution to avoid leaving a trail by selecting each step and at times straightening grasses and brush behind me.

Soon I came to an open field and, realizing that darkness was only about an hour away, I decided to hide along the edge of the field before further traveling. Following a path along the perimeter of the field down the hill for a way I decided to check to see if anyone was on my tail, so I left the path and, staying about fifteen feet off the path in the bushes, I reversed my course and backtracked up the hill to where I started down. A good armful of branches was picked up on the way up the hill to be used for camouflaging a hiding place. Finding a good point to observe the path, I covered myself with brush and the branches brought along and settled down to wait for darkness and to watch for someone tracking me. I suppose the camouflage was pretty good as four pheasants landed fifteen feet away.

A few minutes after getting settled, I heard voices coming from the direction of the search and coming closer. Soon a soldier, with a rifle, came nonchalantly down the path talking to himself. He walked on down the path and gave no indication of searching this area. While hiding here I pulled out my "Blood Chit" with the thought of showing it if discovered by a civilian. At the same time I cut a piece of my undershirt off to use as a white flag in case of discovery by a soldier. I remained in this hiding place until darkness, during which time I checked over my cloth maps and formulated plans on possible routes back to a UN-controlled area. I decided a helicopter would not have the gas range to reach me so made plans to cross the Tongnogang River and go south as far as I could and wait advancing UN troops.

I remained in hiding until I could no longer hear voices and it became dark enough to hide my movements. Some of the preparations I made before starting the journey any further were: (1) mud was rubbed over my face and forehead, (2) using a large dark red bandana handkerchief, a covering was made for my head and ears —this served as both a protection from the cold and to help camouflage my-

(Continued on page 47)

RCAT's

Radio Controlled Aerial Targets—called R-CATS—are now the standard targets used in gunnery training of fighter pilots and anti-aircraft and airborne gunnery crews of the Armed Forces. These drones are maneuvered from the ground to simulate the attacks of an enemy; aloft they are an inexpensive substitute for "the real thing". Precision-built R-CATS are supplied in quantity to the U. S. Army, Navy, Air Force, and National Guard by RADIOPLANE COMPANY. They are one more product of the versatile Northrop team which has built the famous long-range Scorpion F-89 interceptors, Snark XB-62 pilotless bombers, range finders for Army tanks, and other materiel constructed to rigid specifications of the U. S. Department of Defense.

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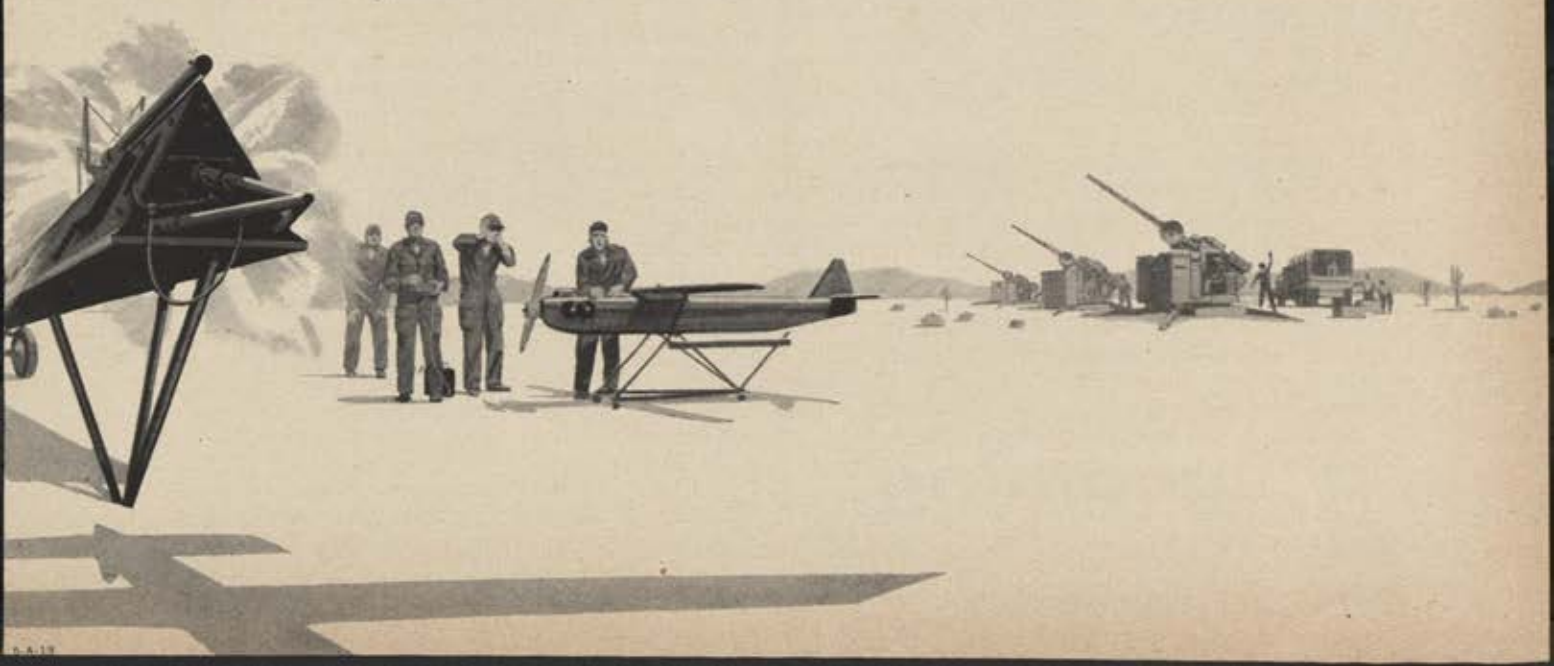

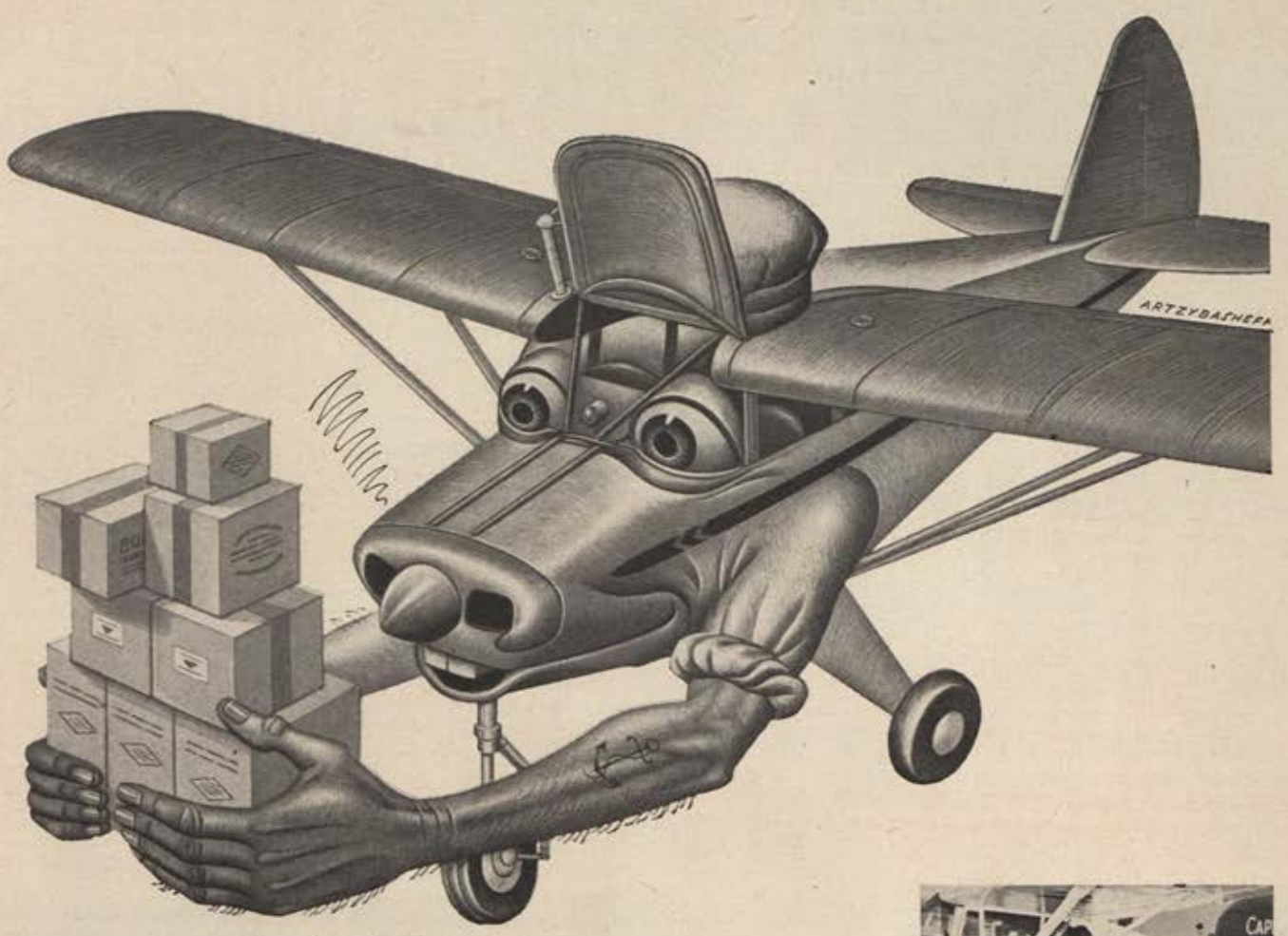

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self, (3) a recheck was made on the amount of ammunition on hand, placing it in a more accessible pocket, (4) I turned up the collar on my flying suit, (5) a complete rearrangement of equipment was made by placing articles in more accessible pockets, (6) I studied the maps I had in the E & E kit plastic container. At this time I missed the large plastic water bag that I had discarded from the C-1 vest at my base and realized that getting and carrying pure water was going to be a problem.

Keeping low to avoid silhouetting myself on the skyline, I moved across a large open field leading down to the Tongnogang River. I took special pains to avoid houses, always passing as far away from one as possible. This was all done in a low crouch and crawling most of the time. Several times I heard dogs barking, but none bothered me nor did it appear the dogs knew I was there. In passing one house I observed carefully the area as one Korean was chopping wood outside with several voices coming from within the house. After a while no one came out so I continued on down toward the river.

Moving only when a cloud came over the bright moon, I crawled on toward the river, following edges of fields and rice paddies. Several times I stopped at straw stacks trying to crawl up into one, but they were packed so tight it was impossible. The water in the rice paddies was frozen solid and I could only keep warm by moving continuously. During this time a train pulled out of a tunnel and crossed a trestle over the river. Upon reaching the river I made my way toward this trestle with intentions of using it to cross the river. I reached the river and followed its bank toward the trestle. About 2200, as I carefully observed the trestle for guards, another train came from the north, crossing the trestle and entering the nearby tunnel. No lights were observed on either train but both blew the whistle every thirty seconds or so. Having seen no guards on the bridge, I continued on until I was under the bridge going toward the other side to get up the river bank.

As I started out from under the bridge I saw three soldiers looking down, looking down toward where I was standing. Avoiding any sudden movement, I sank down into a crouched position and stayed this way for at least thirty minutes as the soldiers talked things over and spit down in the area about me. Someone called from the other end of the bridge and

(Continued on following page)

as the soldiers ran in that direction I jumped up and ran down the sandy edge of the river toward the direction I had previously come. Realizing my tracks would be very obvious, I stopped after a while and listened for pursuit and to rest. Apparently, no one had seen me and another train came out of the tunnel. Growing very thirsty, I finally decided to drink out of the river as I had no container in which to mix the halazone tablets. (I now realize the E & E kit could have been used as a water bag.) I rested and then worked my way slowly up the river away from the trestle.

During this time the road on the opposite side of the river was in clear view in the moonlight and I observed Chinese troops and equipment moving constantly until 0300. All vehicles had lights on and troops were organized, in high spirits, and well spaced. There were about eight to ten thousand troops with artillery, trucks, and one heavy self-propelled gun carriage or tank. This activity was the main reason for my being very cautious and causing me to decide to go back into a forest area in the hills to seek a better hiding place or to allow me to travel during the day. Making my way back to the mountains, I found a straw mat bag in a field which I intended to make into a coat for protection against the ever-increasing cold. About 0500 I had worked my way to a point on the mountain that afforded a good view of the river, all roads, and had heavy concealing foliage.

About 0530 a single engine liaison plane that was not one of ours passed near going north. Soon after that I heard people's voices and, with growing light of day, I saw a house about 200 yards away in a small draw above me. About 0630 a group of horse cavalry (approximately forty) came down the road. There was a great deal of cheering from the people as they passed. All traffic ceased after this. No more cars, trucks, or troops were seen on the highway the rest of the day. Between 0800 and 0830 a flight of F-51s came over and began searching the area where my plane had crashed. The planes continued searching for almost four hours, going down into the valleys and flying very low all over the area. After a plane had passed and was headed away it was followed down the valley by volleys of rifle fire from troops who were well hidden in houses and trees in the valley and on the sides of the hills. The same procedure was followed each time a plane came over. No firing at the planes was ever done as the plane approached; always as it flew away.

Between 0930 and 1030, while the planes were searching, a jeep started up the hill from the valley with a load of soldiers on it. Each time a plane would apprach, the jeep would stop and the soldiers would disperse and crouch down under a bush or limb. As soon as the plane passed they would jump back in and the jeep would continue on up on the hill. This process took the jeep almost an hour before it reached a spot where six or seven soldiers dispersed and began a search. Two of the soldiers in this search passed above me on the mountain.

About noon the aircraft left the area and immediately troops became visible down in the valley, and the search party continued combing the area more in the open. One soldier who searched below me soon gave up and went up on the mountain, passing near my hiding place.

I became more confident in my selection of a hiding place and due to the large number of troops in the area, plus the search party, I remained lying down on my back, partially camouflaged with grasses and pine boughs waiting for nightfall to travel.

It is possible that the enemy search

(Continued on page 51)

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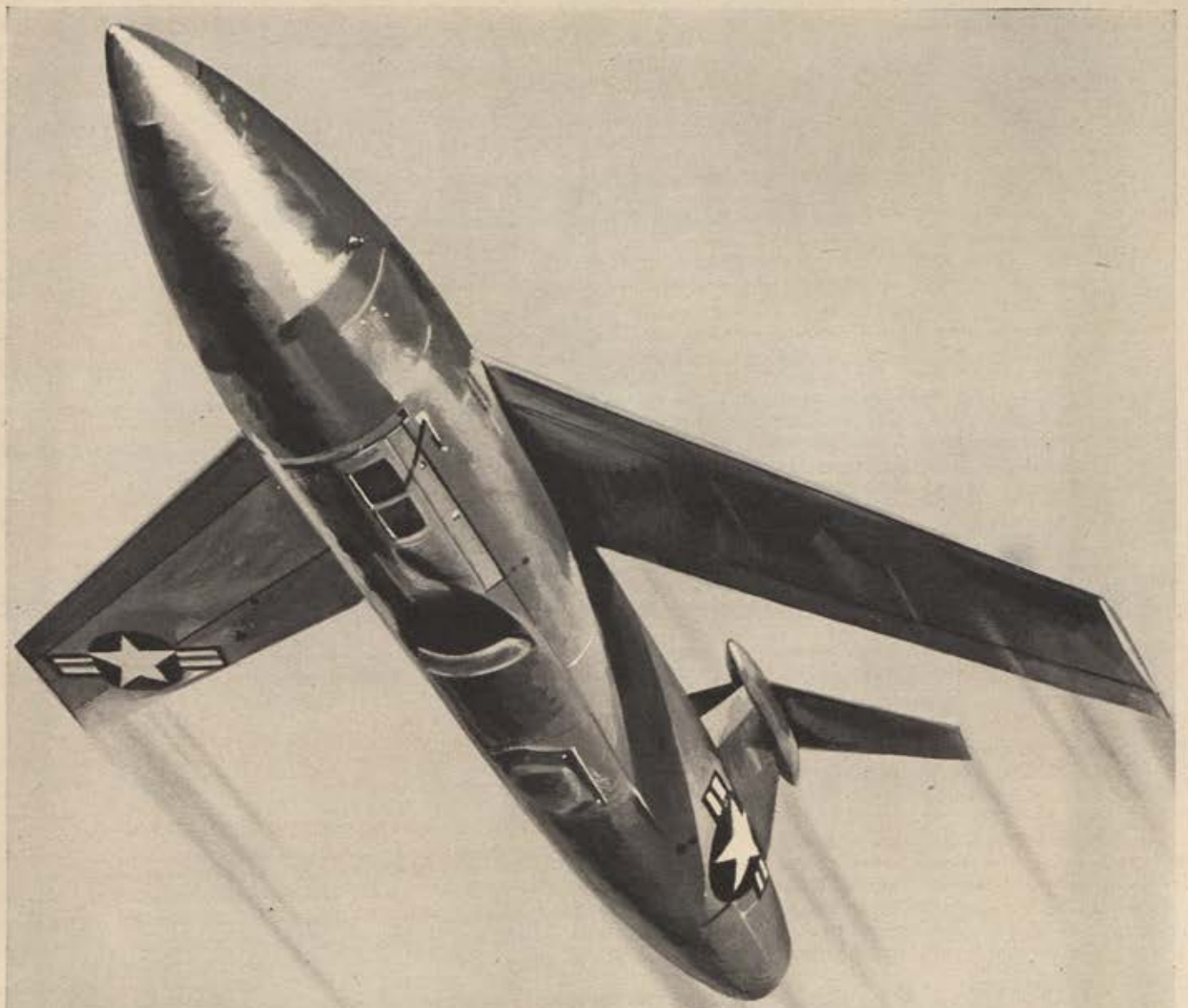

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party saw my attempts to signal the searching planes by a glimpse of the reflection because two soldiers came back to the area where I was hiding and one was posted about 300 yards across a little ravine from me. The other soldier began to search the area and I soon lost trace of him so I believe he hid in the area. A third soldier came over the mountain directly above me and began searching, finally coming to within fifteen feet of me, where he stopped and began to systematically look the area over and listening carefully. I watched him through my camouflage, noting his action and dress. He was carrying a PPHS Russian-type machine gun. This soldier stayed around looking and listening for thirty minutes, finally moving off as aircraft again were heard approaching the area.

The aircraft were two F-51s, and as they began to search, both flew directly above me about 200 feet. In a few minutes I spotted a helicopter following them, approaching from the south up the valley.

Quickly taking stock of where the enemy soldiers were, and figuring the best route to a cornfield above me on the side of the mountain, I cautiously and hurriedly made my way from my camouflaged position, with gun in one hand and my only flare in the other, to the edge of the cornfield. In the brush along the edge of the field I hid, waiting until I could see the F-51s again approaching this area. As soon as the aircraft came within sight, I rushed out into the middle of the field, lighting the flare as I ran, and jammed it into the ground. As soon as I was positive that the flare was lit, I turned and began running back to the edge of the field, hurried on as two rifle shots rang out. The dirt flew as one bullet hit to my right.

The F-51s saw the flare and began making passes down to about fifty feet above the flare. Immediately I stood up waving my arms and the large red bandana handkerchief. The F-51s rocked their wings in recognition of sighting me. The helicopter circled the area and began letting down in the field by the flare. As soon as the helicopter was about 100 feet off the ground I jumped up from the bushes and ran out towards it. As I approached the helicopter I heard two or three more rifle shots but did not see them hit anything. As the copter settled I was waiting for it. It was about 1620 hours. The paramedic jumped out and helped me in. The copter pilot ascended rapidly and headed south for the hospital and treatment.—END


TOMORROW'S AIRCRAFT One step closer
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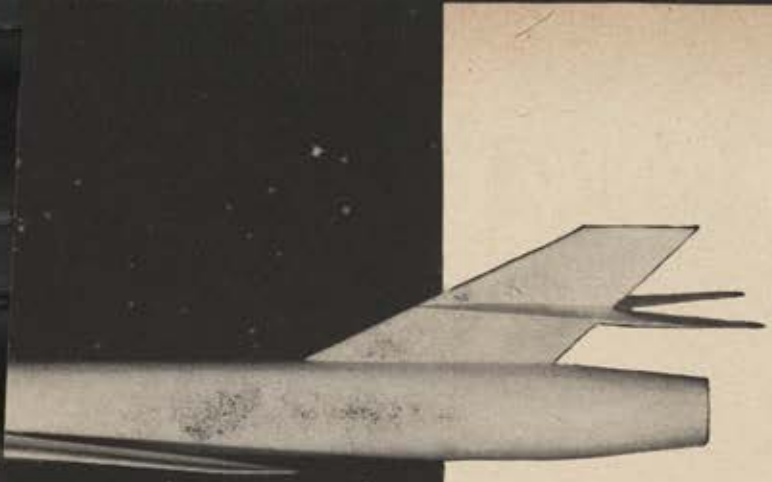
on unseen aircraft



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A STATUS REPORT

Where ★ ★ ★ ★ ★ THE RESERVE Stands Today

By Maj. Gen. William E. Hall, USAF

Assistant Chief of Staff for Reserve Forces

About the Author

When General Hall received his first star in 1943, he was the youngest brigadier general in the Army. His assignment then was Deputy Chief of Air Staff at Hq., AAF. A 1929 graduate of the US Military Academy at West Point, he began his flying career as a member of a Pursuit Group guarding the Panama Canal in the early '30s. In 1944, he was appointed Chief of the US Mission to Bulgaria and followed this with duty as Deputy Commanding General of the 15th Air Force in Italy. Following V-E Day, General Hall returned to the United States and served as the Air Member of General Eisenhower's Advisory Group. In 1947, he was sent to Turkey as Chief of the US Air Survey Mission to determine how US air could be used to make the Turkish Air Force an effective fighting organization. He served as Director of Intelligence for the Commander-in-Chief, European Command, in Berlin during the blockade and airlift. He was Commanding General of the 4th Air Force at Hamilton AFB, Calif., in 1951, and then became Vice Commander of the Continental Air Command at Mitchel AFB, N. Y., in 1952. He was assigned to his present office on September 14, 1953. Born in McAlester, Okla., forty-six years ago, General Hall is married to Marguerite Higgins, the globe-trotting correspondent for the *New York Herald Tribune*.

A GOOD hard look at the Air Force Reserve Program is now in order. Just a year ago the Vice Chief of Staff, USAF, approved twenty-two specific recommendations designed to heighten the prestige and effectiveness of the Reserve forces.

These recommendations were made by the Reserve Program Review Board, of which Lt. Gen. Leon W. Johnson was chairman. They were based on a painstaking study of existing policies and practices.

The Air Staff is aware of the compelling need for building Reserve forces that will be equal to any national emergency. In this era of superweapons, the regular Air Force must have at its shoulder well-trained and equipped Reserve fighting and support units, plus individuals with high skill levels who can effectively augment the standing force in a period of mobilization.

Maintaining an adequate Reserve is never a simple problem. In addition to the normal difficulties, the Air Force a year or more ago was confronted by the fact that its Reserve elements had been wholly disrupted by the Korean war and had to be reconstituted. It was in this atmosphere that the Johnson Board's report was approved last fall.

Since then, what significant changes have been made?

What will be their effect on the Air Force as a whole?

How has Reserve service been made more attractive, convenient, and useful?

The program now in operation is not in any basic sense new. In fact, the Review Board clearly warned against over-frequent changes of direction. But the program has been streamlined, simplified, and rendered far more realistic.

One highly significant outcome of the Board's study was the establishment within the Air Staff of the Office, Assistant Chief of Staff for Reserve Forces. This took place in October 1953. It gave top priority to the maintenance of a strong Reserve and new stature to the program. The author was named Assistant Chief of Staff for Reserve Forces and charged with directing the development of the Air Force Reserve and the Air National Guard. This office, moreover, was given membership in the Air Force Council, highest level policy-making body in the Air Force, and in the Budget Advisory Committee.

Field administration of the Reserve Forces was likewise strengthened. Continental Air Command, headed by Lt. Gen. Leon Johnson, was made, in effect, the Reserve Command of the

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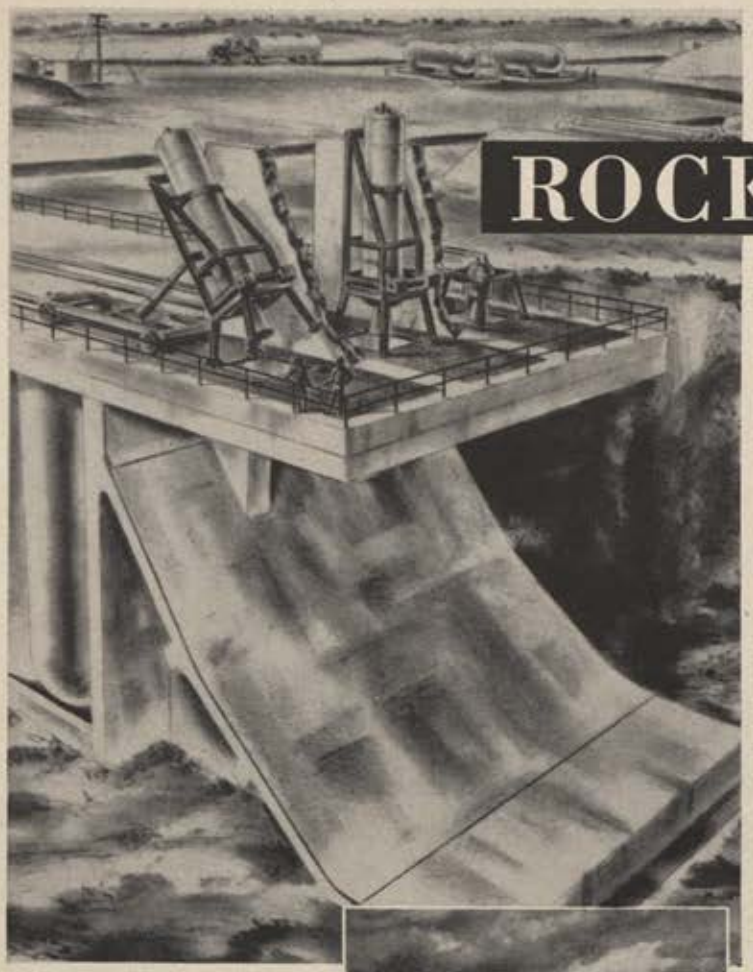

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Enlist to fly in the U. S. Air Force

Air Force, with year-round responsibility for administration and training of the Air Force Reserve, and supervision of training of the Air National Guard. Training of the Reserve is carried out through the First, Fourth, Tenth, and Fourteenth Air Forces.

Since the Air National Guard is presently abreast of its current strength goals, the principal future expansion will occur in the Air Force Reserve. As now constituted, the Reserve is composed of the following five elements: (1) Flying Units; (2) Support Units; (3) Air Reserve Center Trainees; (4) Mobilization Assignees/Designees; and (5) Extension Course Trainees.

Today, there are some 266,000 Air Force Reservists not in active service, of whom about sixty-three percent are receiving training in one or another of the above programs.

Flying Unit Programs

During the past two years, considerable growth has taken place in the Reserve flying wings. Twenty-three of the ultimate thirty wings have been activated, with 11,000 Reservists assigned to them thus far. This number includes 4,200 officers, of whom 1,800 are pilots, and 6,800 airmen. By the end of Fiscal Year 1957, flying wings will require some 49,000 officers and airmen. There are nowhere near enough airmen in the Reserve now to fully man the units, so the principal mission of the moment is to build the groundwork to accept the obligated Reserve airmen who will go off active duty during and after Fiscal Year 1956.

Of the twenty-three wings activated, six are fighter-bomber units, nine troop carrier, two tactical reconnaissance, and six pilot training. They use the same Tables of Organization and Tables of Distribution as similar wings in the Active establishment.

A total of 1,731 aircraft will be needed eventually to equip the flying wings. There are now 460 aircraft on hand, an average of twenty per wing. Jet planes are being phased into the fighter-bomber units and it is hoped that by mid-1956 they will be one-third equipped with jets.

Troop carrier wings have been equipped with C-46 aircraft, while multi-engine pilot training wings have received new C-45 aircraft. Fighter-bomber, single-engine pilot training, and tactical reconnaissance units have been provided with T-6, T-28, F-51, and B-26 propeller-type planes, plus T-33 and F-80 jet types. It is expected that the twenty-three existing wings will be a hundred percent equipped by Fiscal 1958.

The flying wings are administered by permanent party personnel of what are called "Afftraks"—AF Combat Training and Flying Training Centers. These centers are located near large population concentrations: namely, Boston, New York, Buffalo, Wilmington (Del.), Cincinnati, Pittsburgh, Portland (Ore.), Kansas City, Chicago, Indianapolis, Miami, San Francisco, Los Angeles, Detroit, Minneapolis, Milwaukee, Atlanta, St. Louis, San Antonio, Houston, Dallas, Brooklyn, and Memphis.

About half the wings are at Air Force bases, the remainder at municipal airports. One of the factors which heretofore retarded the Reserve program was the lack of adequate facilities. This is fast being overcome. In Fiscal 1954, some $18,000,000 of new construction got under way at twelve airfields. Construction included land clearing, warehousing, airfield pavements, fuel storage tanks, utilities, hangars, and administrative and training facilities.

While ConAC has the responsibility for training these tactical Air Reserve units, the wings are earmarked for assignment to major air commands in event of mobilization. These are known as "gaining commands" and are responsible for providing ConAC with training instructions for transmission to the wings.

To be eligible for training in the flying wings—as for nearly all Reserve membership—personnel must have had prior military service. The only exception to this policy has been a provision for enrollment in FY 1954 of 14,000 airmen without prior service —and 5,000 annually thereafter—who want to begin training before being called to active service and to be assured of enlistment opportunities in the Air Force.

Combat Support Wings

Technical units of the Air Force Reserve are scheduled to train at the same locations as the flying wings. They are administered by AF Reserve Combat Support Training Centers. Two combat support wings have been activated to date.

This phase of the Air Force Reserve Program is slated for vast expansion. The authorized force structure of the Support Unit Program calls for two Air Depot Wings; nine Aerial Port Squadrons; twenty-seven Aviation Engineer Battalions; four AACS Squadrons; five A/C Erection and Storage Squadrons, and certain other miscellaneous squadrons and activities.

Reserve combat support wings require qualified personnel for engineering, materiel, and administration. A total of about 28,000 officers and airmen will ultimately be needed to man these units.

Officers and airmen assigned to combat support wings annually participate in at least forty-eight inactive duty training periods, plus a fifteen-day tour of active-duty training, as do members of the flying wings.

Air Reserve Centers

A long step toward simplifying and unifying the Reserve Program was taken with the establishment of Air Reserve Centers throughout the country. Their primary mission is the training of individuals in ground duties.

Air Reserve Centers replace the former Volunteer Air Reserve Unit (VARTU) and Specialist Training Center (STC) programs. Reserve participants are organized for training into Air Reserve Groups and Squadrons. So far, there are approximately 100 groups and 500 squadrons, with a complement of approximately 34,000 officers and 8,900 airmen.

More than half of these groups and squadrons are located at fifty Air Reserve Centers already established in densely populated cities. An additional thirty-five major Centers are programmed for activation in Fiscal 1955.

The Reservist assigned to an Air Reserve unit conducting general-type training is required to earn fifteen points per year, twelve of them by attendance at unit training periods. The individual assigned to a unit conducting specialized-type training must attend a minimum of five training periods per quarter. This latter training consists of taking technical instruction courses in selected career fields to maintain previously acquired Air Force skills and to learn new skills within their respective fields which have been necessitated by new developments. A few typical courses include flight operations, personnel, supply, intelligence, communications and aircraft maintenance. There are numerous specialized airmen courses.

Pay status members of Air Reserve groups and squadrons conducting specialized training are authorized and required to perform an annual fifteen-

(Continued on page 58)

What's the Mission?

Condensed from the statement of James H. Straubel, Executive Director, Air Force Association, before the Committee on Armed Services, US Senate, concerning the Reserve Officer Personnel Act of 1954, July 20, 1954.

IN CONSIDERING Reserve officer promotion legislation at this time, the Air Force Association takes a broader view toward the problem than is customary for Reserve organizations. Our leaders are the ranking Air Force Reserve officers in the nation. However, the Air Force Association occupies a unique position among Reserve groups—the majority of our active members are non-commissioned veterans of the Air Force. We cannot consider Reserve officer promotion procedure as a separate entity—to be pushed forward relentlessly, regardless of its relative position in the Reserve program. . . .

Yet, here we are—considering legislation for one portion of that program—a program still unknown. To us in the Air Force Association, this just doesn't make sense. We are simple enough to believe that a military mission must precede a military requirement, and a military requirement must precede military programming, and programming must precede legislation. . . .

Today the pressure seems to be on for a Reserve Officer Promotion Bill. What's the established mission of the Reserve? What's the established military requirement, by service, for Reserve officers? What's the established program for procuring, training, and mobilizing Reserve officers? What force levels have been established, by service, for Reserve officers to meet the requirement of the so-called "new look" military program? I don't have the answers to these questions. At the moment I don't think anyone has them. Without knowing the Reserve requirement, no one, in my humble opinion, can realistically appraise any bill—from whatever source, in its original form or heavy amendments—governing Reserve officer promotions.

My message to the Committee is that a large and important segment of the Reserve Forces—the Air Force Reservists and Air National Guardsmen represented by the Air Force Association—do not feel that the public interest will be served at this time by legislation for Reserve Officer promotions—whether it be H.R. 6573 or any other variety of a similar bill. We do not necessarily oppose H.R. 6573 or any variation of it. We cannot know—nor can anyone know—what to support or oppose until we know what is in store for the Reserve. We feel that some legislation is necessary to improve the Reserve officer promotion system. We believe firmly that such legislation must be geared closely to an established Reserve program based on a true military requirement and a definite military mission. Lacking mission, requirement, and program, we do not see how the Committee can realistically appraise a Reserve officer promotion system at this time. . . .

I wish the hearing today concerned program rather than promotion. Then we would be making real progress toward a true defense posture—and give constructive help to the Reservist. Thousands of loyal, intelligent Reservists throughout the nation—men we vitally need for security—are standing by, waiting to serve, to train, to fight again if called upon, regardless of promotions and drill pay and retirement benefits—if only our leaders will give them a program, a reason for belonging to an outfit, a mission, with organized training and the facilities necessary to do the job. . . .

In the Air Force, at least, the need for qualified airmen to participate in the Reserve program—much less get promoted in it—is the major problem of the moment. Air Force leaders, I believe, will testify to that. The truth is that enlisted men—of whom there are about ten for every officer—are staying away from the Reserve—*in droves*. Why? Many reasons, of course. It's a complicated problem. But our is that the peacetime Reserve—tradi surveys show that a prevailing reason tionally and currently—is regarded by the average enlisted man as an Officer's Club. . . .

The point I'm leading up to is just this—under a "new look" Administration which has let it be known that great new things are in store for the Reservist, and with the average Reservist assuming the Congress will support that position, it would be unfortunate indeed if the only Reserve legislation coming out of this session of the Congress—and no other such legislation seems to be forthcoming—would be legislation to take care of Reserve officer promotions. . . .

Let us, rather, work for a program which will raise the Reserve to the stature which it deserves. To this end the Air Force Association pledges its wholehearted support.—END

THE RESERVE—CONTINUED

day active duty tour for training. Non-pay status members may be authorized an annual fifteen-day active duty tour provided they hold training designations with major air commands. All qualified Reservists assigned to the Center and its units are authorized to apply for short tours of active duty for attendance at Air Force schools and refresher courses.

The Air Reserve Center Program is, and will continue to be, the largest single element in the over-all Reserve Program.

Mobilization Assignees

Another method by which the individual can participate in the Air Force Reserve is through the Mobilization Assignee/Designee Program.

A Mobilization Assignee is an officer or airman not on active duty, holding either ready or standby Reserve status and qualified in an Air Force specialty, who is assigned to a specific position with a Regular Air Force unit. He is required to participate in a minimum of five inactive duty training periods each quarter and to perform a fifteen-day active-duty tour each fiscal year. He is scheduled for a minimum of twenty-four training periods annually and is authorized pay for twelve of these.

This MOARS program has been expanded to add a new concept (Replacement Assignee). Previously, the program provided for only augmentation personnel. The new concept provides trained replacements for rated officers who, on M-Day, must be diverted into other Air Force M-Day rated requirements.

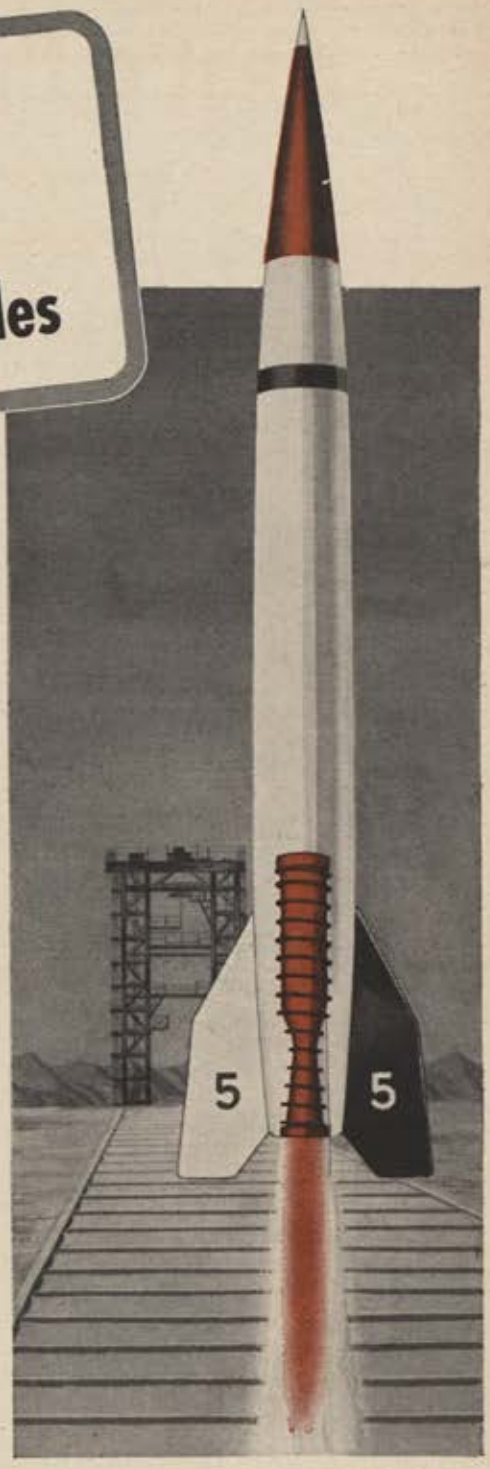
A total of 7,422 Mobilization Assignee positions are authorized throughout the Air Force—5,854 officer spaces and 1,568 airmen positions. At present, 3,514 officers and 223 airmen are serving in this capacity, leaving 3,685 vacancies.

A Mobilization Designee is a Reservist in either ready or standby status who is qualified to fill a mobilization position with the Air Force, either by virtue of previous military experience or similarity of his civilian occupation to his duty AFSC, with a minimum of training. The Designee is required to accrue thirty points a year, which includes fifteen gratuitous points. He is not eligible for inactuve-duty training pay but may be eligible for an annual active-duty training tour, subject to availability of funds.

There are Mobilization Designee vacancies within all major air com-

(Continued on page 60)

RYAN builds ROCKET MOTORS for 3000 mile-per-hour missiles



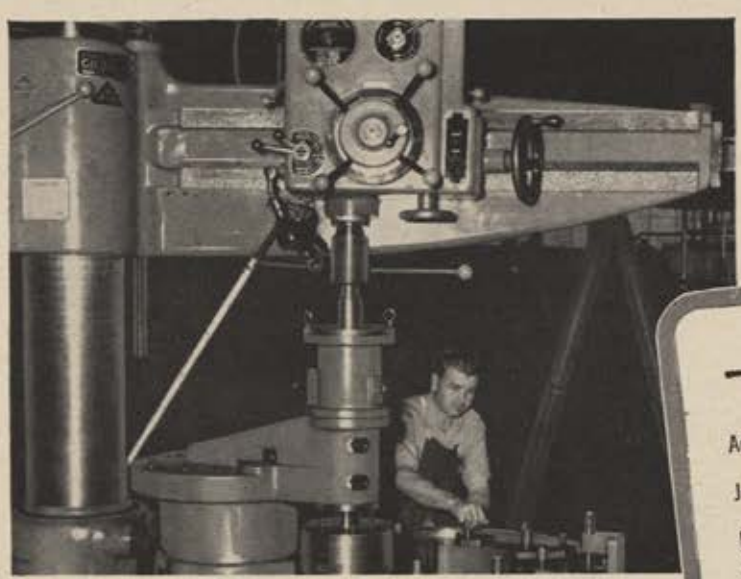
IMAGINE a motor powerful enough to propel a missile at speeds exceeding 3000 mph . . . so powerful that its developed thrust can amount to tens of thousands of pounds. One of Ryan's most challenging current assignments is the complete production of such a motor for an Army Ordnance surface-to-surface missile.

There was a many-sided problem of fabrication, welding and machining that Ryan had to solve in connection with rocket motor manufacture. Because a rocket motor is capable of burning as much as a ton of fuel a minute at temperatures up to 5000 degrees F., terrific internal pressures are created that must be contained in a very compact package of complex construction and exacting dimensions.

The solution was found in perfecting new techniques for forming, welding and machining the special alloy materials. Ryan devised new methods of controlling work to very close tolerances; ingenious electric resistance and arc welding processes and a better furnace brazing system . . . plus intricate machine operations that had to be jewel-like in precision.

Ryan's proved ability in the production of complete rocket motors is due in large measure to its long experience in building the "hot end" of jet and piston engines. Its versatility in many specialized fields is an important advantage in each new assignment, for it enables every division to draw on 31 years of first hand experience in the most advanced phases of aviation engineering and production.

Thus, each year more unique technical engineering and production projects are awarded Ryan . . . an integrated company with superior abilities in meeting the challenges of today's high-speed air age.



RYAN → **SPECIALIZED INGENIOUS VERSATILE**

Advanced-type Aircraft and Components
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Weapons Systems Design and Management
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mands, with a total authorization of 9,661 positions—8,134 for officers and 1,527 for airmen.

Extension Course Program

Extension, or correspondence, courses are designed to provide training for those individuals who cannot participate in organized Reserve Training Program elements because of their places of residence or other reasons. These courses are patterned upon those of Air Force resident schools.

Courses are prepared by the Air University and are available to all Air Force personnel, both on and off active duty. A minimum of fifteen points per year must be earned annually by each student. These courses provide the sole means of training for some Reservists who cannot participate in any of the program elements. However, courses are available to all Reservists in the specialties most needed by the mobilization requirement for individuals.

ROTC

While the Air Force Reserve Officers Training Corps is not an integral part of the Reserve program, it does represent an important source of future officer personnel for the Regular Air Force, the Air National Guard, and the Air Force Reserve and therefore should be discussed in this connection.

Today, there are AF-ROTC units in 188 colleges and universities in forty-six states, the District of Columbia, Puerto Rico, and Hawaii. AF-ROTC students pursue a course of study developed by the Air University, under which the program is administered. Its aim is to provide basic military knowledge and to develop attributes of character and leadership.

Flexibility is an important characteristic of the ROTC program. The annual input of students is in accordance with the projected needs of the Air Force, based on a four-year lead-time basis. Students who now enter the ROTC program do so with the understanding that commissions will be granted in proportion to the needs of the active establishment at the time they finish the program. They also know that they are competing for the available commissions, which results in higher quality officers.

The largest percentage of AF-ROTC commissions is granted to those students enrolling for flying training, since most of the available spaces are in the rated officer field. Students who complete the program and get degrees, but for whom spaces are not available in the active establishment, may enlist in the Air Force for two years, after which they will receive a commission in the Air Force Reserve or Air National Guard.

Reserve Interest

It is apparent that the Air Force Reserve has a sizable job ahead insofar as the full manning of its program elements is concerned.

The Air Staff has encouraged and approved a Reserve structure which provides to the individual participant, while undergoing active or inactive duty training, compensation and benefits that are comparable to those of the active establishment, including benefits for his wife and family. It has, furthermore, strived to develop a program which will enable the Reservist to regard his service with pride and a sense of accomplishment.

The Johnson Board found that one of the chief obstacles in the past was a lack of knowledge of the program among potential active Reservists. There was confusion even to the manner of enrollment in various program elements. Reservists who desire to take part in any of the aforementioned Reserve activities may obtain full information by visiting in person the Air Reserve Center or Command nearest their homes. (Air Force installations are listed in telephone books under US Government.) If a Reservist does not live near either a Center or Air Force headquarters, he may address a military letter to the Commander, Air Reserve Records Center, 3800 York Street, Denver, Colorado, with a subject heading entitled: "Information Relative to Reserve Training Assignment." The Center, which maintains all master personnel records of Reservists not in active military service, will verify the individual's status and then forward his application to the proper command, Air Force Training Center, or other unit conducting the training the Reservist seeks.

It is clear that the primary requirement of the Air Force Reserve today is the highest possible participation in the various programs by skilled, experienced, and enthusiastic personnel. And that interest must be *continuing*. The mission of the Air Force is to provide air defense of the nation and the power of "instant retaliation" against any aggressor. Accomplishment of that mission demands an unceasing state of readiness. That is today's serious challenge to both the Air Force and to the Reservist himself.—END

Their "Upstairs Eye" is a Cessna!

Keeping U. S. artillery fire accurately, effectively "on target" is one of many vital jobs performed by sharp-eyed Army aviators. In training, these pilot-soldiers not only learn flying. They receive instruction in *all* military branches—Infantry, Medical, Transportation, Armored, Communications and Engineering, as well as Artillery.

And to handle a variety of military jobs expertly, they need an airplane *as versatile as their training!* That's why many of these men are assigned to Cessna L-19 "Bird Dogs." Combat-proved L-19's can take it! They're easy to fly, easy to service, powerful and dependable. Today, Cessna is building L-19's in quantity for U. S. Armed Forces.

Hard to Hide from Here

Aerial photographs, properly interpreted, reveal even the most expertly camouflaged men, equipment and installations. Offering excellent high-wing visibility, slow-flight characteristics and 213 horsepower performance, Cessna L-19's are frequently chosen for important photo reconnaissance missions. They carry enough radio equipment to contact ground *and air* units, are invaluable for directing both infantry and artillery fire.

When Quick Answers Count

Fresh, accurate information, the first need of every field commander, is quickly supplied by Army observers flying Cessna L-19's. These highly maneuverable airplanes operate in and out of short, rough fields close to the action, are also valuable for wire laying, emergency equipment supply, courier trips, controlling military highway traffic, even evacuating the wounded.

Cessna AIRCRAFT COMPANY

CESSNA AIRCRAFT COMPANY, WICHITA, KANSAS

Queen of the Mayday

The Albatross has grown from a speck to a queen to many a man marooned in a dinghy or on an icecap. Heart-lifting answer to the airman's emergency distress signal, "Mayday, Mayday." Flown by skilled crews of the Air Rescue Service of the U. S. Air Force, the U. S. Navy and Coast Guard, the Grumman Albatross can land and take off from snow and ice as well as land or sea. Though she doesn't fit into the airman's survival kit, she's part of it.

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DESIGNERS AND BUILDERS ALSO OF COUGAR JET FIGHTERS, S2F SUB-KILLERS, METAL BOATS, AND AEROBILT TRUCK BODIES.

Grumman

At Arnold Engineering Development Center . . .

Tunnels Buy Time

How AEDC works today for the engines, aircraft, and missiles of tomorrow

First AEDC tunnel to go into operation was this Gas Dynamics facility.

BUYING time. That's what F. H. Wenham of Great Britain was doing in 1871 when he experimented with what is said to be the world's first wind tunnel.

That's what the Wright Brothers were doing when they probed the relative lift and efficiency of various wing configurations in their crude wind tunnel in 1902, prior to Kitty Hawk.

That's what NACA was doing when it began operation of the Langley Laboratory's first wind tunnel in 1920.

That's what the Italians were doing at Turin about 1937 when the world's first engine altitude test cell got into full operation.

And that's what the Germans were doing in 1939 when they moved the supersonic tunnel from Aachen's Technological Institute to Peenemünde to use it in the development of the V-2.

This "laboratory approach towards buying time" is not new. But it has improved, and is *improving*, in strides that are comparable and basic to the spectacular and dramatic advances by both research and production aircraft, power plants and missiles.

Lacking the drama of an actual pioneering flight, this "laboratory approach" is more difficult to describe and to appreciate fully. It is nonetheless an increasingly important element in the advance of the aviation art.

Even more difficult to grasp is the effect of "buying time" in its relation to the procurement of planes, missiles, and power plants. As the over-all complexity of the airplane has increased, so has the job of assaying the whole research, development, and production.

To boil it all down to its simplest terms, let's take a brief look at what "buying time" can mean.

- In 1954-1955, the Air Force will probably continue the level of about $6 to $6.5 billion spent in procuring aircraft and related items each year.
- Based on a five-day work week, this means that the nation is spending, and will spend, approximately $23-25 million per work day on just USAF aircraft alone.
- Find a way to save a day or even part of a day. Find a way to avoid a costly "stretch-out"; a way to hurry a power plant's development so that it is ready for a fighter as the plane rolls off the production line; a way to compress the lengthy period of experimental and prototype flight testing; a way to avoid costly production line changes.
- Save time. Save it in varying amounts, here and there. Save a day and you save $23 million or $25 million. You're buying time!

This is a very general appraisal of the situation, to be sure; but it can serve as a frame of reference in looking at today's "laboratory approaches" towards buying time. It will provide the basic "why" behind the millions being spent for high-speed wind tunnels, engine test cells, and altitude test laboratories.

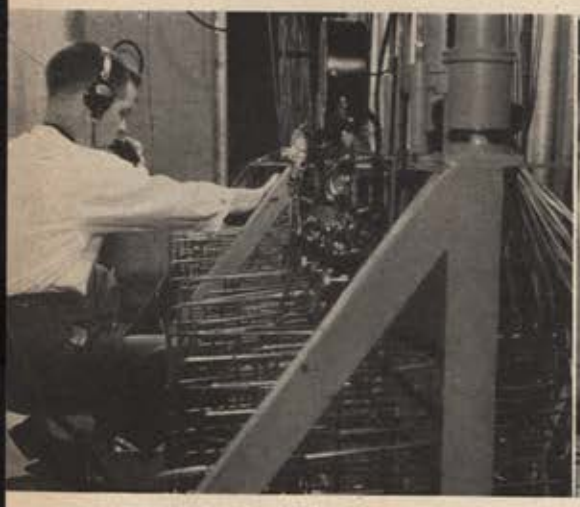
Tunnel testing never has, and never will, completely replace actual flight testing. Whether the item under test is a piloted or guided aircraft or missile, it will finally have to be proven in actual flight. But there are short cuts that can be taken. Measures that can save days—and millions in men, materiel, and money—are under way.

Theoretically it can be said that the objectives of a modern ground test center may be to put flight test centers like Muroc, Holloman, and Banana River out of business. But in actual practice, the findings of ground test labs will generate more precise flight tests and by eliminating much of the guesswork, cut down the number of flights needed for a specific part of the flight test program. The main contributions of the wind tunnels is that they take many of the hazards and much of the guesswork out of research and development flights; avoid risking millions of dollars worth of experimental, hand-made airplanes (plus the pilot's life) in certain types of flight tests; compress the time needed

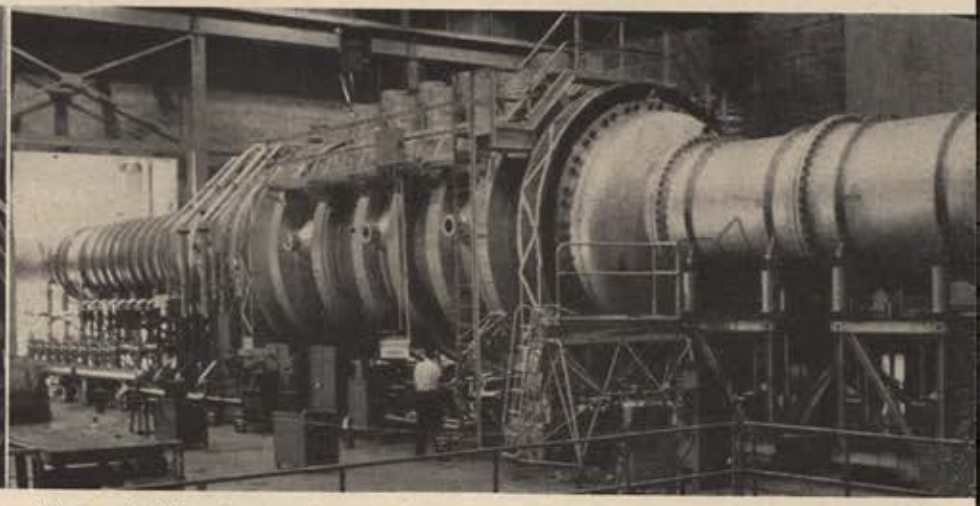
(Continued on following page)

to plot the curves of flight characteristics; and they enable us to carry on development test programs at greater speed, unmindful of flight test weather.

Typical of these modern labs is the Air Force's Arnold Engineering Development Center at Tullahoma, Tenn. Part of the Air Research and Development Command's network of scientific and technological centers, AEDC is located in the heart of Tennessee, almost midway between Nashville and Chattanooga, at the site of World War II's Camp Forrest. This summer, after almost ten years of planning and four years of construction, it is gradually nearing completion. Some of its test units are already at work; one of its three major components—the Engine Test Facility—began development testing work this spring.



More than 150 copper tubes transmit pressure readings from test cell T-1 to control room.



Test cell T-1—first major test unit of AEDC. Air supply enters the cell through pipe leading off to right. Engine in cell is viewed through ports.

Much has been published about the specifications, the awesome statistics of AEDC, and of the other tunnels and labs being built. But not too much has been written on exactly what type of work will be done at these facilities. Let's take a look at this work.

Know what "flame-out limits" are?

In simplest terms a flame-out is loss of combustion in a jet engine—the fire goes out. Literally hundreds of factors can be involved in causing a flame-out: improper fuel-air ratio; combustor design; inlet limitations at certain altitudes, temperatures, and speeds which fail to support combustion; irregularities of airflow or turbulence which produce erratic burning or flame-outs; certain high-altitude maneuvers which may cause partial blockage of the air inlet; or engine control failures under certain pressures, temperatures, and speeds.

After a flame-out, the pilot faces serious problems. He first dives the aircraft to get the compressor to windmill faster. As the aircraft encounters denser atmosphere, he levels out, checks his speed to attain the correct rpm, and is ready for an in-flight start.

Failure to get the turbojet reignited means a difficult "hot" landing—at an airfield or in a pasture. In any case, it is a hazardous risk for a piece of equipment that has cost the government millions of dollars in research and design, craftsmanship, engineering man hours, and materiel. And you can't put a price tag on the life of the experienced engineer-test pilot at the controls.

How many hours, how many flights, does it take to establish the flame-out limits? Hundreds of different factors are involved: flight conditions; ambient temperature encountered; reliability of instrument recordings; completeness of recorded data; mechanical bugs in the airplane—a bind in the brakes or a "gripe" on the electronic gear; and, of course, the way in which the test pilot flew the mission.

The Air Force's AEDC provides a basic answer to this problem—minimize the risks and delays of flight testing by providing for adequate ground tests.

In fact, the flame-out problem is just one simple example of the typical jobs that are scheduled at the AEDC laboratories within the next few months. This particular job will be done in the Engine Test Facility, first of the Center's three major testing laboratories to operate as a complete unit. The ETF has already been through its shake-down phases and its initial calibration.

"Tunnel E-1," the intermittent-flow, foot-square test cell of the Gas Dynamics Facilities has already racked up one set of tests for Hughes Aircraft, for Republic, some work for the Army's Guided Missile Center at Redstone Arsenal, has two tentative schedulings for a missile research program and one for the Sandia Corporation. In addition, other tests are being scheduled.

The tempo is changing at AEDC and you can detect it. The organized noisy confusion of construction, the hammering of rivet guns, growling of bulldozers and earthmoving equipment and creaking of the construction crews' cranes are gradually being replaced by a new sound at the Center. The nights are filled with the thunderous roar of giant compressors as they undergo test runs; as they are readied to ram thousands of pounds of "conditioned" air per minute into the maws of aircraft and missile power plants, create altitudes of 80,000 feet to gulp the jet blast of the captive engines, and force hypersonic airstreams over wind tunnel models.

Although it will be several years before it will be operating on a round-the-clock, full-time basis, the Center is gradually assuming a normal operating pattern.

AEDC statistics are awesome—its 7,000-acre reservoir for cooling water, the 150,000 gallon-per-minute flow of cooling water; the 216,000-hp of the Propulsion Wind Tunnel's motor drive; and the five million kilowatt-hours-per-month electrical demand. To really appreciate the meaning of these figures, let's take a look at the AEDC lab where flame-outs will be studied—the Engine Test Facility.

The Engine Test Facility—like all wind tunnels—is concerned with solv-

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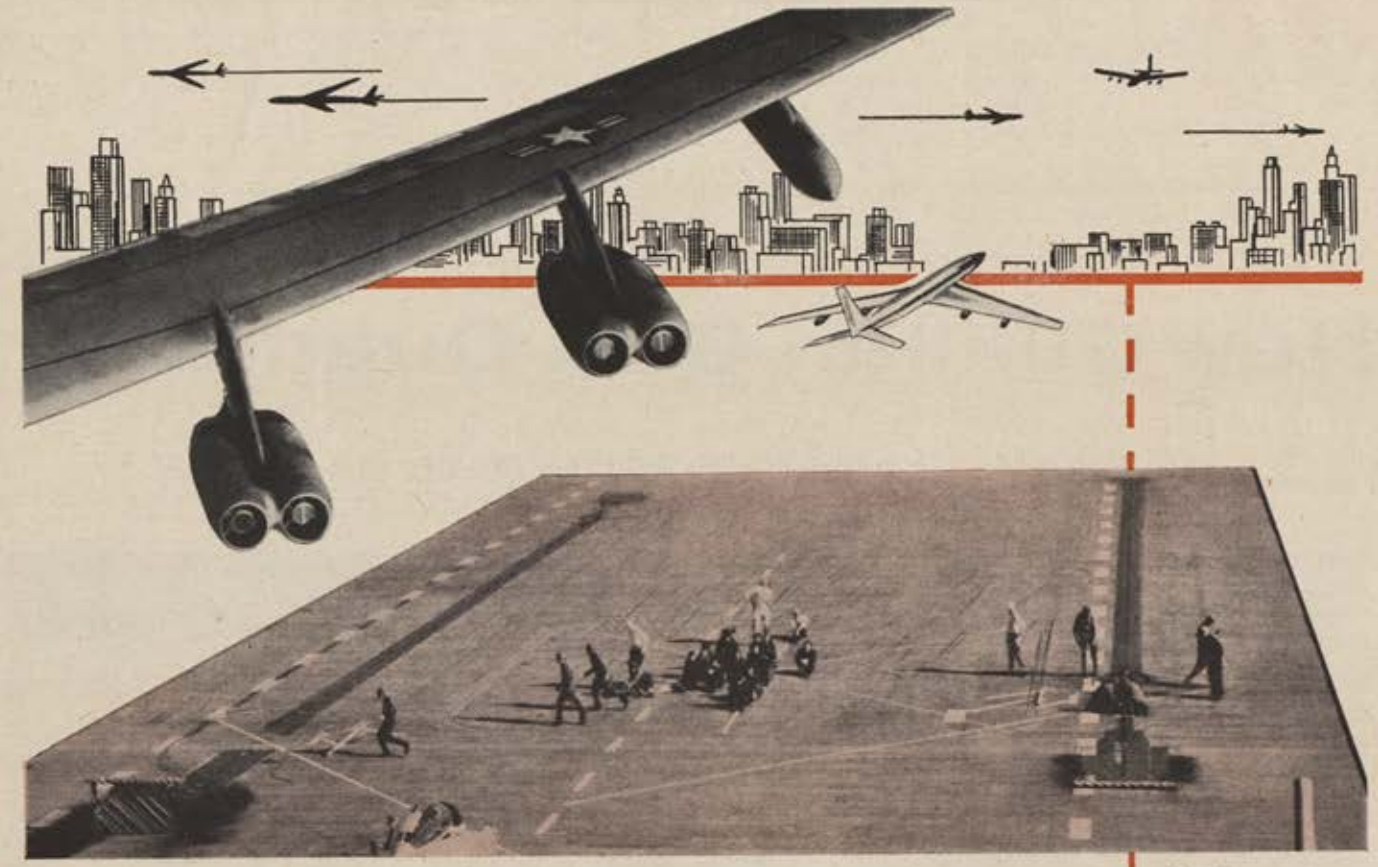

Will the airfield of the future resemble a carrier flight deck?

According to the authorities, it is only a matter of time—perhaps 10 years or so—when launching and recovery systems will be as common a sight on airfields as they are today aboard carriers.

It is to be, for the fields of today are acknowledged to be inadequate for many of the jets on the drawing boards *right now*. Think of the problems this raises—

For the military, increasing the length and strength of runways only adds to their vulnerability.

For commercial interests, construction costs would be prohibitive—even where they were fortunate enough to obtain suitable sites.

Special high energy catapults and modern arresting gear offer one solution to these problems. Such equipment can keep existing fields in use... cut costs when *new fields* are required... maintain present high safety standards.

Bliss personnel are developing launching and recovery systems capable of handling heavier, faster planes. Backed by research and technical know-how, they are ready for the day... that is not too far away... when "land-based" carriers are needed.

E. W. BLISS Company, Canton, Ohio

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CATAPULTS
ARRESTING GEAR
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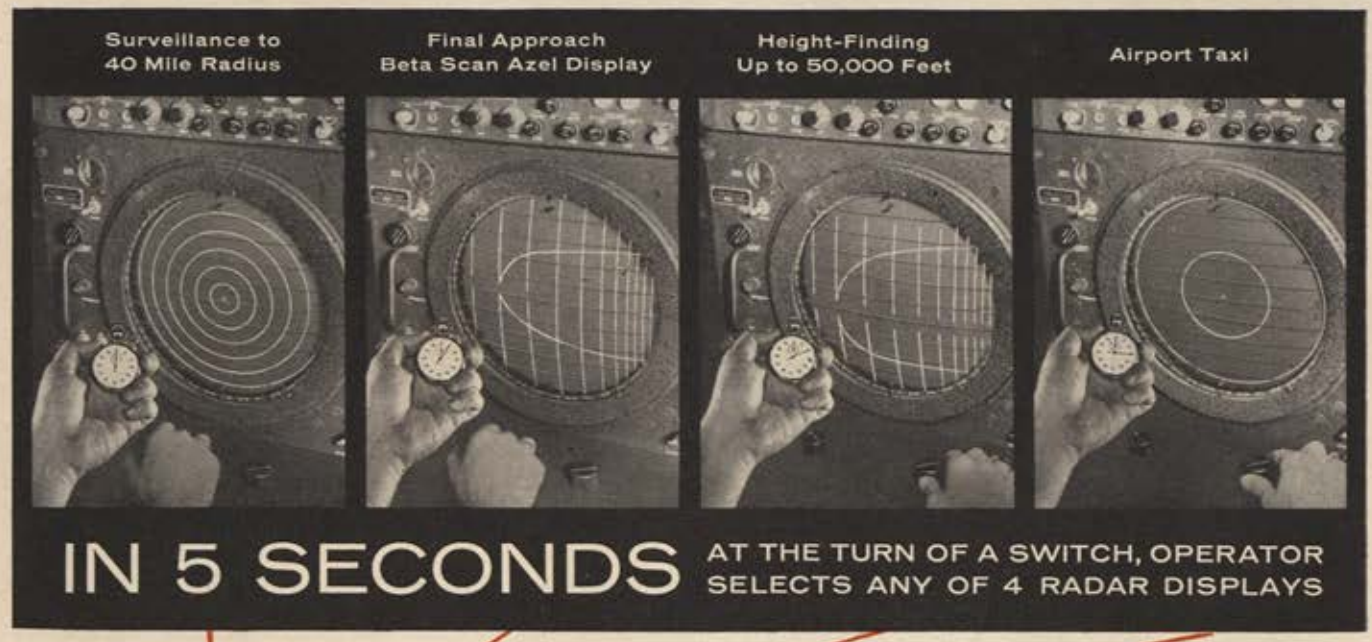
PROVEN...IN PRODUCTION

World's First 4-in-1 Airport Radar at One-Sixth the Cost of GCA Radar

New Gilfillan GCA Quadradar

DELIVERY: 10 MONTHS FROM DATE OF ORDER



IN 5 SECONDS AT THE TURN OF A SWITCH, OPERATOR SELECTS ANY OF 4 RADAR DISPLAYS

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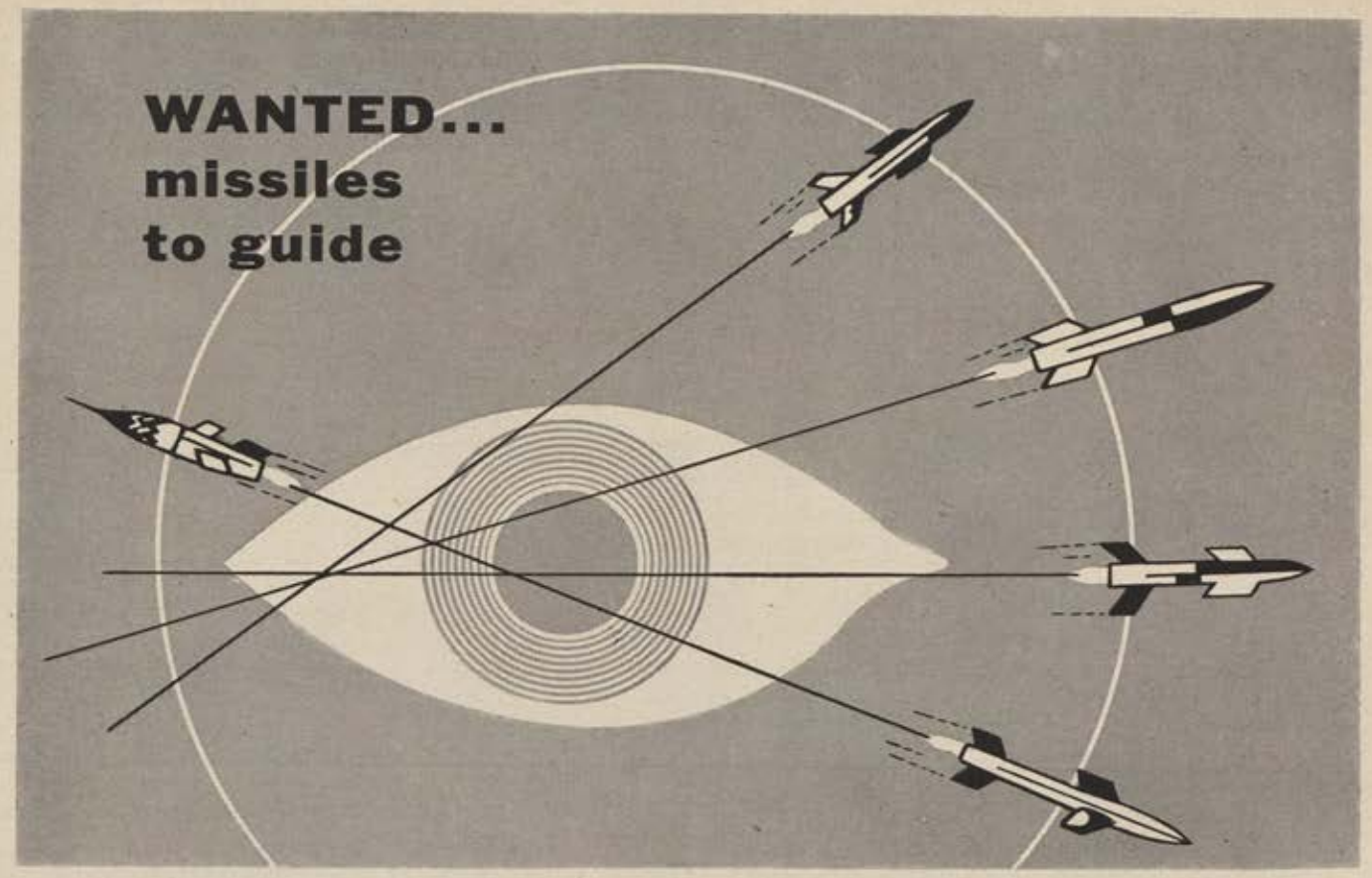

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for the remote electrical transmission of data such as true airspeed, indicated airspeed, absolute pressure, log absolute pressure, differential pressure, log differential pressure, altitude and Mach number.

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to provide control signals which are functions of altitude, absolute pressure, differential pressure, etc.

To CONTROL a guided missile effectively and absolutely is a challenging problem with which hundreds of engineers are grappling every day.

The solution depends upon the efficiency and the reliability of the controlling parts.

For over 25 years Kollsman has been making precision aircraft instruments and equipment used on military and commercial aircraft throughout the world. The talents and skills needed for success in this special and challenging field are equally necessary in the design and manufacture of precision controls for missiles.

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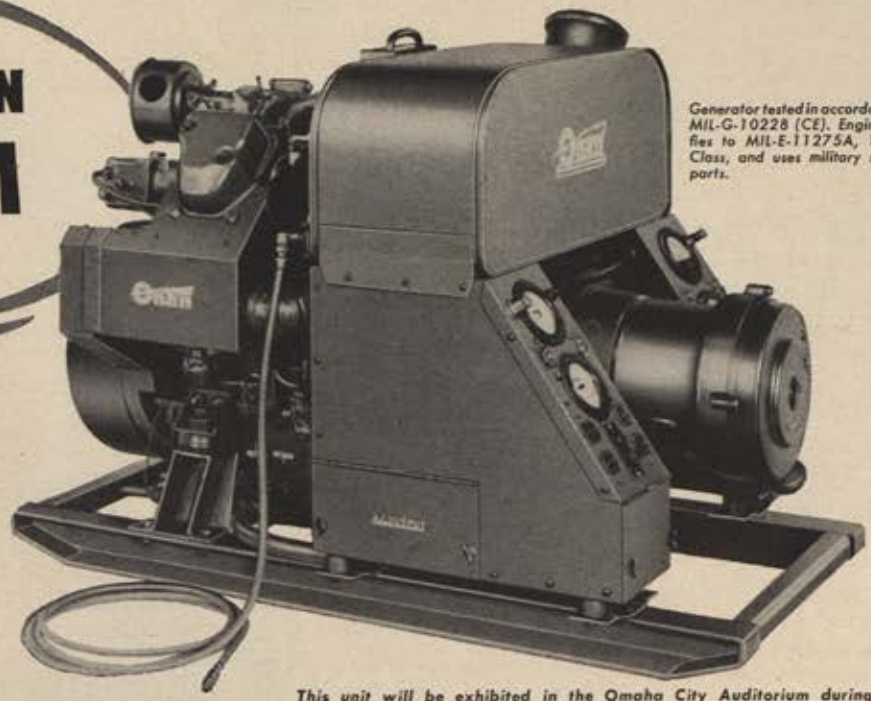
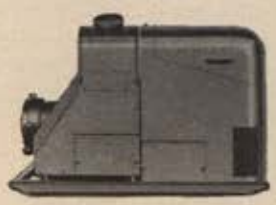
the new ONAN

5VB-4M

5KW, A.C.



Generator tested in accordance with MIL-G-10228 (CE). Engine qualifies to MIL-E-11275A, 10 H.P. Class, and uses military standard parts.



WINTERIZED MODEL

Equipped with engine heater and rugged sheet-metal housing to protect generating set against wind, rain and snow. Delivers full rated output at ambient temperatures from +125° to —65° F. Weight: 500 lbs.

This unit will be exhibited in the Omaha City Auditorium during the National Air Force Convention.

Built and tested for military service!

The Onan Model 5VB-4M meets all specified test requirements for Military Type II, Class A engine-generator sets. It's built to withstand braking and dropping shocks, to resist high humidity, to start at extreme temperatures and to operate at all angles up to 15° from horizontal.

After 1,000 hours of operation with full rated load, and under test conditions of 107° F. and 5,000-foot altitude, *the Model 5VB delivers more than 150% of rated output at rated voltage, frequency and power factor.*

The skid-mounted set has an actual dry weight of 445 pounds and requires 25% less space than many conventional units. Design of the suction air-cooling system allows the generator set to be "buried" within a large piece of equipment *in space only slightly larger than actual generator-set dimensions.*

Prime mover on the 5VB is a new Onan high-compression, overhead-valve, two-cylinder, V-type gasoline engine delivering 19 H.P. (with accessories) at 3600 R.P.M. It is equipped for manual starting using integral, self-winding rope starter. Electric starting can also be provided.

Designed specially for field service as a source of power for communications, lighting and operating motor-driven equipment, the Onan 5VB combines the portability, rugged construction and dependable performance demanded in military service, *with the all-important advantage of being built with military standard parts.*

MEETS OR EXCEEDS ALL MILITARY SPECIFICATIONS

Specially designed direct-connected generator supplies multiple voltages (1 and 3-Phase) with voltage regulation within a total band width of 4%. A single rotary switch selects the required voltage and phase. Rated at 5KW with 60-cycle output, this model is also available with D.C. output up to 7½ KW in standard voltages.

Splash-proof generator is unusually accessible for inspection and adjustment. Equipped with all essential instruments conveniently located and protected from the weather.

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of the versatility of this laboratory. Basically designed to test turbojets, turboprops, and ram-jets, it can also be used for turbojets equipped with afterburners, pulse jets, ducted-fan type power plants, engine components, engine inlets, and engine exit nozzle configurations.

Sound complicated? It is, and it would take book-length descriptions to explain the complete operation of the Engine Test Facility, the Gas Dynamics Facility and Propulsion Wind Tunnel which comprise the Arnold Engineering Development complex.

This is only a brief outline of the "what" and "how" of AEDC. Now let's consider the over-all mission of the Center . . . the factors that brought it into being.

US shortcomings in the field of testing facilities for aircraft research and development were actually sensed on the eve of World War II. As early as March 1936, the National Advisory Committee for Aeronautics reported that "[England, Germany, France and Italy] within a few years . . . will surpass the US in technical development of aircraft."

More specific reaction came just prior to the end of World War II, as air technical intelligence experts of the Allied powers pieced together the amazing story of German accomplishments in aeronautical research and development programs. To assist in this task, and to help plan for the future qualitative superiority of American airpower, the late Gen. Hap Arnold brought together a group of eminent scientists in the Pentagon, under the leadership of Dr. Theodore von Karman (see page 77). The latter, assisted by the Air Materiel Command's Dr. Frank Wattendorf, was among those who first urged a program to "catch up and surpass" the Axis achievements in these fields. They initiated the first steps towards establishing AEDC.

These initial steps came almost ten years ago—late in 1944. From Peenemünde on the Baltic to the Bavarian Motor Works at Munich, British and American investigators found dramatic illustrations of the vast strides that had brought the Germans from the black-powder sea-rescue rocket to the liquid-oxygen-fueled V-2 in the short span of one decade.

The Germans realized the inherent value of this program, as is proven by the vast sums of money spent on it despite a war-tightened national economy. Consider the initial allocation of 300 million marks to the V-2 laboratories at Peenemünde in 1939—a sum which compares to approximately $300 million in current US construction dollars. And that was for just one of the many German tunnels and lab centers.

Although security restrictions prohibit a detailed discussion of the test facilities at AEDC, it can be stated that the "catch-up-and-surpass" objectives of General Arnold, Dr. von Karman, Dr. Wattendorf, and their colleagues have not been neglected. The Tullahoma laboratories are not just ten-year-old copies of what the Germans had achieved by V-E Day.

In the words of one of the German scientists who designed and operated the German tunnels, and who is now working at Tullahoma:

"I was happy to see that the Americans did not merely attempt to duplicate the laboratories and wind tunnels. In most instances, they grasped the idea, learned as much as they could from German design and then went on to evolve their own, and far more advanced designs. This is very good."

As one of the key centers of the Air Research and Development Command, AEDC is an Air Force installation and is under the direction of Air Force Brig. Gen. Samuel R. Harris. Tests are programmed for three basic purposes: development testing for aircraft, engine and aviation equipment manufacturers; evaluation testing for the Air Force and the other armed services; and research testing for colleges and universities involved in classified aeronautical research projects.

To insure that AEDC operations contribute most effectively to the progress of military aviation, the Chief of Staff, USAF, has appointed an AEDC Industry and Educational Advisory Board. This board, made up of aircraft industry executives and educators in the aviation science field who are appointed annually, reviews all policy matters pertaining to the design and operation of the Center and submits its recommendations to the Chief of Staff. These recommendations and reviews also go to the AEDC commander and to Lt. Gen. Thomas S. Power, ARDC commander.

The design work for the technical facilities is being completed by Sverdrup and Parcel, Incorporated, a St. Louis engineering firm. There are also some additional technical installations which will be designed by other engineering firms on the basis of negotiated contracts, after which the firms have been invited to submit proposals by the Air Force.

These designs, reviewed by AEDC, go to the US Army's Corps of Engineers, established as the Tullahoma Engineer District. The District supervises the construction of the facilities and administers the construction subcontracts to the various construction, equipment and architectural firms that are participating in creating the Center. The District also generates, either directly or on a subcontract basis, the architecture for the non-technical structures.

The operation and administration of the Center is being carried out by a contract operator, ARO, Incorporated. "ARO," a contraction of "Arnold Research Organization," is a subsidiary of Sverdrup and Parcel, the same engineering firm that designed the technical facilities and which carried out the initial preliminary engineering work and site survey for the Air Force during the three-year period—1946-49.

As the technical facilities come into use, new developments may require that they be reviewed and modified by ARO for adaptation to certain test programs, but the basic design work is still done by Sverdrup and Parcel, a separate firm that ARO can and does argue with. S and P undertook the ARO contract at the lowest fee of any such military contract operation.

The fee has continued to be low. After three years on construction and preparation for operation, during which operating costs totaled approximately $14.5 million, the fixed fees have amounted to $275,000 – or slightly more than 1.75 percent.

All in all, the organization and administration phase of AEDC is being worked out with the same meticulous care and consideration directed towards the technical details and problems. Industry's demands for development test time, the Air Force's evaluation test program, the needs of the other armed services, and the research projects of scientific institutions are the basis for shaping the pattern of normal operation that AEDC is now entering.

To the outsider, "normal operations" means that the construction machinery has disappeared and that "the wind has begun to blow" in the tunnels. However, for the personnel of the aircraft industry, ARO, and the USAF at Tullahoma, there will never be any such thing as "normal operation." For to them, AEDC represents a quarter-billion-dollar bet on the part of the American taxpayer that we can stay ahead of the Reds in the qualitative armaments race. And AEDC's job in that race is to buy us *time* in the development of an endless series of power plants, aircraft, and missiles—that can out-perform those of the USSR for some time to come.—END

ing four kinds of problems; the problems presented by velocity or Mach number; by altitude; by temperature; and by flight attitude. Answers to these four types of questions are now beginning to issue from the ETF structure (450 feet wide, 600 long).

Basically, the facility will work this way: the engine to be tested will be placed in the 12.5 foot-diameter test cell (the cells can be varied in overall length from thirty-two feet to ninety feet) while mounted on a specially designed test cart that transports it and its test instrumentation directly from separate, walled-off shops where individual manufacturers will be able to ready their test items for tunnel time.

These separate shops, incidentally, are to insure the protection of proprietary rights of competing companies at the Center. Furthermore, they help reduce "tunnel set-up time" to an absolute minimum, thus increasing the useful work output of the facilities.

Locked into position in the sealed cells, the engines will be "fed" intake air that has been conditioned to simulate various altitudes up to 80,000 feet above sea level, over a temperature range of from minus 120° F. to plus 650° F., and at a mass flow rate which will permit running engines at operating speeds up to Mach two.

A seal will separate the intake portion of the test item from its tail pipe which will open onto similarly conditioned air. This is to provide readings which will indicate the power plant's "bite" or amount of thrust on various altitudes up to 80,000 and in the same temperature range as that experienced by the inlet of the power plant.

Batteries of compressors create the speed simulation and exhausters the altitude. These machines have a combined rating of over 60,000-hp.

All three of ETF's test cells can be used to test engines by "direct connect" means in which all of the intake air is rammed into the inlet of the engine. In one of these three cells, however, engines can be mounted for "free jet" testing in which the air surges around the engine as well as into its inlet. Different "angles of attack" can be arranged for in both the direct and free-jet set-ups.

Subsequently, "free-flight" aerodynamic tests of entire engine pods will be possible in the sixteen-foot-square test sections of the Propulsion Wind Tunnel.

Separate control rooms, with foot-thick, reinforced-concrete, soundproofed walls, are located beside each test cell. In addition, there is a master ETF control room that provides overall operation of the whole test facility, from its console of hundreds of gleaming colored lights, meters, and dials.

The crews in the separate test cell control rooms adjust for a specific air supply, then alter power settings to achieve the test data. Unique, data-reduction digital computers, hooked to as many as 250 control points, will plot points on three or more "X-Y graphs" within thirty seconds after each test point has been measured and recorded in the cell. All three of the AEDC labs will have this data reduction set-up.

Actually, the name, "Engine Test Facility," is an inadequate indication

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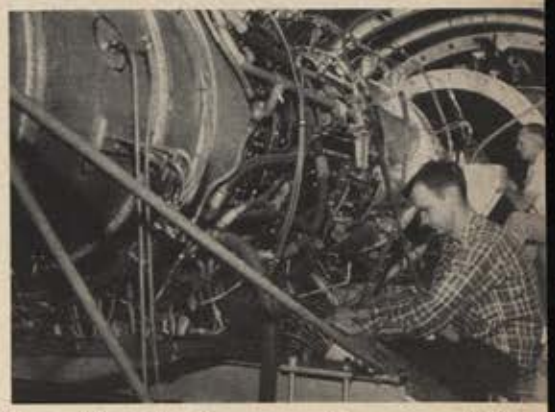
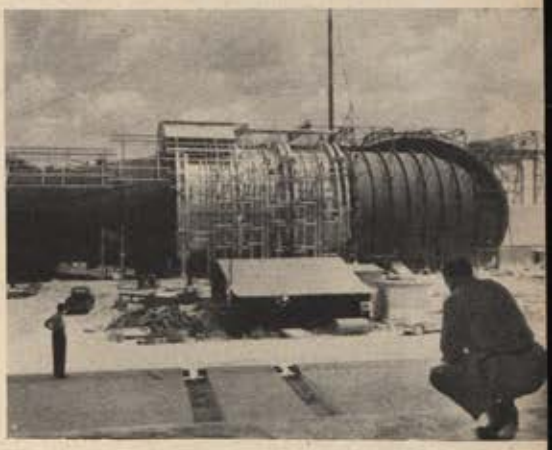


Technicians install pressure lines on a J-47 in a test cell. These go to a control room.

Propulsion wind tunnel's transonic circuit. It's powered by a 216,000-hp. motor drive.



Competitive manufacturers have walled-off bays in this unit.

The UNITED STATES AIR FORCE

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The Inspector General
Lt. Gen. Truman H. Landon

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Hq., Mitchel AFB, N.Y.

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Hq., Baltimore, Md.

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Hq., Pepperrell AFB, Newfoundland

Air Training Command
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Hq., Hamilton AFB, Calif.

10th Air Force
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2d Air Force
Maj. Gen. Frank A. Armstrong, Jr.
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8th Air Force
Maj. Gen. John B. Montgomery
Hq., Carswell AFB, Tex.

15th Air Force
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Hq., March AFB, Calif.

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9th Air Force
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Hq., Pope AFB, N.C.

18th Air Force
Maj. Gen. Robert W. Douglass, Jr.
Hq., Donaldson AFB, S.C.

An ***AIR FORCE*** Magazine Chart

(Corrected as of August 4, 1954)

3d Air Force
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Hq., Middlesex, England

12th Air Force
Maj. Gen. Robert M. Lee
Hq., Wiesbaden, Germany

17th Air Force
Maj. Gen. Frederic E. Glantzberg
Hq., Rabat Sale, French Morocco

Air Materiel Force
Maj. Gen. Lewis R. Parker
Hq., Wiesbaden, Germany

Flying Training Air Force
Maj. Gen. Gabriel P. Disosway
Hq., Waco, Tex.

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And from the Flight Refueling laboratories new systems of higher capacity and efficiency are being developed.

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FRIENDSHIP INTERNATIONAL AIRPORT

Baltimore 3, Maryland

If I was running the Air Force

A career airman takes a look at some of the problems of the Air Force and offers some unique solutions for them. Here's what it'd be like in his AF

By M/Sgt. Frank J. Clifford

SOONER or later, generally sooner, everyone in the military business becomes an expert on how things should be run and done. But very few of us end up with our own Air Force to play with. I can hear it now. The beer has had a chance to settle, the chairs are comfortable, and the boys are relaxing it up.

"Now if I was running this Air Force," a man will say. More modest men introduce their reforms with a restrained, "If I was running this outfit." This caliber of operator is generally found in the lower ranks—his canvas will enlarge in proportion to his grade and length of service.

I happen to be one of the latter, so I ask your indulgence when I start my reform program with, "If I was running the Air Force."

The first thing I'd do would be to take the just-passed reup bonus and hold it up to the spotlight of reality. Briefly, for the benefit of those not directly affected—that is, officers—let me sketch the skeleton of the plan. First reenlistees would get thirty days' pay for each year contracted for, either four or six. Second-timers would get twenty days' pay for the same service obligation. Those who take a third whirl get ten days' pay multiplied by the number of years in the contract. This goes on until the man completes twenty years' service at which point he gets nothing—repeat, nothing at all!

With classical naivete, the architects of the bill are saying, substantially, "This will induce the one-timer to reconsider separation. With all that dough riding, he can't afford to skip out." What about the guy with service, say entering his fourth tour (he'd get five days' pay)? "To hell with him, he's hooked. He can't afford to quit."

Perhaps *he* can't afford to quit, like the man says, and *he'll* stay on for that reason. But that is *him*. As a group, *his* reup problems are, on the average, due to be over in about six to eight years—when his "class" reaches twenty-year retirement. His "class," by the way, is the whole object of all this fiscal romancing.

To the working airman, young or old, the law is not well received because it attempts to reverse the established laws of financial and social gravity. It reverses the methods tested and proved by the experience of US industry. It places a very real premium on staying on the job *until the cow is milked dry and then quitting*.

Let it be stated as Clifford's law that: "An airman is not stupid, and the tendency is toward smarter and smarter airmen."

What does this mean? In sampling talks with dozens of airmen, it means this—"Who do they think they're kidding? Sure, the dough looks good, and I might even take a slice of the big one, but only a jerk would stick around for the distance."

The cure? A bitter pill, but the Air Force and the Congress will just have to get used to the fact that this is not the "depression." Money will have to be spent since, with the exception of mother love, it is the best expression of respect and affection.

Pay the first-time reenlistee a good reup bonus, say about $500, and establish this as the standard reup price. When he gets sixteen years' service on his sleeve, up the ante to $1,000. Over twenty years boost it to $1,500; over twenty-five to $1,750, and let it stop there. Make all enlistments a standard four years. This would put a premium on staying in, not quitting after twenty years.

Eliminating the five- and six-year terms of service would enable manpower requirements to be more accurately predicted; it would cut down on the administrative work needed to

(Continued on following page)

keep track of the present three brands of enlistments; it would simplify scheduling a man for overseas movement since he would, in most cases, have time enough remaining after recruit and tech school training to pull a thirty-six-month bit overseas.

With the savings gained as a result of the above action, the style of bonus I propose could be paid. The time has come to recognize and profit from the pioneer work done by industry in cultivating worker loyalty and incentive.

Another thing I'd do if I was running this AF would be to insert a few rungs in the ladder of promotion. Why should a man's opportunity for promotion end at a certain age? Why, indeed! Why shouldn't a thirty-five-year-old man become a second lieutenant? This, and the warrant officer grade are two albatrosses around the AF's neck. In a 700-mph Air Force, it's ridiculous to cling to personnel policies as ancient as cannon balls.

"It wouldn't look right to see a balding man of thirty-five or so, wearing a gold bar," you say. I say, the hell you say. The Air Force has an adequate supply of downy-cheeked boys to carry out the traditional pattern—I am of the opinion the AF is looking for working officers capable of hitting the ball regardless of age.

A man educated in his trade in the ranks, working with his hands and his head, moving from airman through master to the commissioned ranks could not possibly be a liability. And the possibility of earning a commission the "hard way" would be a real golden apple.

Our present system robs the AF of valuable performance because it erects an artificial barrier which deflects a man from developing his full potential. It is all too typical to see a performing master sergeant frustrated because he doesn't have the necessary hardware on his shoulder which would clear the way.

"Better check with Lieutenant Jones, Sergeant," says Major Boff. "He'll let you know if it's okay." The sergeant has licked the problem many times before, but now he must submit it again for approval. The sergeant checks with Lieutenant Jones and is informed, "Let me clear this with Major Boff." Whirly-gig? Certainly. And certainly no fun for a man who wants to get things done and knows how to do them.

What could be wrong with taking a working master sergeant who has had tech school training and packing him off to a six-month, intensified, cram course in his specialty at a *private college*. Include in the curriculum a fact-packed course in Administrative Procedures, Supply, Finance, Maintenance, Human Relations, etc. These subjects could be taught by Reserve officers residing in the area where the school is located.

Would it produce officers? Why not? The experience of school authorities with ex-GI students following World War II is overwhelmingly in favor of giving such a program a try. A man in his late twenties or thirties is a good risk—he's done fooling around.

Why this scraping around for officers? Don't the ROTC units, the service schools, and other sources supply enough officers? Yes, they do, but in most cases these are self-admitted short-term officers who make no secret of the fact that they expect to perform their required tour and get out. On the other hand, the career enlisted man has demonstrated his intention of staying in for the limit. To restrict him forever to the limited area of the enlisted ranks is to short-circuit a lush supply of potential officers.

In my Air Force, OCS would be the exclusive preserve of the enlisted man on a bona fide four-year enlistment. College men who graduated from institutions offering ROTC would be barred, on the grounds they'd had their chance. Besides, the AF is faced with the problem of placing a bumper crop of AF-ROTC graduates. In my Air Force, ROTC cadets would *have* to agree to fly. The other officers required to put the show on the road would come, in large part, from the ranks. Napeoleon, no slouch at the military trade, built a very highly regarded team from just such material—except that today's airman is a much better physical and mental piece of goods.

The bar to commissioning from the enlisted ranks, as a matter of course, is an expensive luxury. The day of the "Old Master Sergeant," quaint and wise in the ways of the service and the world, is gone, along with the "Old Army." Today's top-grader is a zebra of a different stripe. He wants to get the job done swiftly, efficiently—and to move up the ladder under his own steam.

In the light of what has happened to the warrant officer recently (his reduction to enlisted status), my Air Force would eliminate this rank entirely. It is out-of-date and serves no purpose. I would shift all qualified warrant officer incumbents laterally by pay grade into commissioned slots. This would eliminate the very funny condition, currently in force, where commissioned officers on active duty are also sitting on warrant officer appointments.

If I was running the AF, I would give first preference for detached service jobs, such as recruiting, AF-ROTC, Air National Guard, etc., to men overseas. This has recently been done, in an oblique way, by allowing men overseas to apply. I'd make it a rule, reserving as much as seventy-five percent of the quota for men on foreign service.

The savings to the AF would be two-fold. Under the present system, a man has to serve with a troop unit in the US for a year before he can apply for DS. Coming from overseas this means two permanent changes of station—expensive to the AF and to the man involved from a dollars-and-cents view, since most men eligible for DS jobs are married and have families and the AF has to foot the bill for moving him and his tribe. Also, two dislocations are mighty wearying even if the man gets "a good deal."

By assigning him to DS even before he leaves his overseas station, the AF would gain far more than it invested. There would be no dislocation, no replacement problem, since the man would be departing anyhow at the normal end of his tour. My overseas commanders would do all the interviewing and Hq., USAF the assigning. Before departure, the man would be able to ship his household goods directly to the place of assignment.

Conversely, men coming off DS-type duty should, as a matter of course, be assigned to a brief refresher course in their AFSC. Frequently, a man on DS does not work in his primary AFSC while on such duty. In fact, he often learns another one. Therefore, a refresher course is in order. Also, in my AF a man demonstrating unusual skill or aptitude in a newly learned AFSC would have the opportunity to take formal tech school (not on-the-job) training, in the new AFSC with no loss in grade. This would be the finest kind of cross-training possible, and it would cost the AF the services of a man for only six months at the very most.

The argument that his services are immediately required at the end of his DS tour is hard to make, since it is hard to discover a genuine "exigency of the service." There is time enough to make a good man even better.

Romance would take something of a clouting in my AF. I'd limit marriage to the first three grades only! Shocking? Daring? Revolting? Not so, if the facts are examined. A man

(Continued on page 81)

How Lewyt engineering licked a 10,000 rpm stumbling block to mass-produce radar test equipment!

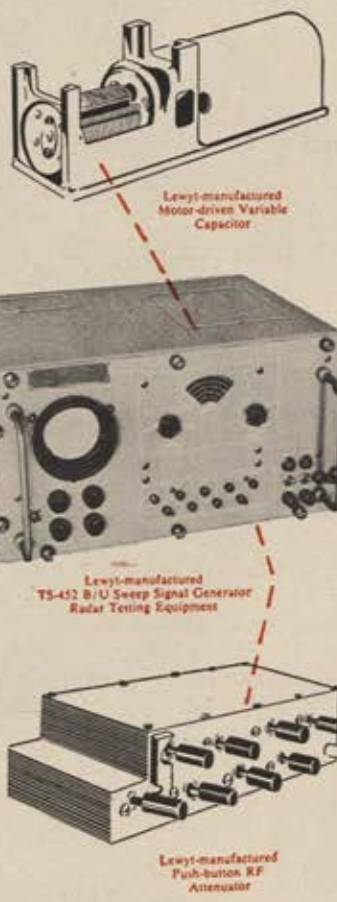
Before the TS-452 Signal Generator existed, technicians had to check the frequency response of radar system networks with a point-by-point plot of frequency amplitude curves.

Each plot took as much as 30 minutes. Checking and readjustment were long, tedious jobs.

To overcome these problems, specifications were drawn up for a Sweep Signal Generator that would permit an instantaneous check of frequency response. However, two major problems presented themselves:

1. A motor-driven variable capacitor had to be designed that would rotate up to 10,000 rpm. The best obtainable could operate at only 500 rpm. Some flew apart in minutes, some in a few hours.
2. A highly accurate push-button RF attenuator was also required. It had to be of such range and accuracy that the specification requirements could not be met by existing measurement techniques.

At this point, Lewyt engineering went to work. The resulting TS-452 B/U has since become a "must" for maintenance of all Armed Forces radar installations. With it, technicians can make and observe corrections in split seconds!



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To make this possible, Lewyt designed a motor-driven variable capacitor that rotated at 10,000 rpm for several hundred hours without a quiver—maintaining its electrical calibration at all speeds. *It is probably the world's fastest rotating variable capacitor!*

Lewyt also developed a high precision attenuator with an accuracy over the frequency range not attained before. *New techniques and standards for testing it had to be devised by the Bureau of Standards!*

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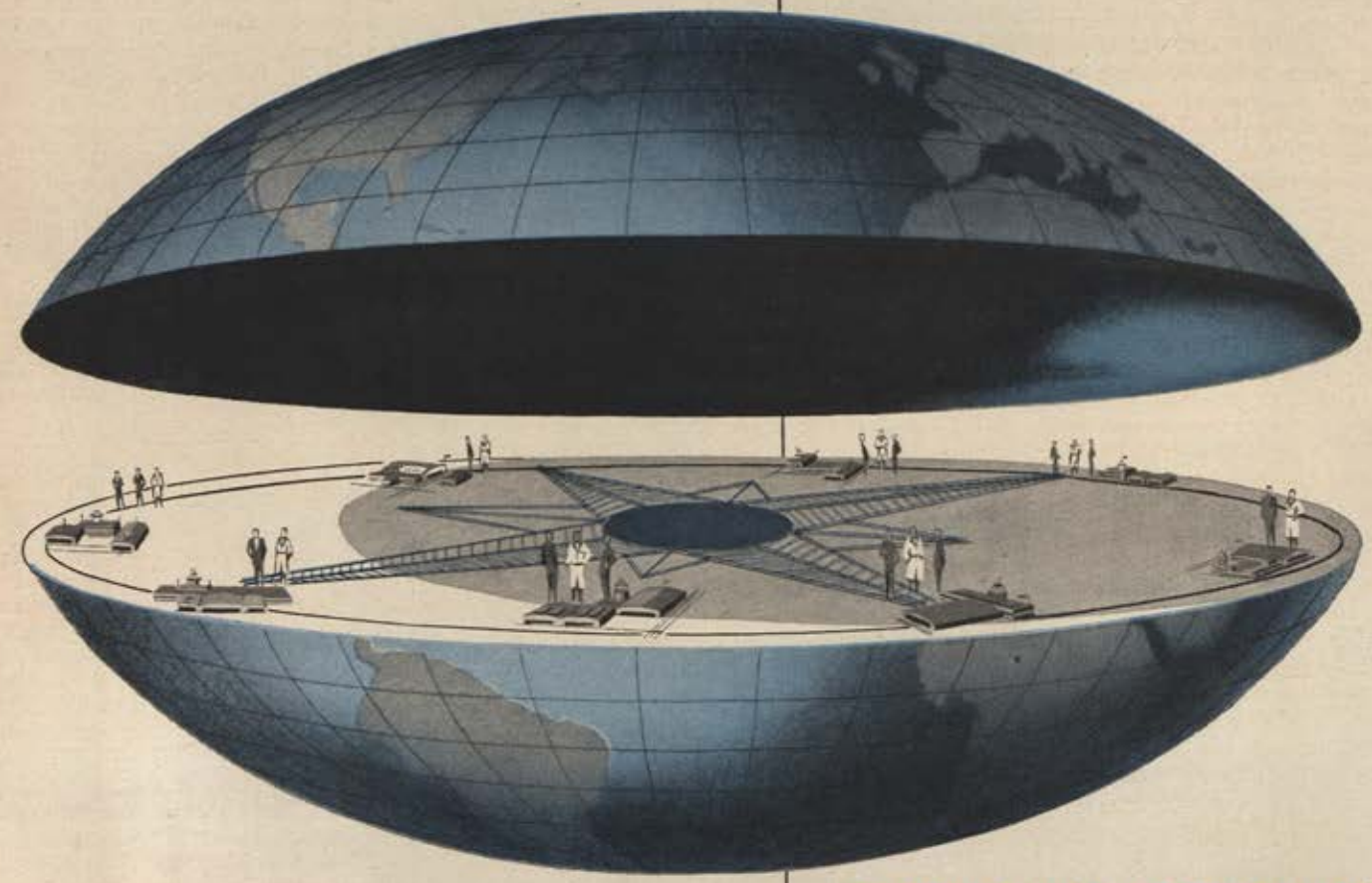

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ranked below staff just simply can't afford a wife and, inevitably, a family. Certainly, I'm aware of the Class Q allotment, but the Class Q was not intended to *encourage* marriage, which is now the case. Unless I'm way off base, the Class Q was intended, in part, to assist men already married who were drafted.

Non-com supervisors, squadron commanders, personal affairs officers, all can tell horror stories of miniature family tragedies directly caused by marriages of men not capable of supporting a family. In all too many cases, the airman concerned can give only perfunctory performance to his job and more often than not he becomes a subject of charity, both military (Air Force Aid) and civilian.

People in my AF would be paid by check. This would speed up the paying process, eliminate the rare possibility of robbery, make payment to the exact penny possible, encourage the establishment of savings and checking accounts, and would make accountability much easier. Squadron commanders would be relieved of the need to detail an officer and several enlisted men to spend an entire morning making ready to pay. It would also make it unnecessary to have a loaded .45 lying on the table.

Turning the checks into cash would not be the big job it would seem at first glance. The Base Exchange, NCO Mess, local banks, and other facilities set up for the purpose could do the job.

A variation would be to pay the man $10.00 in cash—same amount to all ranks—at the table and the balance in a check. By using machine check-writers, it would be feasible to pay twice a month, as has been so often recommended.

Homesteaders and career overseas men would get a friendly nod in my Air Force. Not all categories, of course, just selected men. The homesteader has been denounced almost universally, but this is not in step with reality, in my opinion. The homesteaders I've known personally have, almost to a man, been superior performers. In fact, that is why they became homesteaders.

In a typical case, a good man arrives at a base and soon proves his worth. His CO recognizes his ability and takes steps to hang on to him. Thus we see that the man who stays for years and years at one base is not a shirking drone but a man so valued by *many* commanders that he stays on by specific invitation. Tales are told of "shrewd old master sergeants" who keep themselves off shipment, but I've never seen a time when the Old Man couldn't step in and get rid of anyone, any time, and at once!

The threat of a man becoming so deeply entrenched so as to become arrogant and unmanageable is largely imaginary and could easily be controlled by the base commander. After all, the homesteader is an enlisted man and he is not in business for himself.

A case can also be made for the career overseas man, although his case is much more delicate because of the very real danger of "going native." But this could be controlled by the man's commanding officer.

It is just simply true that some men like foreign service, and in my Air Force I'd indulge their whim. Naturally, rummies, black marketeers, and such would not qualify.

In my Air Force I'd allow reup shopping-around for a base. I think a man should have the opportunity to pick the base of his choice since it is he who has to serve there. Time enough to assign him to Dry Gulch AFB later in his enlistment. I don't think such a policy would upset the manpower apple cart because no significant number of men *actually* do "shop around," in spite of the many fervent protestations that they intend to "get off this crummy base even if I have to put in for Desolate AFB."

And the right to choose a base, even if the option of choice is never exercised, represents an ace in the hole and often means the difference between a reup and a permanent separation from the Air Force. Personnel people might well note this, since people are composed of flesh and blood, hopes, ambitions and desires, and not entirely of AFSCs.

To overcome some minor, but aggravating stumbling blocks, men in my Air Force would have to take a military motor vehicle operator's permit test only once per enlistment. Presently, a man coming on a base, even for a brief TDY, must take a retest. Ridiculous!

Motor pool officers will solemnly tell you why they demand a road and written test (same test all over the Air Force). "Our roads are different here," they will say with a knowing shake of the head. Or, "Our vehicles are in better/worse shape than those on the base you came from." Baloney!

What the motor officer is really saying is, "Yes, I know you have a valid operator's permit only two months old, but it is a widely known fact in the trade that the motor officer who signed your license is a slipshod crook who makes a practice of handing out tickets to every crackpot who asks for one."

KP would be abolished in my Air Force. This has been tried before, but that is no reason why it shouldn't be tried again and made to work. In spite of its widely advertised character-building qualities, KP is a waste of high-priced help. It's an inefficient source of manpower and a grinding jolt to a man's self pride. Pious words to the contrary, KP is dirty, degrading, and obnoxious work, and the delinquency reports in every Food Service Squadron in the Air Force will prove this statement.

In many parts of the US and in almost every overseas station, low-priced help is available in quantity from the local populace. I would place the KP function in the hands of civilian contractors, making them subordinate to the Mess Officer. Cooking jobs would still be manned by airmen.

On an afternoon when things were slow, I'd assign the following lightweight jobs to my junior officers to work on and get satisfactory results.

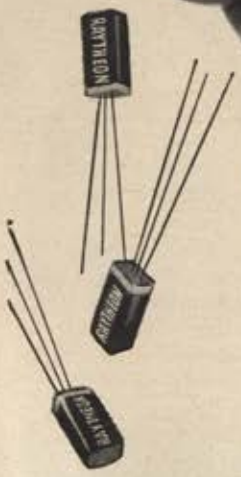
I'd have them explore the possibility of licensing all privately-owned motor vehicles belonging to military personnel under the registry of the District of Columbia. This would take a little doing, since the principle of state rights is involved, but I think the thing could be done with the right leverage. As things stand now, military people transferred to some states are required to buy a new set of plates soon after arrival—and it is not exactly rare to hit a new state more than once a year.

I'd have another group of officers handle the matter of professional actors, entertainers, and athletes who find themselves in uniform. My instructions would be to employ all of these people full-time in their special field. After basic training these people would be on call to display their talents, just as they did on the "outside."

A lot has been written on this subject, and most of it is hogwash. Why take a man who is so expert in his field that he commands thousands of dollars salary per week and try to make an airplane mechanic out of him—and take a mechanic and try to make an entertainer out of him? For one thing, you just simply won't get a good mechanic and that is the only kind that is worth while.

Besides, there are not enough of these "exceptions" to get exercised about. A good entertainer is worth his

(Continued on page 114)



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Guide to AIR FORCE BASES

Where they are

How they were named

What the housing situation is

ALEXANDRIA AFB, La., 6 mi. NNW of Alexandria. Fighter-bomber base, 9th AF, TAC; named for city. Housing: officers, good; airmen, good.

ALTUS AFB, Okla., 2 mi. E of Altus. Medium bomber base, SAC; named for city. Housing: officers, fair; airmen, fair.

AMARILLO AFB, Tex., 14 mi. SE of Amarillo. Jet mechanics and airframe repair schools, TTAF, ATRC; named for city. Housing: officers, excellent; airmen, excellent.

ANDREWS AFB, Md., 1 mi. E of Camp Springs, 11 mi. SE of Washington, D. C. Hq., MATS; fighter-interceptor base, EADF, ADC; formerly Pyles Field; renamed for Lt. Gen. Frank M. Andrews, pioneer exponent of airpower, CG of US forces in Europe, killed in aircraft accident, Iceland, 1943. Housing: officers, good; airmen, good.

ARDMORE AFB, Okla., 16 mi. NE of Ardmore. Troop carrier base, 18th AF, TAC; named for city. Housing: officers, fair; airmen, fair.

ARNOLD ENGINEERING DEVELOPMENT CENTER, Tenn., 10 mi. E of Tullahoma. Hq., AEDC; named for Gen. H. H. "Hap" Arnold, WW II AF Commanding General. Housing: officers, good; airmen, good.

ATTERBURY AFB, Ind., 3 mi. N of Columbus. Reserve training, 10th AF, ConAC; formerly Columbus AAB, renamed for Army camp for Army Brig. Gen. W. W. Atterbury, WW I transportation commander in ETO. Housing: officers, fair; airmen, fair.

BAINBRIDGE AB, Ga., 7 mi. NW of Bainbridge. Primary contract pilot training, FTAF, ATRC; named for city. Housing: officers, fair; airmen, fair.

BARKSDALE AFB, La., 1 mi. S of Bossier City, 6 mi. E of Shreveport. Hq., 2nd AF, SAC; medium bomber base; named for Lt. Eugene H. Barksdale, WW I pilot killed near Wright Field, Ohio, Aug. 1926, while testing observation-type plane. Housing: officers, excellent; airmen, excellent.

BARTOW AB, Fla., 5 mi. NE of Bartow. Primary contract pilot training, FTAF, ATRC; named for city. Housing: officers, excellent; airmen, excellent.

BEALE AFB, Calif., 11 mi. SE of Marysville. Aviation Engineer Force, ConAC; named for Camp Beale, for Brig. Gen. Edward F. Beale, California Indian agent before the Civil War. Housing: officers, good; airmen, good.

BERGSTROM AFB, Tex., 7 mi. SE of Austin. Strategic fighter base, 8th AF, SAC; formerly Del Valle AAB; renamed for Capt. John A. E. Bergstrom of Austin, killed at Clark Field, P. I., Dec. 1941, during Jap bombardment. Housing: officers, excellent; airmen, excellent.

BIGGS AFB, Tex., 6 mi. NW of El Paso. Medium bomber and tow target base, 8th AF, SAC; named for Lt. James B. Biggs, WW I fighter pilot, killed in France, 1918. Housing: officers, poor; airmen, poor.

BOLLING AFB, 3 mi. S of Washington, D. C. Hq. Command, USAF; named for Col. Raynal C. Bolling, Ass't Chief of Air Service, died saving life of a 19-year-old private near Amiens, France, 1918. Housing: officers, excellent; airmen, good.

BROOKLEY AFB, Ala., 3 mi. SSW of Mobile. Air Materiel Area, AMC; foreign clearing station, MATS; formerly Bates Field, renamed for Capt. Wendell H. Brookley, test pilot, killed in

(Continued on following page)

BT-2B crash near Bolling Field, Feb. 1934. Housing: officers, good; airmen, fair.

BROOKS AFB, Tex., 7 mi. SSE of San Antonio. Hq., USAF Security Service, 14th AF, ConAC; formerly Gosport Field, renamed for Lt. Sidney J. Brooks, Jr., of San Antonio, killed in air crash near Hondo, Tex., Nov. 1917, on final day of cadet training and commissioned posthumously. Housing: officers, excellent; airmen, excellent.

BRYAN AFB, Tex., 6 mi. WSW of Bryan. Basic single-engine jet pilot training; FTAF, ATRC; named for city. Housing: officers, excellent; airmen, excellent.

BURLINGTON MUNICIPAL AP, Vt., 3 mi. E of Burlington. Fighter-interceptor base, EADF, ADC; named for city. Housing at Ethan Allen AFB.

CAMPBELL AFB, Ky., 14 mi. S of Hopkinsville. Air Base Squadron, 2d AF, SAC; named for Fort Campbell, for Gen. William Bowen Campbell, 19th century Tennessee governor, Indian fighter, and public figure. Housing: officers, good; airmen, good.

CARSWELL AFB, Tex., 7 mi. WNW of Fort Worth. Hq., 8th AF, SAC; heavy bomber base; formerly Tarrant Field, renamed for Maj. Horace S. Carswell, Jr., of Fort Worth, WW II B-24 pilot and winner of CMH, killed in China, Oct. 1944. Housing: officers, excellent; airmen, excellent.

CASTLE AFB, Calif; 7 mi. NW of Merced. Heavy bomber base, 15th AF, SAC; formerly Merced Field, renamed for Brig. Gen. Frederick W. Castle, WW II B-17 pilot and winner of CMH, killed over Germany, Dec. 1944. Housing: officers, excellent; airmen, excellent.

CHANUTE AFB, Ill., 1 mi. SE of Rantoul. Aircraft maintenance, weather, and administrative schools, TTAF, ATRC; named for Octave Chanute, aviation pioneer and navigation engineer, died in US, 1910. Housing: officers, good; airmen, fair.

CHARLESTON AFB, S. C., 10 mi. N of Charleston. Troop carrier base, 18th AF, TAC; named for city. Housing: officers, fair; airmen, fair.

CLINTON COUNTY AFB, Ohio, 2 mi. SE of Wilmington. Reserve combat training, 1st AF, ConAC; named geographically. Housing: officers, good; airmen, fair.

CLOVIS AFB, N. Mex., 7 mi. W of Clovis. Fighter-bomber base, 9th AF, TAC; named for city. Housing: officers, good; airmen, good.

COLUMBUS AB, Miss., 9 mi. N of Columbus. Primary contract pilot training, FTAF, ATRC named for city. Housing: officers, good; airmen, good.

CRAIG AFB, Ala., 5 mi. SE of Selma. Instructor pilot training, FTAF, ATRC; named for Bruce K. Craig, flight engineer for B-24 manufacturer, killed during B-24 test flight, in US, 1941. Housing: officers, good; airmen, good.

DALLAS NAS, Tex. (Hensley Field) 11 mi. SSW of Dallas. Reserve training, 14th AF, ConAC; named for Maj. William N. Hensley, airpower pioneer, died in US, 1929. Housing: officers, good; airmen, good.

DAVIS-MONTHAN AFB, Ariz., 4 mi. SE of Tucson. Medium bomber base, 15th AF, SAC; formerly Tucson Municipal Airport, renamed for Lt. Samuel H. Davis, killed in US, 1921, and Lt. Oscar Monthan, bomber pilot, killed in Hawaii, 1924. Housing: officers, excellent; airmen, excellent.

DOBBINS AFB, Ga., 2 mi. SE of Marietta. Reserve training, 14th AF, ConAC, CADF, ADC, joint use; formerly Marietta AFB; renamed for Capt. Charles M. Dobbins, killed transporting paratroopers over Sicily, July 1943. Housing: officers, excellent; airmen, excellent.

DONALDSON AFB, S. C., 7 mi. SSE of Greenville. Hq., 18th AF, TAC, troop carrier base; formerly Greenville AFB; renamed for Maj. John O. W. Donaldson, fourth ranking US ace in WW I, killed in flying accident near Philadelphia, Sept. 1930, during aerial circus. Housing: officers, good; airmen, good.

DOVER AFB, Del., 3 mi. SE of Dover. Air transport base, MATS; named for city. Housing: officers, fair; airmen, fair.

DOW AFB, Me., 2 mi. W of Bangor. Strategic Fighter Base, 8th AF, SAC; formerly Bangor AB; renamed for 2d Lt. James F. Dow of Oakfield, Me., killed in crash near Mitchel Field, June 1940. Housing: officers, good; airmen, fair.

DULUTH MUNICIPAL AP, Minn., 7 mi. NNW of Duluth. Fighter-interceptor base, CADF, ADC; formerly Williamson-Johnson AP; renamed for city. Housing: officers, fair; airmen, fair.

EDWARDS AFB, Calif., 2 mi. S of Muroc. Hq., AF Flight Test Center, ARDC; formerly Muroc AFB; renamed for Capt. Glen W. Edwards, test pilot, killed at Muroc Field, June 1948, in crash of YB-49 Flying Wing. Housing: officers, fair; airmen, fair.

EGLIN AFB, Fla., 2 mi. SW of Valparaiso. Hq., Air Proving Ground; Hq., AF Armament Center, ARDC; named for Lt. Col. Frederick I. Eglin, killed in US, 1937. Housing: officers, good; airmen, good.

ELLINGTON AFB, Tex., 16 mi. SE of Houston. Observer training, FTAF, ATRC; named for 2d Lt. Eric L. Ellington, killed during training flight near San Diego, 1913. Housing: officers, excellent; airmen, excellent.

ELLSWORTH AFB, S.D., 8 mi. NE of Rapid City. Heavy strategic recon base, 8th AF, SAC; formerly Rapid City AFB; renamed for Brig. Gen. Richard E. Ellsworth, killed in B-36 crash in Newfoundland, March 1952. Housing: officers, fair; airmen, fair.

ENT AFB, Colo., 8 mi. NE of Colorado Springs. Hq., ADC; named for Brig. Gen. Uzal G. Ent, CG, 2d AF, recipient of DSC, died in 1948. Housing: officers, fair; airmen, fair.

ETHAN ALLEN AFB, Vt., 2 mi. E of Winooski, Fighter-interceptor base, EADF, ADC; named for the famed Revolutionary War leader of the Green Mountain Boys. Housing: officers, good; airmen, good.

FAIRCHILD AFB, Wash., 11 mi. WSW of Spokane. Heavy bomber base, 15th AF, SAC; formerly Spokane AFB; renamed for Gen. Muir S. Fairchild, WW I bomber pilot, Vice Chief of Staff, USAF, died of heart attack, Washington, D.C., March 1950. Housing: officers, good, airmen, good.

FORBES AFB, Kan., 7 mi. S of Topeka. Medium strategic recon base, replacement training center, 15th AF, SAC; formerly Topeka AAB; renamed for Maj. Daniel H. Forbes, Jr., WW II bomber pilot, killed at Muroc Field in crash of YB-49 Flying Wing, June 1948. Housing: officers, good; airmen, fair.

FOSTER AFB, Tex., 5 mi. NE of Victoria. Fighter-bomber and day-fighter base, 9th AF, TAC; named for 1st Lt. Arthur L. Foster of Georgetown, Tex., killed in air crash near Brooks Field, Feb. 1925. Housing: officers, fair; airmen, fair.

FRANCIS E. WARREN AFB, Wyo., 2 mi. W of Cheyenne. Engineer, administrative schools, TTAF, ATRC; named for first US Senator from Wyoming, first elected governor of the state, Civil War winner of CMH, died in US, 1929. Housing: officers, excellent; airmen, good.

GARY AFB, Tex., 5 mi. E of San Marcos. Liaison helicopter school, FTAF, ATRC; formerly San Marcos AFB; renamed for 2d Lt. A. Edward Gary, native of San Marcos and WW II B-17 co-pilot, killed at Clark Field, Philippines, Dec. 1941. Housing: officers, fair; airmen, fair.

GEIGER AFB, Wash., 6 mi. WSW of Spokane. Fighter-interceptor base, WADF, ADC; formerly Sunset Field; renamed for Maj. Harold Geiger, WW I dirigible expert, killed while crash landing at Olmsted Field, May 1927. Housing: officers, good; airmen, good.

GEN. BILLY MITCHELL FIELD, Wis., 6 mi. S of Milwaukee. Reserve training, ConAC. Also known as Milwaukee County AP. Named for Gen. Billy Mitchell, pioneer flyer whose defiant faith in airpower brought about his court martial, died in US, 1936. Housing: officers, good; airmen, good.

GEORGE AFB, Calif., 6 mi. NW of Victorville. Fighter-bomber and day-fighter base, 9th AF, TAC; formerly Victorville AAB; renamed for Brig. Gen. Harold H. George, WW I ace, commander of US Air Forces in Australia in WW II, killed in Australia, April 1942. Housing: officers, fair; airmen, fair.

GOODFELLOW AFB, Tex., 2 mi. SE of San Angelo. Primary pilot training school, FTAF, ATRC; named for Lt. John J. Goodfellow, Jr., of San Angelo, killed in fighter combat, France, Sept. 1918. Housing: officers, good; airmen, excellent.

(Continued on page 87)

The 3 frontiers of know-how...

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DEVELOPMENT 2

3 PRODUCTION

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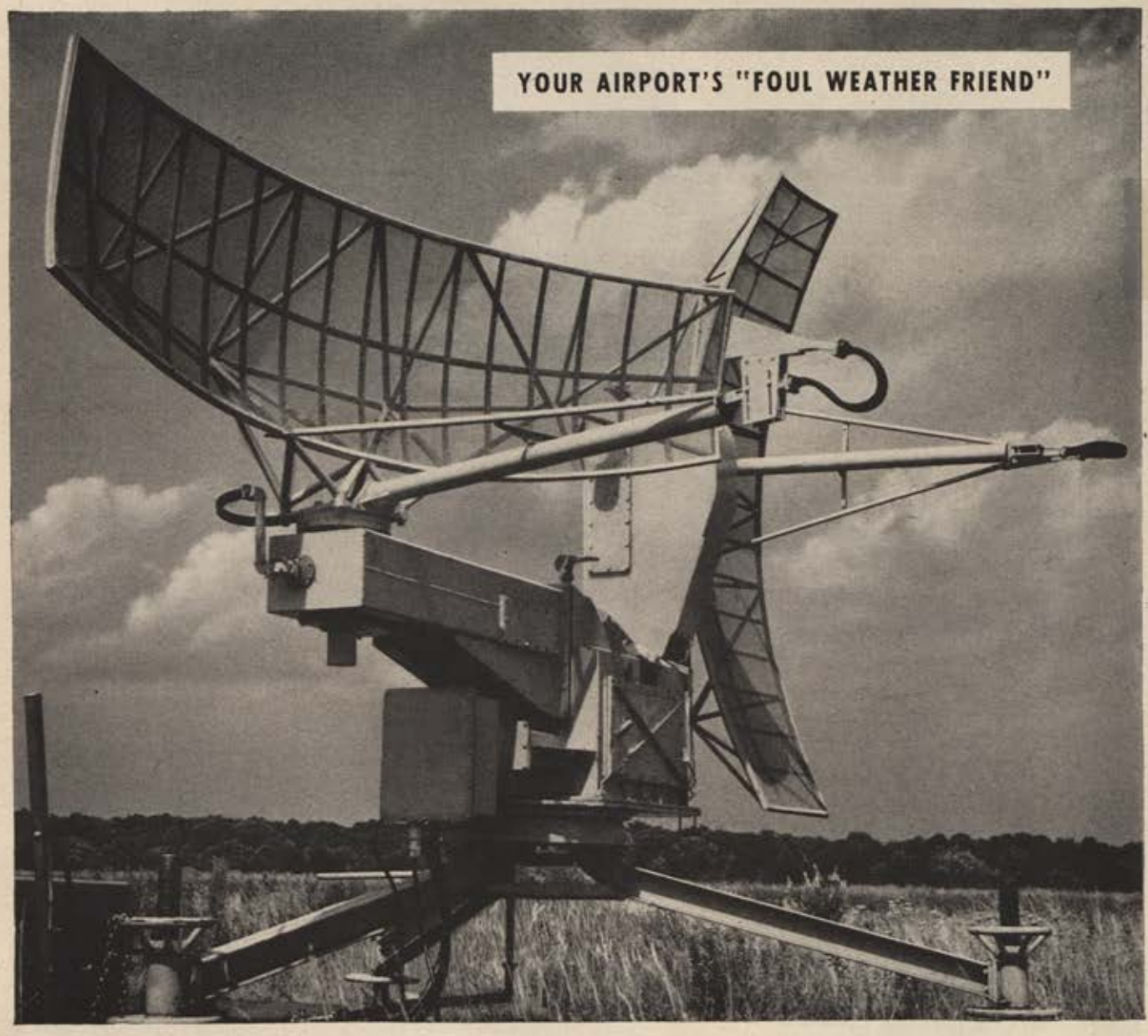

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MARANA AB, Ariz., 35 mi. NW of Tucson. Basic single-engine pilot training, FTAF, ATRC; named for nearby city. Housing: officers, good; airmen, good.

MARCH AFB, Calif., 9 mi. SE of Riverside. Hq., 15th AF, SAC; medium bomber and air rescue base; named for Lt. Peyton C. March, Jr., son of WW I Army Chief of Staff, killed in air crash in US, 1918. Housing: officers, good; airmen, good.

MATAGORDA ISLAND BOMBING AND GUNNERY RANGE, 9 mi. SSW of Port O'Conner, Tex. Training installation, 8th AF, SAC; named for island in Gulf of Mexico. Housing: officers, fair; airmen, fair.

MATHER AFB, Calif., 10 mi. E of Sacramento. Observer training, FTAF, ATRC; air rescue base; named for Lt. Carl S. Mather, killed near Ellington Field during training flight, 1918, five days after receiving commission. Housing: officers, good; airmen, good.

MAXWELL AFB, Ala., 3 mi. WNW of Montgomery. Hq., Air University; Air War College, AU; air rescue base; named for 2d Lt. William C. Maxwell of Natchez, killed on Luzon, Philippines, Aug. 1920, while attempting emergency landing. Housing: officers, good; airmen, good.

McCHORD AFB, Wash., 8 mi. S of Tacoma. Fighter-interceptor base. WADF, ADC; air rescue base, foreign clearing station, MATS; named for Col. William C. McChord, killed in US, 1937. Housing: officers, excellent; airmen, excellent.

McCLELLAN AFB, Calif., 10 mi. NE of Sacramento. Hq., Air Materiel Area, AMC; named for Maj. Hezekiah McClellan, pioneer in arctic aeronautical experiments, killed in test flight of new plane, US, 1936. Housing: officers, good; airmen, fair.

McCONNELL AFB, Kan., 5 mi. SE of Wichita. Medium bomber crew training, CTAF, ATRC; formerly Wichita AFB; renamed for the two McConnell brothers of Wichita, Thomas L., killed July 10, 1943, in the S. Pacific, and Fred M. Jr., killed in 1945 in a private plane crash in Kansas. Housing: officers, good; airmen, fair.

McGHEE-TYSON MUNICIPAL AP, Tenn., 12 mi. SSW of Knoxville. Fighter-interceptor base, CADF, ADC; named for Charles McGhee Tyson, WW I flyer whose family donated land for the airport. Housing: officers, good; airmen, good.

McGUIRE AFB, Fort Dix, N.J., 1 mi. SE of Wrightstown. Transport base, MATS; formerly Fort Dix AAB, renamed for Maj. Thomas B. McGuire, Jr., of Ridgewood, N. J., 2d ranking WW II ace, P-38 pilot, winner of CMH, recipient of DSC, killed over Leyte, P. I., 1945. Housing: officers, good; airmen, good.

MEMPHIS MUNICIPAL AP, Tenn., 6 mi. SSE of Memphis. Reserve training, 14th AF, ConAC; named for city. Housing: officers, excellent; airmen, excellent.

MIAMI INTERNAT'L AP, Fla., 5 mi. NW of Miami. Reserve training; 14th AF, ConAC; named for city. Housing: officers, excellent; airmen, excellent.

MINNEAPOLIS-ST. PAUL INTERNAT'L AP, Minn., 7 mi. SSE of Minneapolis. Fighter-interceptor base, CADF, ADC; formerly Wold Chamberlain Field, renamed for twin cities. Housing: officers, good; airmen, fair.

MITCHEL AFB, N. Y., 2 mi. NE of Hempstead, L. I. Hq., ConAC; Hq., 1st AF; named for Maj. John P. Mitchel, first Fusion mayor of NYC, fighter pilot, killed in air crash in Louisiana, July 1918. Housing: officers, fair; airmen, fair.

MOODY AFB, Ga., 12 mi. NNE of Valdosta. Advance flying and instrument training, CTAF, ATRC; named for Maj. George P. Moody, fighter pilot, killed in US, 1941. Housing: officers, fair; airmen, fair.

MOUNTAIN HOME AFB, Idaho, 11 mi. WSW of Mountain Home. Medium bomber base, SAC; named for city. Housing: officers, fair; airmen, fair.

NELLIS AFB, Nev., 8 mi. NE of Las Vegas. Air crew school, gunnery school, CTAF, ATRC; formerly Las Vegas AFB; renamed for Lt. William H. Nellis, of Las Vegas, fighter pilot, killed in action over Luxembourg, Dec. 1944. Housing: officers, fair; student officers, fair; airmen, fair.

NEW CASTLE CO. AP, Del., 5 mi. SW of Wilmington. Fighter-interceptor base, EADF, ADC; named geographically. Housing: officers, good; airmen, good.

NEW YORK NAS, N. Y., (Floyd Bennett Field) Reserve training center, 1st AF, ConAC, joint use with Navy; named for Admiral Byrd's pilot on first flight over North Pole, 1926. Housing: officers, fair; airmen, fair.

NIAGARA FALLS MUNICIPAL AP, N. Y., 4 mi. E of Niagara Falls. Fighter-interceptor base, EADF, ADC; Reserve training, ConAC; named for city. Housing: officers, fair; airmen, fair.

NORTON AFB, Calif., 5 mi. ESE of San Bernardino. Hq., Air Materiel Area, AMC; formerly San Bernardino Air Depot, renamed for Capt. Leland F. Norton, bomber pilot killed near Amiens, France, May 1944. Housing: officers, excellent; airmen, excellent.

OFFUTT AFB, Neb., 9 mi. S of Omaha. Hq., SAC; named for 1st Lt. James Jarvis Offutt, killed in fighter action, France, 1918. Housing: officers, good; airmen, good.

O'HARE INTERNAT'L AP, Ill., 15 mi. NW of Chicago. Fighter-interceptor base, EADF, ADC; Reserve training; formerly Douglas Airport; renamed for Lt. Cmdr. Edward H. O'Hare of Chicago, Navy pilot in WW II, winner of CMH, killed in action near Tarawa in the Pacific, 1943. Housing: officers, fair; airmen, fair.

OLATHE NAS, Kan., 5 mi. SW of Olathe. Reserve training. 10th AF, ConAC; joint use with Navy; named for city. Housing: officers, good; airmen, good.

OLMSTED AFB, Pa., 1 mi. NW of Middletown. Hq., Air Materiel Area, air freight terminal, AMC; formerly Middletown Air Depot, renamed for Lt. Robert S. Olmsted, balloon pilot, killed when his balloon was struck by lightning over Belgium, Sept. 1923. Housing: officers, good; airmen, good.

ORLANDO AFB, Fla., 2 mi. E of Orlando. Hq., Air Photographic and Charting Service, Hq., Air Rescue Service, Hq., Flight Service, MATS; named for city. Housing: officers, excellent; airmen, excellent.

OTIS AFB, Mass., 9 mi. NNE of Falmouth. Fighter-interceptor base, EADF, ADC; air rescue base; named for Lt. Frank J. Otis, killed in air crash in US, 1937. Housing: officers, good; airmen, good.

OXNARD AFB, Oxnard, Calif. Fighter-interceptor base, WADF, ADC; named for city. Housing: officers, fair; airmen, fair.

PAINE AFB, Wash., 6 mi. S of Everett. Fighter-interceptor base, WADF, ADC; named for 2d Lt. Topliff O. Paine, air mail pilot, killed in US while mapping air mail routes, 1922. Housing: officers, good; airmen, good.

PALM BEACH AFB, Fla., 2 mi. W of West Palm Beach. Transport base, MATS; formerly Morrison Field, renamed for city. Housing: officers, fair; airmen, fair.

PARKS AFB, Calif., Pleasanton, 28 mi. E of Oakland. Hq., Air Base Defense School, TTAF, ATRC; overseas replacement depot; formerly Camp Shoemaker (Navy), renamed for Adm. Charles W. Parks, naval engineer. Housing: officers, excellent; airmen, good.

PATRICK AFB, Fla., 12 mi. SE of Cocoa. Hq., AF Missile Test Center, ARDC; formerly Banana River NAS, renamed for Maj. Gen. Mason M. Patrick, Chief of Army Air Service during and after WW I, died in US, Jan. 1942. Housing: officers, fair; airmen, fair.

PERRIN AFB, Tex., 6 mi. NNW of Sherman. Fighter-interceptor training, CTAF, ATRC; named for Lt. Col. Elmer D. Perrin of Boerne, Tex., killed testing a B-26 near Baltimore, June 1941. Housing: officers, fair; airmen, fair.

PETERSON FIELD, Colo., 6 mi. E of Colorado Springs. Administrative flying, ADC; named for 1st Lt. Edward J. Peterson, killed in US, in airplane crash, 1942. Housing: officers: fair; airmen, fair.

PINECASTLE AFB, Fla., 7 mi. S of Orlando. Medium bomber base, 2d AF, SAC; named for nearby city. Housing: officers, excellent; airmen, good.

POPE AFB, Fort Bragg, N. C., 12 mi. W of Fayetteville. Hq., 9th AF, TAC; named for 1st Lt. Harley H. Pope, killed while making a forced landing in a Jenny in South Carolina, Jan. 1919. Housing: officers, good; airmen, good.

PORTLAND INTERNAT'L AP, Ore., 5 mi. NNE of Portland. Fighter-interceptor base, WADF, ADC; troop carrier base; named for city. Housing: officers, excellent; airmen, good.

PRESQUE ISLE AFB, Me., 1 mi. NW of Presque Isle. Fighter-inter-

(Continued on page 93)

GRAHAM AB, Fla., 5 mi. NE of Marianna. Primary contract pilot training, FTAF, ATRC; named after operator of field, formerly Marianna AB. Housing: officers, fair; airmen, fair.

GRANDVIEW AFB, Mo., 16 mi. S of Kansas City. Hq., CADF, ADC; formerly Grandview AP, named for nearby city. Housing: officers, fair, airmen, fair.

GRAY AFB, Tex., 6 mi. SW of Killeen. Special activities base, 8th AF, SAC; formerly Camp Hood AAF; renamed for Capt. Robert M. Gray, pilot on first Tokyo bombing mission of WW II, killed in India, 1942. Housing: officers, excellent; airmen, fair.

GREATER PITTSBURGH AP, Pa., 5 mi. SW of Coraopolis. Fighter-interceptor base, EADF, ADC; named for nearby city. Housing: officers, good; airmen, fair.

GREAT FALLS AFB, Mont., 4 mi. E of Great Falls. Strategic fighter base, SAC; named for city. Housing: officers, fair; airmen, fair.

GREENVILLE AB, Miss., 6 mi. NE of Greenville. Primary pilot training school, FTAF, ATRC; named for city. Housing: officers, fair; airmen, fair.

GRENIER AFB, N.H., 4 mi. S of Manchester. Transport base, MATS; named for 2d Lt. Jean D. Grenier of Manchester, killed in US, 1934, while in snowstorm during air mail test run. Housing: officers, fair; airmen, fair.

GRIFFISS AFB, N. Y., 2 mi. NE of Rome. Hq., Rome Air Development Center, ARDC; Rome AF Depot, AMC; formerly Rome AB; renamed for Lt. Col. Townsend E. Griffiss of Buffalo, recipient of DSC, killed on flight from Russia to England, Feb. 1942. Housing: officers, fair; airmen, fair.

GUNTER AFB, Ala., 5 mi. NE of Montgomery. Air Command and Staff School; Branch, USAF School of Aviation Medicine, AU; named for William A. Gunter, mayor of Montgomery for 27 years, ardent exponent of airpower, died in 1940. Housing: officers, good; airmen, good.

HAMILTON AFB, Calif., 6 mi. NNE of San Rafael. Hq., 4th AF, ConAC; Hq., WADF, ADC; air rescue base, MATS; formerly Marin Meadows, renamed for 1st Lt. Lloyd A. Hamilton, recipient of DSC, killed in fighter combat, France, Aug. 1918. Housing: officers, excellent; airmen, good.

HARLINGEN AFB, Tex., near Harlingen. Observer training, FTAF, ATRC; named for city. Housing: officers, good; airmen, good.

HILL AFB, Utah, 6 mi. S of Ogden. Hq., Air Materiel Area, AMC; named for Maj. Ployer P. Hill, killed near Wright Field while testing one of first B-17s, Oct. 1935. Housing: officers, good; airmen, good.

HOLLOMAN AFB, N. Mex., 8 mi. SW of Alamogordo. Hq., Holloman Air Development Center, ARDC; formerly Alamogordo AAB; renamed for Col. George V. Holloman, guided missile pioneer, killed in air crash in Formosa, March 1946. Housing: officers, poor; airmen, poor.

HONDO AB, Tex., 1 mi. NW of Hondo. Primary contract pilot training, FTAF, ATRC; named for city. Housing: officers, good; airmen, good.

HUNTER AFB, Ga., 3 mi. SW of Savannah. Medium bomber base, 2d AF, SAC; named for Maj. Gen. Frank O'D. Hunter, WW I ace, recipient of DSC, four clusters; past AFA Director. Housing: officers, good; airmen, good.

INDIAN SPRINGS AFB, Nev., 1 mi. NW of Indian Springs. Special weapons testing base, ARDC; named for city. Housing: officers, fair; airmen, fair.

JAMES CONNALLY AFB, Tex., 7 mi. NNE of Waco. Observer training and single-engine jet pilot training, FTAF, ATRC; formerly Waco AFB; renamed for Col. James T. Connally of Waco, killed on B-29 mission over Yokohama, Japan, May 1945. Housing: officers, excellent; airmen, excellent.

KEESLER AFB, Miss., 2 mi. WNW of Biloxi. Electronics, communications, and radar schools, TTAF, ATRC; named for Lt. Samuel R. Keesler, Jr., of Greenwood, Miss., aerial observer, killed on special bombing mission near Verdun, France, Oct. 1918. Housing: officers, excellent; airmen, excellent.

KELLY AFB, Tex., 6 mi. WSW of San Antonio. Hq., Air Materiel Area, AMC; foreign clearing station, MATS; named for Lt. George E. M. Kelly, a pioneer Army pilot who was killed in the US, 1911. Housing: officers, excellent; airmen, excellent.

KINROSS AFB, Mich., 3 mi. SE of Kinross. Fighter-interceptor base, EADF, ADC; named for nearby city. Housing: officers, fair; airmen, fair.

KIRTLAND AFB, N. Mex., 4 mi. SSE of Albuquerque. Hq., AF Special Weapons Center, ARDC; formerly Albuquerque AAB; renamed for Col. Roy S. Kirtland, aviation pioneer and former CO of Langley Field, died in 1941. Housing: officers, good; airmen, good.

LACKLAND AFB, Tex., 7 mi. WSW of San Antonio. Basic training, OCS, WAF training, TTAF, ATRC; Hq., AF Personnel and Training Research Center, ARDC; formerly San Antonio Aviation Cadet Center; renamed for Brig. Gen. Frank D. Lackland, former Commandant of Kelly Field flying school, died in 1943. Housing: officers, excellent; airmen, excellent.

LAKE CHARLES AFB, La., 3 mi. E. of Lake Charles. Medium bomber base, 2d AF, SAC; named for city. Housing: officers, fair; airmen, fair.

LANGLEY AFB, Va., 3 mi. N of Hampton. Hq., TAC; Fighter-bomber and light bombardment school; fighter-bomber base; named for Samuel P. Langley, pioneer aeronautical scientist, died in 1906. Housing: officers, good; airmen, good.

LAREDO AFB, Tex., on Rio Grande, near Laredo. Single-engine jet pilot training, FTAF, ARTC; named for city. Housing: officers, poor; airmen, poor.

LARSON AFB, Wash., 6 mi. NNW of Moses Lake. Troop carrier base, 18th AF, TAC; formerly Moses Lake AFB; renamed for Maj. Donald A. Larson, native of Yakima, Wash., WW II ace, killed on fighter mission over Ulzen, Germany, Aug. 1944. Housing: officers, good; airmen, good.

LAUGHLIN AFB, Tex., 7 mi. E of Del Rio. Air service base, ATRC; named for Lt. Jack T. Laughlin, pilot killed in action in Far East, 1942. Housing: officers, fair; airmen, fair.

LAURENCE G. HANSCOM FIELD, Mass., 1 mi. SSW of Bedford. Hq., AF Cambridge Research Center, ARDC; fighter-interceptor base, EADF, ADC; formerly Bedford AFB; renamed for Laurence Hanscom, Boston and Worcester newspaperman, Army Reserve pilot, killed near base, 1941. Housing: officers, excellent; airmen, excellent.

LAWSON AFB, Fort Benning, Ga., 7 mi. S of Columbus. Troop carrier base, 18th AF, TAC; named for Capt. Walter R. Lawson, WW I pilot, killed in aircraft accident at McCook (now Wright-Patterson) Field, 1923. Housing: officers, fair; airmen, fair.

LIMESTONE AFB, Me., 2 mi. NW of Limestone. Heavy bomber base, 8th AF, SAC; named for city. Housing: officers, fair; airmen, fair.

LINCOLN AFB, Neb., 5 mi. NW of Lincoln. Medium bomber base, 15th AF, SAC; named for city. Housing: officers, good; airmen, good.

LOCKBOURNE AFB, Ohio, 11 mi. SSE of Columbus. Medium strategic recon bomber base, 2d AF, SAC; named for city. Housing: officers, fair; airmen, fair.

LONG BEACH MUNICIPAL AP, Calif., 3 mi. NE of Long Beach. Reserve training, fighter base, 4th AF, ConAC; named for city. Housing: officers, good; airmen, good.

LOWRY AFB, Colo., 5 mi. ESE of Denver. Flexible gunnery, armament, ordnance, photographic, supply, administrative schools, TTAF, ATRC; named for Lt. Francis B. Lowry of Denver, recipient of DSC, killed on photo mission over France, Sept. 1918; only Colorado airman to be killed in WW I. Housing: officers, good; airmen, good.

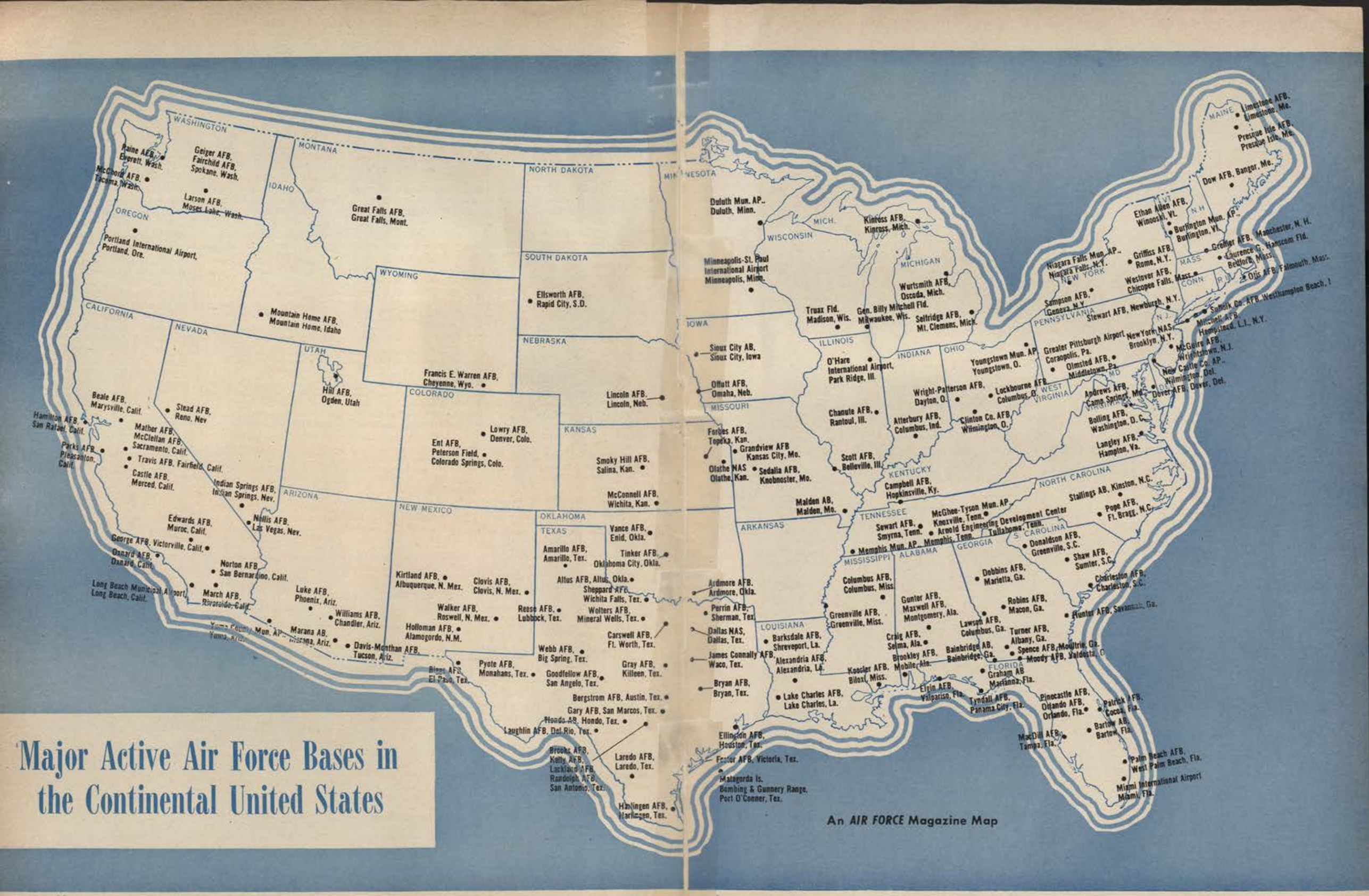
LUKE AFB, Ariz., 20 mi. WNW of Phoenix. Fighter-bomber advanced training; air crew training; ATRC; named for Lt. Frank Luke, Jr., "balloon-busting" WW I ace, winner of CMH and recipient of DSC, killed in France, 1918. Housing: officers, excellent; airmen, excellent.

MacDILL AFB, Fla., 8 mi. SSW of Tampa. Medium bomber base, 2d AF, SAC; named for Col. Leslie MacDill, fighter pilot, killed in air crash at Anacostia, Md., 1938. Housing: officers, excellent; airmen, excellent.

MALDEN AB, Mo., 4 mi. N of Malden. Primary contract pilot training, FTAF, ATRC; named for city. Housing: officers, fair; airmen, fair.

(Continued on page 90)

Major Active Air Force Bases in the Continental United States



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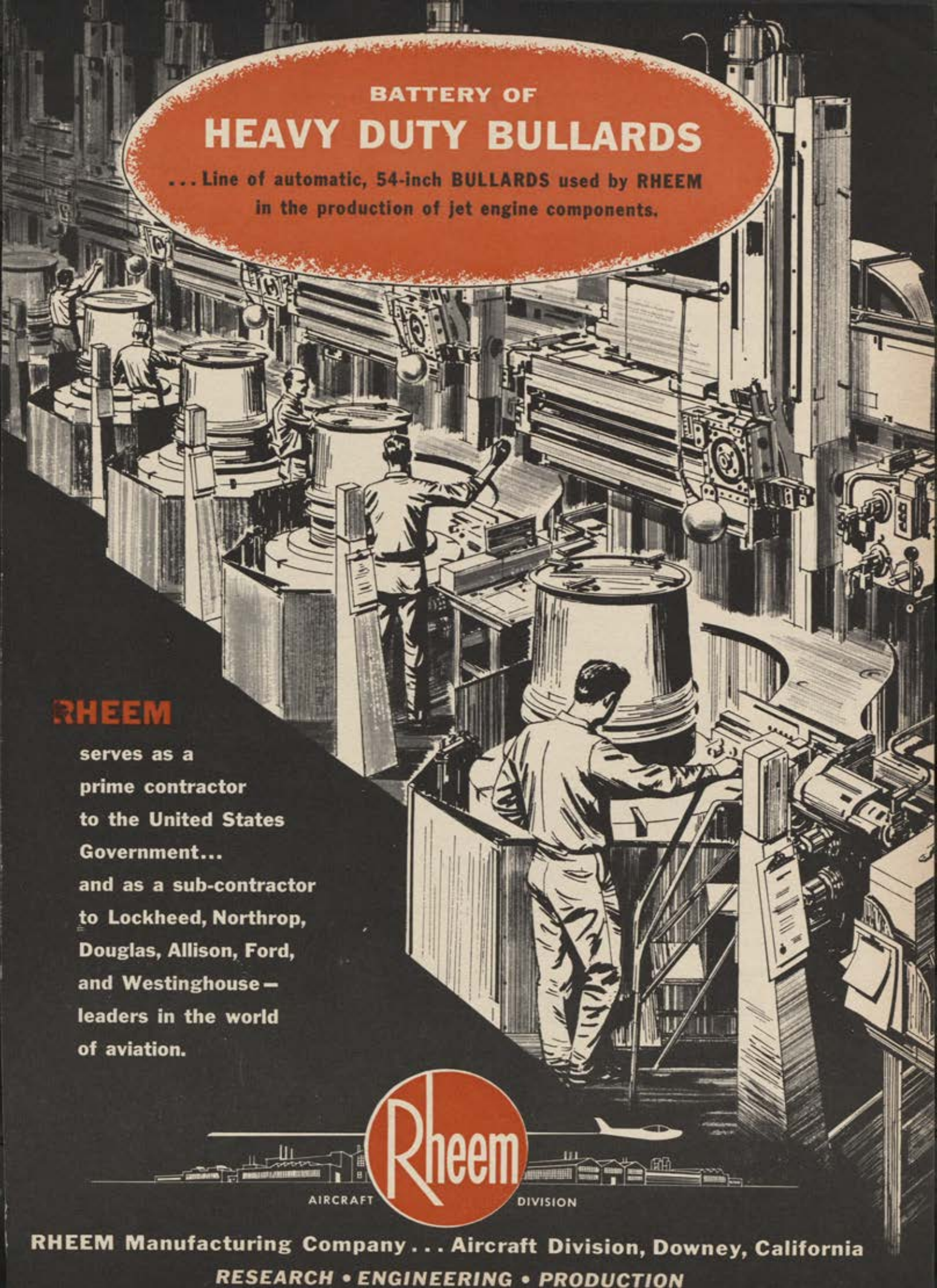

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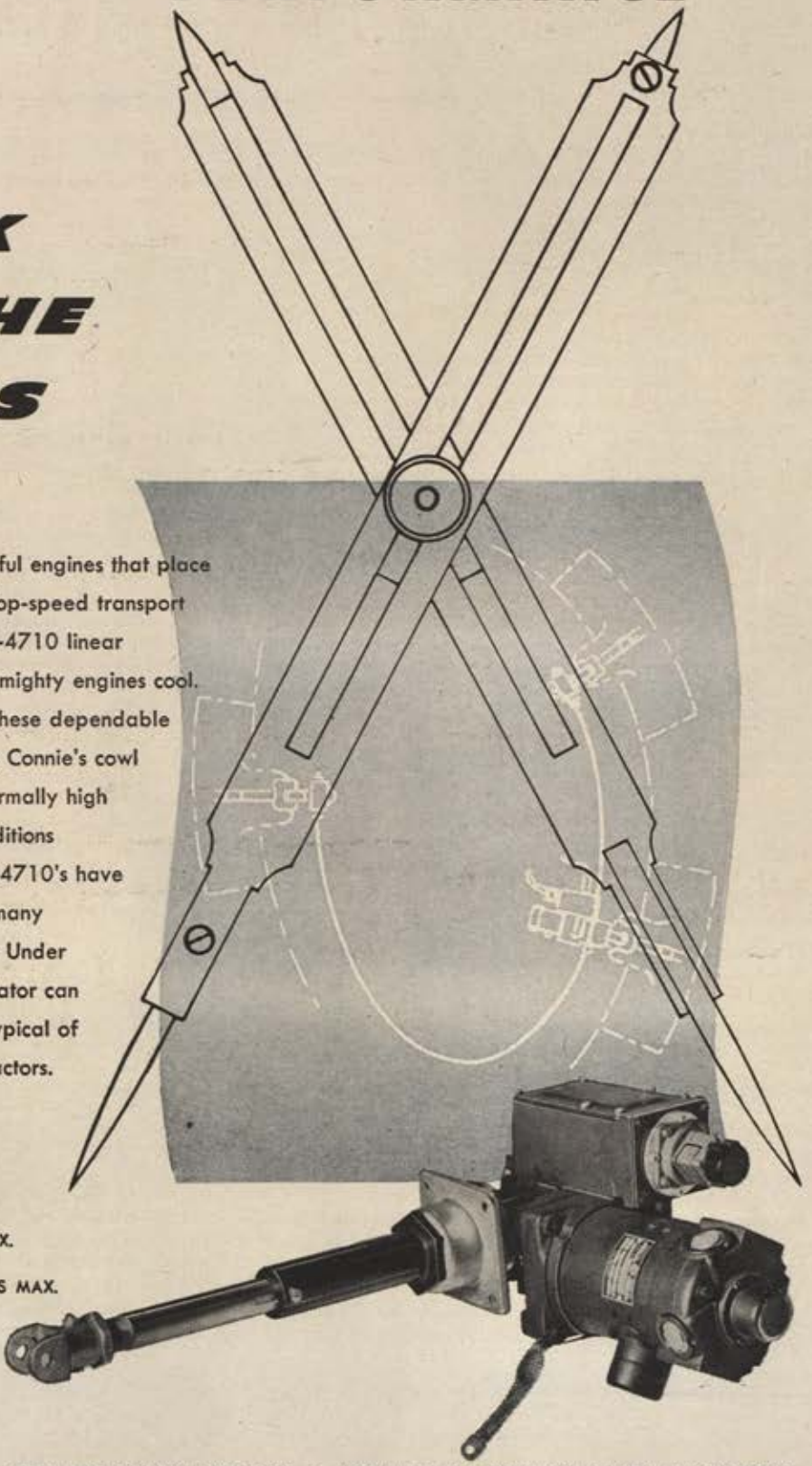

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ceptor base, EADF, ADC; named for city. Housing: officers, fair; airmen, fair.

PYOTE AFB, Tex., 1 mi. SW of Pyote, near Monahans. A/C storage, AMC; named for city. Housing: officers, fair; airmen, fair.

RANDOLPH AFB, Tex., 15 mi. ENE of San Antonio. Medium bomber training, CTAF, ATRC; School of Aviation Medicine; named for Capt. William M. Randolph of Austin, fighter pilot, killed in aircraft accident in Texas, 1928. Housing: officers, excellent; airmen, good.

REESE AFB, Tex., 12 mi. W of Lubbock. Multi-engine pilot training, FTAF, ATRC; formerly Lubbock AFB, renamed for Lt. Augustus F. Reese, Jr., of Shallowater, Tex., killed on bomber mission over Cagliari, Italy, May 1943. Housing: officers, excellent; airmen, excellent.

ROBINS AFB, Ga., 14 mi. SSE of Macon. Hq., 14th AF, ConAC; Hq., Air Materiel Area, AMC; named for Brig. Gen. Augustine Warner Robins, Chief, Materiel Division, Air Corps, who devised system of cataloging in 1920s still used; died in 1940. Housing: officers, excellent; airmen, excellent.

SAMPSON AFB, N. Y., near Geneva. Processing center, basic training, TTAF, ATRC; former Navy base named for Rear Adm. William T. Sampson, Atlantic Fleet commander in Spanish-American War, died in 1902. Housing: officers, good; airmen, fair.

SCOTT AFB, Ill, 6 mi. ENE of Belleville. Hq., ATRC; communications school; named for Cpl. Frank S. Scott, first enlisted man to die in an air accident, killed at College Park, Md., 1912. Housing: officers, good; airmen, good.

SEDALIA AFB, Mo., 3 mi. S of Knobnoster. Air services base, medium bomber base, 8th AF, SAC; named for nearby city. Housing: officers, fair; airmen, fair.

SELFRIDGE AFB, Mich., 3 mi. E of Mount Clemens. Hq., 10th AF, ConAC, fighter-interceptor base, EADF, ADC; air rescue base; named for Lt. Thomas E. Selfridge, killed in 1908 demonstrating Wright Brothers' plane for government. Housing: officers, excellent; airmen, good.

SEWART AFB, Tenn., 3 mi. N of Smyrna. Troop carrier base, 18th AF, TAC; formerly Smyrna AAB, renamed for Maj. Allan J. Sewart, Jr., bomber pilot, recipient of DSC, killed in action over the Solomons, Nov. 1942. Housing: officers, fair; airmen, fair.

SHAW AFB, S. C., 7 mi. WNW of Sumter. Tactical recon, 9th AF, TAC; named for 1st Lt. Erwin D. Shaw of Sumter, killed during recon flight over German lines, July 1918, while serving with Royal Flying Corps. Housing: officers, excellent; airmen, excellent.

SHEPPARD AFB, Tex., 6 mi. N of Wichita Falls. Aircraft maintenance school, TTAF, ATRC; named for Morris E. Sheppard, US Senator from Texas, chm. Senate Military Affairs Committee, who died in 1941. Housing: officers, good; airmen, good.

SIOUX CITY MUNICIPAL AP, Iowa, 10 mi. S of Sioux City. Fighter-interceptor base, CADF, ADC; named for city. Housing: officers, fair; airmen, fair.

SMOKY HILL AFB, Kan., 4 mi. SW of Salina. Medium bomber base, 15th AF, SAC; named for geographical area. Housing: officers, fair; airmen, fair.

SPENCE AB, Ga., near Moultrie. Primary contract pilot training, FTAF, ATRC; named for Lt. Thomas L. Spence of Thomasville, Ga., WW I pilot, killed in aircraft accident at end of war. Housing: officers, fair; airmen, fair.

STALLINGS AB, N. C., 5 mi. NW of Kinston. Primary contract pilot training, FTAF, ATRC; formerly Kinston-Lenoir Co. Airport, renamed for Lt. Harry F. Stallings, Jr., B-29 navigator, killed in action in Pacific, April 1945; and his brother, Lt. June Bruce Stallings, P-51 pilot, killed over Germany, March 1945. Housing: officers, fair; airmen, fair.

STEAD AFB, Nev., 10 mi. NW of Reno. Survival training, CTAF, ATRC; named locally. Housing: officers, good; airmen, fair.

STEWART AFB, N. Y., 4 mi. NW of Newburgh. Hq., EADF, ADC; fighter-interceptor base; named for Lachlan Stewart, sea captain whose father provided the original land for the base. Housing: officers, fair; airmen, fair.

SUFFOLK CO. AFB, N. Y., 3 mi. N of Westhampton Beach, L. I. Fighter-interceptor base, EADF, ADC; named for geographical area. Housing: officers, fair; airmen, fair.

TINKER AFB, Okla., 8 mi. SE of Oklahoma City. Hq., Air Materiel Area, AMC; air freight terminal; named for Maj. Gen. Clarence L. Tinker, a Pawhuska Indian, bomber and fighter pilot, CG, 7th AF, killed in Battle of Midway, June 1942. Housing: officers, good; airmen, good.

TRAVIS AFB, Calif., 6 mi. ENE of Fairfield and Suisun. Heavy strategic recon bomber base, 15th AF, SAC; foreign clearing station, MATS; formerly Fairfield-Suisun AFB, renamed for Brig. Gen. Robert F. Travis, bomber pilot, recipient of DSC, killed in B-29 crash in US, Aug. 1950. Housing: officers, good; airmen, good.

TRUAX FIELD, Wis., 1 mi. E of Madison. Fighter-interceptor base, CADF, ADC; named for 1st Lt. Thomas L. Truax of Madison, pilot killed in training flight in US, Nov. 1941. Housing: officers, fair; airmen, fair.

TURNER AFB, Ga., 4 mi. ENE of Albany. Strategic fighter base, 2d AF, SAC; named for Lt. Sullins Preston Turner of Oxford, Ga., killed in aircraft accident at Langley AFB, May 1940. Housing: officers, fair; airmen, fair.

TYNDALL AFB, Fla., 8 mi. SE of Panama City. Aircraft control and fighter-interceptor training, CTAF, ATRC; Air Police school; named for Lt. Frank B. Tyndall of Pt. Seward, Fla., WW I fighter pilot, killed in air crash, 1930, first Florida military flyer to be killed. Housing: officers, good; airmen, good.

VANCE AFB, Okla., 4 mi. SSW of Enid. Basic multi-engine pilot training, light bomber transition, FTAF, ATRC; formerly Enid AAB, renamed for Lt. Col. Leon R. Vance, Jr., WW II winner of CMH, lost in hospital aircraft when forced down at sea off Iceland, 1944. Housing: officers, excellent; airmen, excellent.

WALKER AFB, N. Mex., 6 mi. S of Roswell. Medium and heavy bomber base, 8th AF, SAC; formerly Roswell AAF, renamed for Brig. Gen. Kenneth N. Walker, a native of New Mexico, CG, 5th Bomber Command, WW II winner of CMH, killed in Southwest Pacific while leading a bombing attack, 1943. Housing: officers, good; airmen, fair.

WEBB AFB, Tex., near Big Spring. Advance single-engine pilot training, FTAF, ATRC; formerly Big Spring AFB, renamed for 1st Lt. James L. Webb, Jr., F-51 pilot, killed off Japanese coast, 1949. Housing: officers, good; airmen, good.

WESTOVER AFB, Mass., 3 mi. NNE of Chicopee Falls. Hq., Atlantic Division, MATS; air rescue base; foreign clearing station; named for Maj. Gen. Oscar Westover, Chief of Air Corps, killed in air crash near Burbank, Calif., Sept. 1938. Housing: officers, good; airmen, good.

WILLIAMS AFB, Ariz., 10 mi. E of Chandler. Basic single-engine pilot training, FTAF, ATRC; jet pilot training; formerly Higley Field, renamed for Lt. Charles L. Williams, native of Arizona, bomber pilot, killed in Hawaii, July 1927. Housing: officers, excellent; airmen, excellent.

WOLTERS AFB, Tex., 3 mi. W of Mineral Wells. Hq., Aviation Engineer Force, ConAC; formerly Camp Wolters named for Brig. Gen. Jacob F. Wolters of Houston, founder and CO of Texas National Guard Cavalry. Housing: officers, excellent; airmen, excellent.

WRIGHT-PATTERSON AFB, Ohio, 2 mi. ENE of Dayton. Hq., AMC; WADC, ARDC; USAF Institute of Technology; formerly separate areas including Fairfield Air Depot, Wilbur Wright Field and McCook Field, and Patterson Field; now named for Orville and Wilbur Wright, and Lt. Frank S. Patterson, killed in air crash near this base during early tests of synchronized machine gun firing, June 1918. Housing: officers, good; airmen, good.

WURTSMITH AFB, Mich., 3 mi. NW of Oscoda. Fighter-interceptor base, EADF, ADC; formerly Camp Skeel, later Oscoda AFB, renamed for Maj. Gen. Paul B. Wurtsmith, CG, 13th AF, killed in B-25 crash in North Carolina, 1946. Housing: officers, excellent; airmen, excellent.

YOUNGSTOWN MUNICIPAL AP, Ohio, 10 mi. N of Youngstown. Fighter-interceptor base, EADF, ADC; named for city. Housing: officers, fair; airmen, fair.

YUMA COUNTY MUNICIPAL AP, Ariz., 7 mi. SE of Yuma. Weapons training center, ADC; named for city. Housing: officers, excellent; airmen, good.

(OVERSEAS BASES ON NEXT PAGE)

GUIDE TO USAF BASES OVERSEAS

A rundown, within security limits, on the installations that make the Air Force global

ALASKA

EIELSON AFB, 17.5 mi. SE of Fairbanks. Composite wing; named for Capt. Carl B. Eielson, pioneer of Alaskan aviation who flew over North Pole with Sir Hubert Wilkins in 1928, flew first US air mail in Alaska, and was killed in a crash while trying to aid iced-in vessel in Bering Sea.

ELMENDORF AFB, 4 mi. NE of Anchorage. Hq., Alaskan Air Command; named for Capt. Hugh M. Elmendorf who was killed in 1933 during test flight of a P-25.

LADD AFB, 3.5 mi. E of Fairbanks. Fighter-interceptor base; named for Maj. Arthur K. Ladd who was assistant G-4 at general headquarters Air Force, Langley Field, Va., where he died in 1935.

Government housing in Alaskan area; private housing standards fair to good, rents high.

AUSTRIA

TULLN AB, 13.5 mi. NW of Vienna. Administrative field. Housing: private housing in Austria fair to good, rents medium to high.

BERMUDA

KINDLEY AFB, 2 mi. S of St. George. Air transport base; named for Capt. Field E. Kindley, outstanding WW I pilot, killed in an air crash at Kelly Field, San Antonio, Tex., in 1920. Housing: government housing in Bermuda for key personnel only; private housing adequate but very expensive.

CANAL ZONE

ALBROOK AFB, 1 mi. NE of Balboa. Air rescue base; named for 1st Lt. Frank P. Albrook, killed in air crash at Chanute Field, Ill., in 1924. Housing: government housing in Canal Zone; private housing standards poor to fair, rents expensive.

ENGLAND

BENTWATERS AB, 4.5 mi. NE of Woodbridge. Fighter-bomber base.

BOVINGDON AB, NE of Bovindon. Air Force base.

BRIZE NORTON AB, SW of Brize Norton. Secondary Air Force depot.

BURTONWOOD AB, S of Burtonwood. Major Air Force depot.

BUSHY PARK, at Middlesex. Air rescue group headquarters.

FAIRFORD AB, 1 mi. SSE of Fairford. Air base unit.

GREENHAM COMMON AB, SE of Greenham Common. Air base group.

LAKENHEATH AB, SE of Lakenheath. Air base squadron.

MANSTON AB, 2 mi. WNW of Ramsgate. Fighter-interceptor base.

MILDENHALL AB, 2 mi. NW of Mildenhall. Air base group.

SCULTHORPE AB, W of Sculthorpe. Light bombardment base.

SOUTH RUISLIP USAB, at South Ruislip. Hq., 3d Air Force.

SHEPHERDS GROVE AB, 2 mi. E of Stanton. Fighter-bomber base.

UPPER HEYFORD AB, at Upper Heyford. Air base group.

WADDINGTON AB, NE of Waddington. Dispensary facility.

WEST DRAYTON, at West Drayton. Recon Tech Center.

WIMPOLE PARK, at Wimpole Park. USAF hospital.

Some government housing available for key personnel in England, but not at all bases; private housing adequate, rents reasonable, utilities and heating expensive.

FRANCE

BORDEAUX AB, 6 mi. W of Bordeaux. Air rescue base.

CHAMBLEY AB, NE of Chambley. Supply depot.

CHATEAUROUX-DEOLS AP, 3 mi. NNE of Chateauroux. Major Air Force depot.

CHAUMONT AB, SE of Montsaon. Fighter-bomber base.

FONTAINEBLEAU, at Fontainebleau. Support base.

MOULIN, at Moulin. Sub depot base.

ORLY AB, 9 mi. SSE of Paris. Air base group.

TOUL-ROSIERE AB, 8:5 mi. NE of Croix de Metz. Medium troop carrier base.

Except for Paris, housing critically short, far from duty stations, extensive repairs needed, rents very high. In Paris housing is short, poor to good in standards, rents very high. There is no government housing in France.

FRENCH MOROCCO

BENGUERIR AB, 2 mi. SSE of Benguerir. Air base squadron.

NOUASEUR AB, 2 mi. ENE of Nouaseur. Air depot.

SALE AB, 5 mi. ENE of Rabat. Hq., 17th Air Force, SAC (at Rabat).

SIDI SLIMANE AB, 6.5 mi. WSW of Sidi Slimane. Fighter-interceptor base.

Government housing for key personnel. Private housing critically short, standards poor. Rents excessive for suitable accommodations.

GERMANY

BITBURG AB, 13.5 mi. SE of Trier. Fighter-bomber base.

ERDING AB, 2 mi. NE of Erding. Air Force depot.

FURSTENFELDBRUCK AB, 2 mi. NNE of Furstenfeldbruck. Air transport base.

GIEBELSTADT AB, E of Giebelstadt. Support base.

HAHN AB, 1 mi. S of Hahn. Fighter-bomber base.

LANDSBERG AB, 2 mi. NE of Landsberg. Hq. security group.

LANDSTUHL AB, 1.5 mi. NE of Landstuhl. Fighter-bomber base.

NEUBIBERG AB, 5 mi. SSE of Munich. Troop carrier base.

RHINE-MAIN AB, 6.5 mi. SW of Frankfurt. Troop carrier base.

SPANGDAHLEM AB, 8 mi. E of Spangdahlem. Tactical reconnaissance base.

(Continued on following page)

USAF Overseas Bases

TEMPELHOF AB, at Berlin. Base complement squadron.
WIESBADEN AB, 4.3 mi. SE of Wiesbaden. Hq., USAFE, Hq., Air Materiel Force; Hq., support wing.

Government quarters only in Germany, but appropriate temporary private housing at reasonable rates pending assignment to government housing.

GREENLAND

NARSARSSUAK AB, 1 mi. N of Narsarssuak. Air rescue base.
SONDRESTROM AB, 7.5 mi. NE of Sondrestromfjord. Air base squadron.
THULE AB, 2.5 mi. SE of Thule. Fighter-interceptor and MATS base.

Government quarters only are available at Narsarssuak, no private housing. No dependents allowed at Sondrestromfjord or Thule.

GUAM

ANDERSON AFB, SW Guam Island. Air rescue base; named for Brig. Gen. James R. Anderson, Chief of Staff to Lt. Gen. Millard F. Harmon at Hq., AAFPOA in WW II. General Anderson's plane was lost off Kwajelein in 1945. Housing: government quarters available, standards low for private housing.

HAWAII

HICKAM AFB, at NW Oahu. Air transport base; named for outstanding aviator Lt. Horace M. Hickam, commander Third Attack Group, killed in air crash, Fort Crockett, Tex., in 1934. Housing: government housing; private housing adequate, rents high.

JAPAN

ASHIYA AB, SSW of Ashiya. Troop carrier base.
CHITOSE AB, 1 mi. SE of Chitose. Fighter-interceptor base.
ITAMI AB, 10 mi. NNW of Osaka. Support base.
ITAZUKE AB, 1 mi. N of Fukuoka. Fighter-bomber base.
JOHNSON AB, 1 mi. S of Irumagawa. Fighter-inteceptor base.
KOMAKI AB, at Komaki. Fighter-bomber and air rescue base.
MIHO AB, at Miho. Air base squadron.
MISAWA AB, 2 mi. WNW of Misawa. Fighter-bomber base.
NAGOYA, at Nagoya. Hq., Japanese Air Defense.
TACHIKAWA AB, NW of Tachikawa. Troop carrier base.
TOKYO INTERNATIONAL AIRPORT AB, 8 mi. S of Tokyo. Air transport base.
YOKOTA AB, 1.5 mi. E of Fussa. Medium bomber base.

Government housing in Japan; private housing available in metropoliton areas, standards fair, rents medium to high.

(Continued on following page)

KOREA

KIMPO AB, 7 mi. SE of Kimpo. Tactical reconnaissance base.

PUSAN AB, 6 mi. NE of Pusan. Light bomber base.

SUWON AB, at Suwon. Fighter-bomber base.

TAEGU AB, 4 mi. NE of Taegu. Fighter-bomber base.

No dependents authorized for Korea.

LABRADOR

GOOSE AB, 1 mi. W of Goose Bay. Fighter-interceptor base. Housing: government housing, availability exteremly limited.

NEWFOUNDLAND

ERNEST HARMON AFB, 1 mi. E of Stephenville. Fighter-interceptor base; named for Capt. Ernest E. Harmon, specialist in piloting large aircraft and winner of many air trophies. He was parachute patent expert and ironically lost his life while bailing out of a plane with a chute that failed to open.

PEPPERRELL AFB, at St. Johns. Hq., Northeast Air Command; named for Sir William Pepperrell of Kittery, Me. (then Mass.), an American soldier who served with the Colonial Army in 1746 as a Colonel of the Militia. He was made a baronet by British for his outstanding service during French and Indian War.

Government housing for key personnel; private housing availability very limited, standards fair, rents medium to high.

PUERTO RICO

RAMEY AFB, 5 mi. NNE of Aguadilla. Strategic recon (heavy) base; named for Brig. Gen. Howard K. Ramey, a WW II pilot and later instructor at Kelly Field, Tex., where he became director of the Observation Section of the Advance Flying School. In 1942 he was G-3, 4th Bomber Command, San Francisco. He went overseas as a command pilot and combat observer and was reported missing in action in March 1943. Housing: government quarters in Puerto Rico; private housing limited, standards fair, rents high.

TRIPOLI (LIBYA)

WHEELUS FIELD, 5 mi. E of Tripoli. Air transport base; named for 1st Lt. Richard E. Wheelus, ATC, killed in 1945 in the Near East. Housing: government quarters available; private housing standards fair, rents reasonable to high.

OKINAWA

KADENA AB, 1 mi. SE of Kadena. Medium bomber base.

NAHA AB, 2 mi. SW of Naha. Fighter-interceptor base.

Government housing; private housing extremely limited.

PACIFIC OCEAN

JOHNSON ISLAND AFB, on Johnson Island. MATS refueling base. Housing: government housing only.

PHILIPPINE ISLANDS

CLARK AFB, on Luzon Island. Air Force depot; named for Maj. Harold M. Clark, killed in crash in Canal Zone in 1919. Housing: government housing; private housing limited in the Philippines, and restricted to certain areas; standards poor to fair, rents reasonable.

SAUDI ARABIA

DHAHRAN AIR FIELD, 3.5 mi. SE of Dhahran. Air rescue base. Housing: government quarters only, restricted to key personnel in Saudi Arabia.

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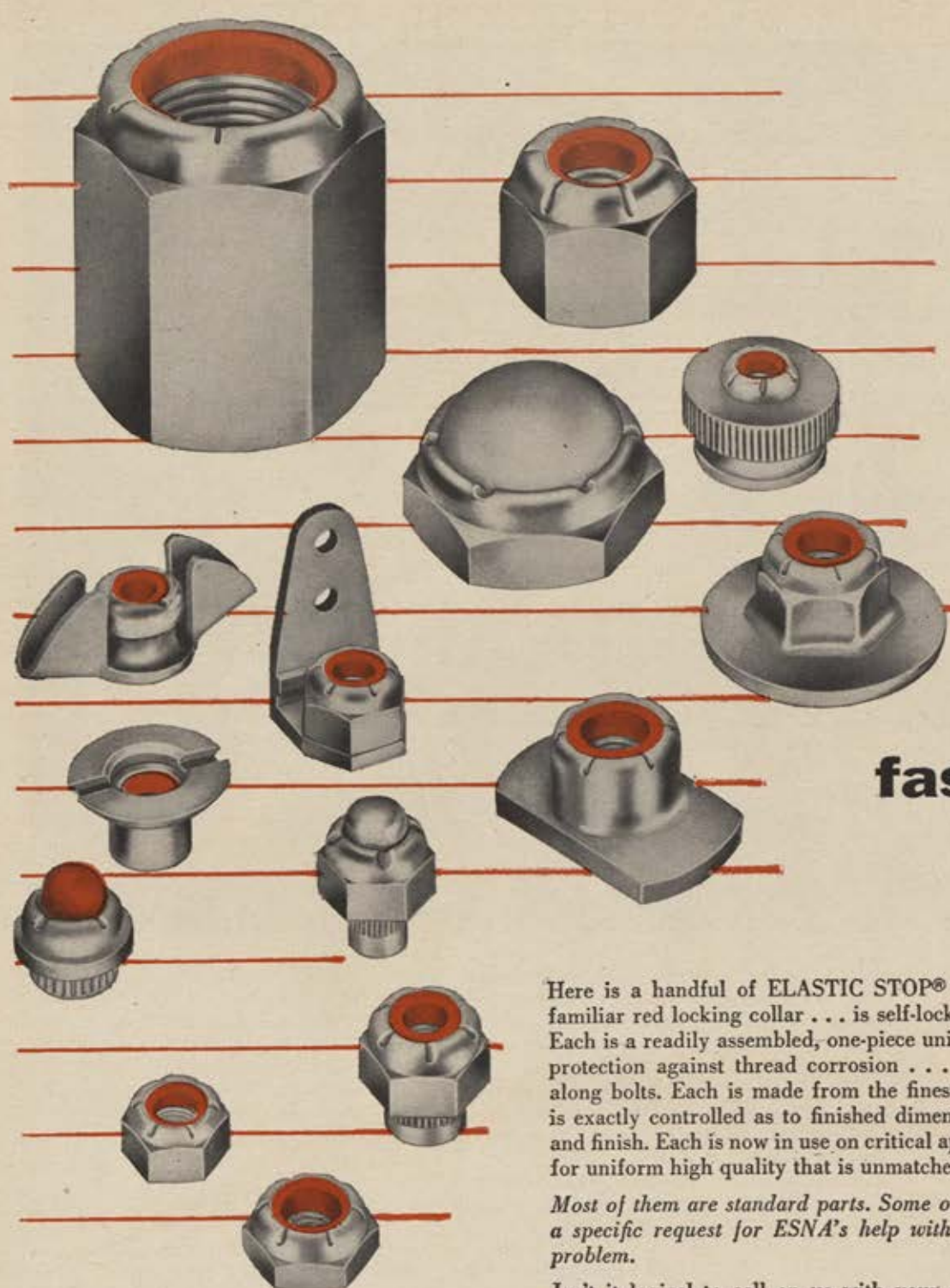

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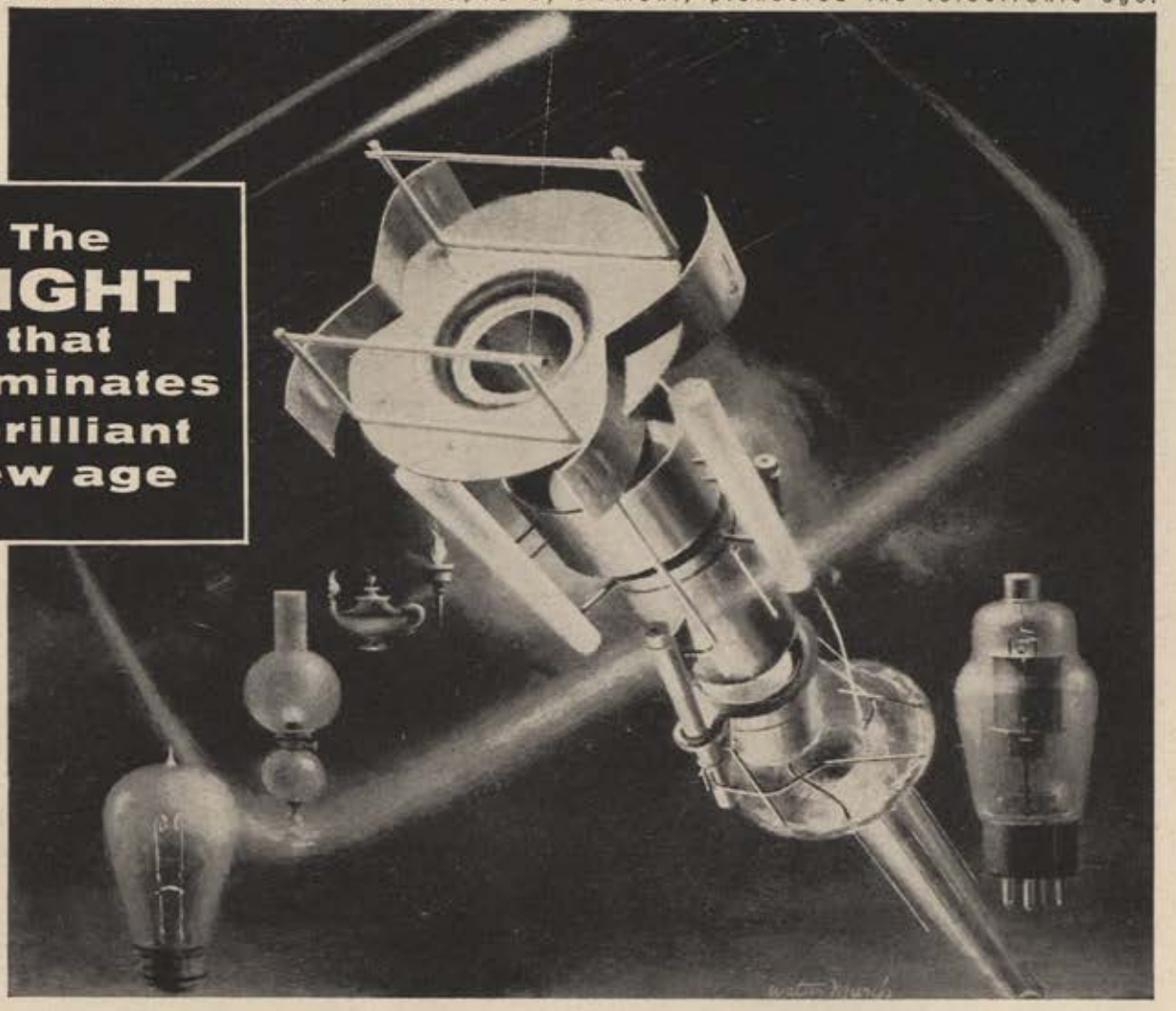

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JET BLASTS

THROTTLE JERK

Taxi technique separates the wheat from the chaff

Among other things, I am, and have been for about nine years, an instructor pilot. One thing that I find requires continual stress, and have noticed that far too few Air Force pilots have, is proper taxi technique. The difference between our pilots and airline types in this respect is like night and day.

How many times, after the engines were started and you had settled back in the seat and the pilot started to taxi, have you almost subconsciously noted the taxi technique and then made up your mind as to what kind of a ride this would probably be? Many times, undoubtedly. Yet, through either carelessness or ignorance the majority of pilots inadvertently try the confidence of their passengers by poor taxi technique. How do you feel, as a passenger (which occasionally we all must be), when the pilot revs up to the fans, releases the brakes, and you start with a lurch. Or on the straightaway he tramps on one brake for a minor correction, or least pleasant of all, in order to stop he clamps on the brakes and as you pick yourself out of your fellow passenger's lap, he reduces taxi power to idle.

Not only does proper taxi technique inspire passenger confidence, which may or may not be good, depending upon whom you are carrying, but it really saves the Air Force dollars by conserving tires, brakes and struts. The first sign of a pilot, after the fires are burning, is that the passengers cannot feel that they have started to move. This is accomplished by merely allowing the engines to idle when the brakes are released, then after release gently applying a little manifold pressure. In getting out of a parking slot be sure the inside wheel is not locked when turning sharply. No single maneuver, other than a crash, does more damage to tires and struts. In taxiing do use differential power, full rudder, and a minimum of brakes. Lead into turns with outside power and anticipate roll outs with inside power. When stopping, for runup or other reasons, anticipate the stop. Retard throttles fully and apply brakes gently and evenly. Reduce foot pressure on the brakes just before the stop. In this way passengers

(Continued on following page)

LET'S HAVE YOUR JET BLAST

In "Jet Blasts" you can sound off on any subject you want. Each month we'll pick the letter or letters we feel will interest our readers most and pay $10 for each one printed. Please keep letters under 500 words.—The Editors.

never know, unless they are looking, whether or not the plane is in motion, and consequently, unconsciously feel confidence in the pilot.

Are you a professional pilot who knows his job and has regard for his equipment, technique, and passengers, or are you a typical "Throttle Jerk"? Good taxi technique is a habit. Cultivate it. To the initiated it separates the wheat from the chaff.

Capt. Gerald E. Neuburg, USAF
Wright-Patterson AFB, Ohio

Nail on the Head

Your article pertaining to present AF personnel troubles ("Here's Why They Leave the Air Force," AIR FORCE, March '54), is the first one I've seen that really hits the nail on the head. The natural question now is: What are Congress and the Air Force going to do about it?

With your permission, I'd like to add several observations of my own to this article. For one thing, why is it that only generals and admirals have sufficient brainpower to serve on the committees that are set up to resolve just such problems as these? There is an active movement in the services today to build up prestige of the non-com; so why not have several master sergeants and a few company grade officers (considering only the AF in this discussion) on such committees? After all, these are the ranks mostly affected by the discontent prevalent in the Air Force today.

Secondly, that part of your article pertaining to AF personnel policies was extremely well written. I recently had a personnel officer whose favorite expression was "you can't buck city hall." It is my contention that "city hall" can be bucked by the simple expedient of settling any and all doubts about personnel policies *before* they become policy. The simplest way of accomplishing this is by the intelligent use of questionnaires. Each time a matter of policy is to be changed, or evolved, why not send questionnaires to a certain portion (five or ten percent) of the personnel involved, and ask their opinions and advice? For example, to the best of my knowledge, no field survey has yet been made to determine exactly how the current controversy over division of airmen into non-coms and technicians is to be settled. Why not use the simple device of asking the men whose futures are affected?

Thirdly, I'd like to offer the thought that over-all officer efficiency can be greatly improved by a change in the present method of officer efficiency reports. As these reports are now written, they only prove conclusively that an officer is capable of pleasing his immediate supervisor. As a suggestion for a truly objective report on an officer, why not divide the report into at least three parts; one to be written by the CO, one by another officer of similar rank, and one by an NCO who works for the officer

(Continued on page 105)

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Lockheed F-94A & B Air Force Fighter Plane
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Martin P4M-1 Long Range Navy Patrol Bomber
Martin B-57A U.S. Air Force Version of the English Electric Canberra Medium Bomber
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being rated? A large amount of dead wood would thus be eliminated, and this system could later be applied to NCOs.

Along this same line of thought, I believe over-all Air Force efficiency could be greatly improved by the rigid use of competitive examinations for promotion criteria for both officers (below field grade) and non-coms. I understand such a system works very well in the Navy. It would go a long way toward eliminating "friendship" promotions.

Years ago I decided on the Air Force as a career; but at the present time I feel exactly the same as the sergeant mentioned in the article who would "break his son's neck if he ever attempted to enlist." I only hope to God that the present world situation is cleared up before my two boys (ages six and eight) are of draft age; but if not, then I sincerely hope that this letter will help towards making a better Air Force for them to serve in.

Master Sergeant
New York, N. Y.

Pride of Airmen

Ten years ago American airmen took part in a great joint venture of our fighting men. No one but God knows where the men of the Air Forces spent their flight, but this we do know: They have made their path in the sky. As heroes they have proved their passion of manhood, the wisdom of their age, and now have the splendor of kings and the triumph of warriors, the fame of poets, and the honor of true patriots. As it should be, they have the challenge that when met with love and understanding will always go upward and onward to true glory.

In these few short years the Air Force has acquired a wealth of tradition and history that is at last to be hewed in stone and fashioned to liberty and beauty. A memorial which will be suitable to commemorate greatness, both of men and events, and it must be conceived by those who in their hearts and their minds know the real and everlasting significance of the fame and spirit that will be immortalized by the Air Academy's yearly pride of men to the United States Air Force.

This Air Force Academy, a school for boys, a training field for men and a memory for heroes will be a job to build that is so vast in its complexities that the genius of a Leonardo da Vinci would be taxed. One wonders if it is possible to do what should and must be done to create a group of buildings and fields and give them the pride and spirit of our American airmen and the practical uses that the Academy must have.

It cannot be like the Gothic ramparts of West Point, or the French style of the Naval Academy, even though they be hallowed and beautiful. The need is great for understanding and interpretation of what the Air Force was, is and will be. The designers must work with the greatness and glamour of its be-

(Continued on following page)

ginning, from box kites and Kitty Hawk, to Eddie Rickenbacker, to the United States mails, and to the B-17, the jet and Nike. They must sculpt the spirit of Selfridge, the vision of Billy Mitchell, the strength of Arnold, and the love and devotion of Hoyt Vandenberg. There is military tradition and there is the transitional of "by ground, by sea, and by air," and there is the future that changes as it arrives.

Where will the geniuses come from who will create this dream of the Air Force? They are here, just as we have them in other works; we will have them for this Academy if the men of the Air Force understand their enormous responsibility to America, to the Air Force, and to the future. These Air Force men, these artists, planners and artisans, will breathe beauty and love, memory and tradition, genius and leadership and spirit into these buildings and fields that will be the Air Academy and the thousands who will train there will be inspired and will benefit, and carry the glory that is America.

The halls of learning are loved because learning is loved. No man goes forward without love for the place where he has received learning, be it the small red schoolhouse with its row of willows, be it a city school with its fenced-in playground, or be it his mother's knee and his father's whip. But halls of learning grow like a village grows, from a crossroads, as a town grows from a village and the city from a town.

In building the halls of learning the fathers of a village work so their children will learn, and a town will build Old Main, and as the city grows the schools will grow around the first building which remains—either in reality or memory, in the style and workmanship of the village fathers.

Now the gentlemen of the Air Force are as the village fathers and they are to build Old Main, and if it be of greatness and beauty, as it must be, they shall place their style and their workmanship on this Academy. It is not to be over many lives, but is to be complete and lasting from one idea, one plan, and one generation. In building this college at one time there are great advantages, but no mistakes will be allowed these men of the Air Force lest their sons and their son's sons lose pride.

This Air Force Academy must be good; it must be of the best. The planning, design, and construction must be of genius for it is to pick up the past, be perfect in the present, and be built for the future. The men who work on this school must be dedicated to the Air Force, to what the Academy represents and needs, and to the love and understanding of the brick and stone they mould. They must have a deep sincerity and honesty in their principals so that the plan, the design and the use shall not fail the glory of the Air Force, our military tradition, and the American people.

Walter R. Whitver, Jr.
Washington, D. C.

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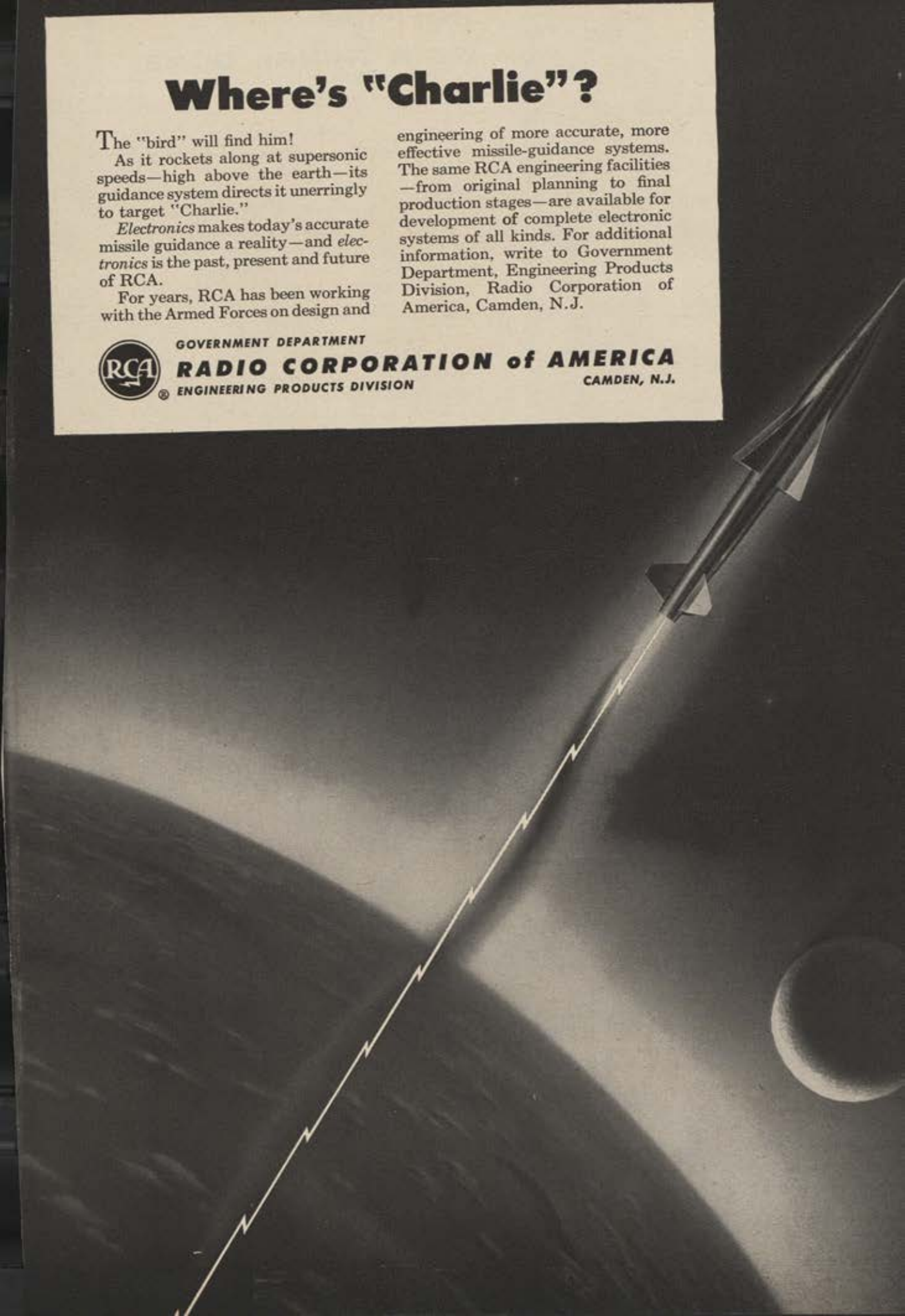

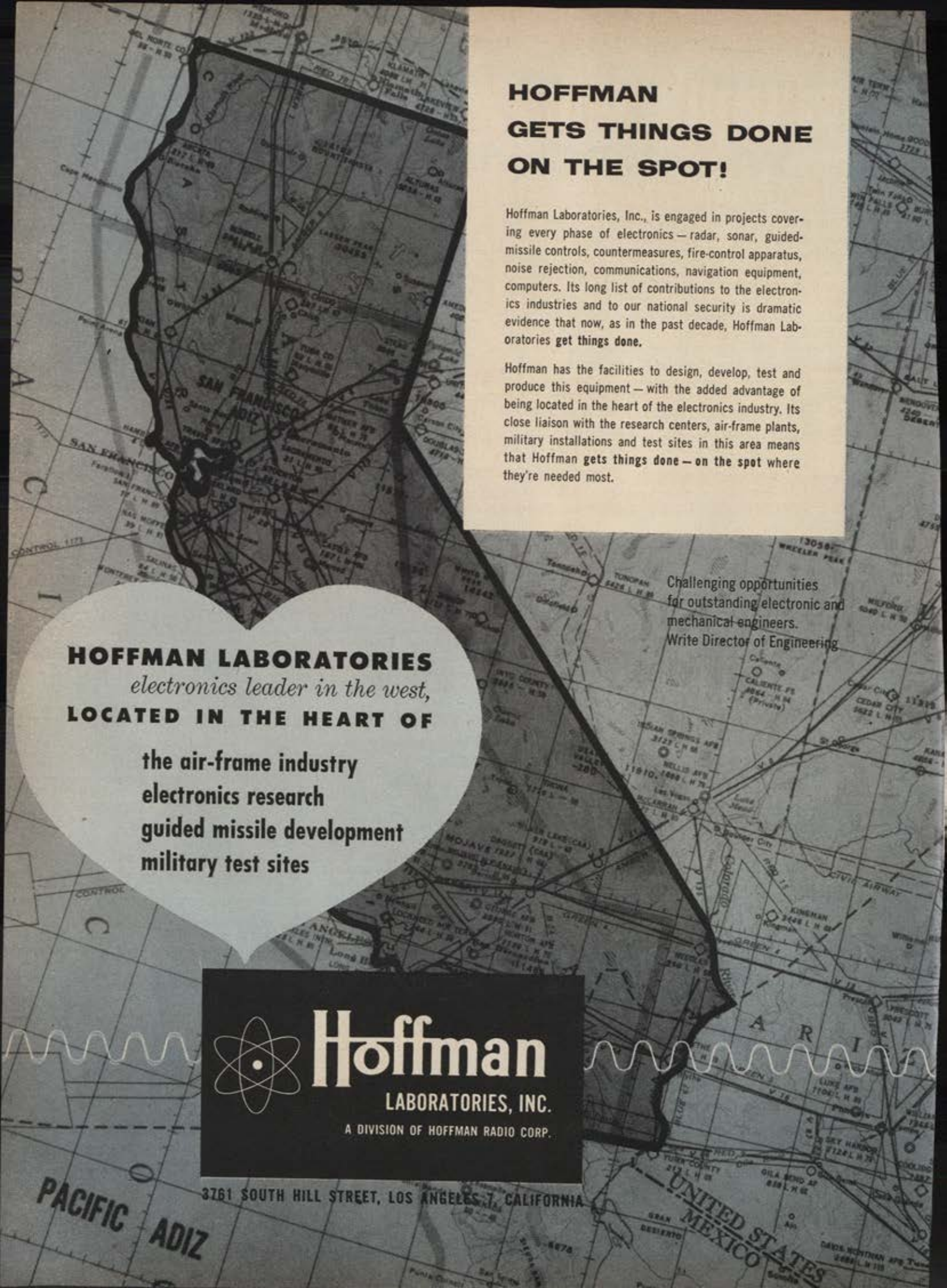

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The READY ROOM

RESERVE AND AIR GUARD NEWS

The old saw about things being "at sixes and sevens" to denote confusion could have been coined for the proposed "new look" Reserve program (AIR FORCE, April '54 *et seq.*).

Unless two and two no longer equal four, two of the three agencies principally concerned with the "new look" Reserve program are not on the same frequency. The Department of Defense is saying one thing; the White House another. The third agency—the Congress—is saying nothing, for the excellent reason that it's not being read in.

The program was supposed to have been ready May 1. Dr. John A. Hannah, who labored valiantly in the manpower vineyard as Assistant Secretary of Defense until very recently and was in charge of bird-dogging the program, told reporters at a farewell press conference that the proposed "new look" now is scheduled to go to Congress early next year.

Dr. Hannah told the newsmen a few other things, too, which caused the Air Force people who had drafted the Pentagon version of the program to wonder whether the departing Assistant Secretary hadn't been reading from the wrong notes.

The manpower expert announced that the Air Force Reserve program, as presently constituted, would "disappear" and that the Air National Guard would be the exclusive agency for Reserve training.

This bombshell had a double reaction. People in the Reserve bristled at the suggestion that they were scheduled to be programmed out of business. Air Guardsmen concluded that Dr. Hannah was hinting at that nasty word, "federalization."

Whatever Dr. Hannah was hinting at in his swan song apparently wasn't the same thing the White House had in mind. Into the breach rushed James C. Hagerty, press secretary to President Eisenhower.

One day after Hannah spoke, Mr. Hagerty denied that the departed Defense aide was reflecting "fully the attitude of the National Security Council."

Mr. Hagerty's statement relieved the tension—but only temporarily. Defense Secretary Charles E. Wilson scheduled a press conference the day after Mr. Hagerty's spoke, and the No. 1 man in the Pentagon backed Dr. Hannah to the hilt.

Mr. Wilson insisted that the Administration had approved "in a broad sense" the very kind of plan Dr. Hannah had discussed with reporters.

Mr. Wilson admitted that he was not unaware of the explosive nature of the "new look" Reserve program and said he expected to hear from the people who have a "vested interest."

But, said the Defense Secretary, the Administration has decided that something must be done about the Reserve situation because "the old conception of the minuteman with his musket does not fit any more."

If Hagerty had succeeded in getting the Administration off the hook as a result of Hannah's remarks, Wilson promptly put it right back on.

He said the new plan was prepared by the Defense Department after consultation with the Office of Defense Mobilization and was presented to the National Security Council. "In a broad sense," the Secretary went on, "its principles have been approved."

If the apparent difference of opinion between Dr. Hannah and Mr. Wilson on the one hand and the White House on the other confuses the issue, other events in this drama are guaranteed to make every member of both Reserve components fall off at the first turn.

An Air Force task force recommended to the Secretary of Defense that both the Guard and Reserve be continued in their present configuration. A single Reserve force issue, so far as the Air Force still knows, never arose.

The Pentagon study went to the National Security Council, where it was reviewed two days before Dr. Hannah's press conference and returned with the notation, in effect, to "do some more homework." NSC, so the story goes, wasn't too impressed by the Pentagon recommendations and wanted answers to questions that would surely arise if the Pentagon study were forwarded routinely to Congress.

The best information is that the NSC told the Pentagon that all questions in doubt should be answered in time for the Council to give full consideration to the program at a meeting in September.

Assuming, therefore, that the Council did not contemplate a full-dress rehearsal of the program until September, why did Dr. Hannah tell newsmen the program was in the works?

If Hannah were sending up a trial balloon, it would make sense in the absence of a denial from the White House. But the White House countered him. At this point, everything was even. When the Defense Secretary got into the act and backed up all Hannah had said, the scales definitely tipped in favor of Messrs. Hannah and Wilson.

It is unthinkable that Mr. Wilson would have filled Hannah's hand without first having cleared the policy line with the White House. The conclusion is obvious that the Administration, despite Hagerty's challenge to Hannah, is prepared to ask the Congress for the kind of program Hannah outlined.

Such a program can only precipitate a donneybrook on Capitol Hill. And this knowledge may have influenced the last word on the subject by Secretary Wilson.

Some six hours after backing Hannah's position, Mr. Wilson issued a memo to the press in which he said the Administration had no thought of abolishing the Reserve. "On the contrary," he said, "these units must be properly integrated into the entire program."

Unfortunately, Mr. Wilson's addendum to the press came too late to clear the atmosphere. The Administration may not like it in an election year but the program to which Secretary Wilson apparently subscribes is political dynamite. He will need a high-powered sales campaign to convince Reservists the "new look" is best for them and the country.

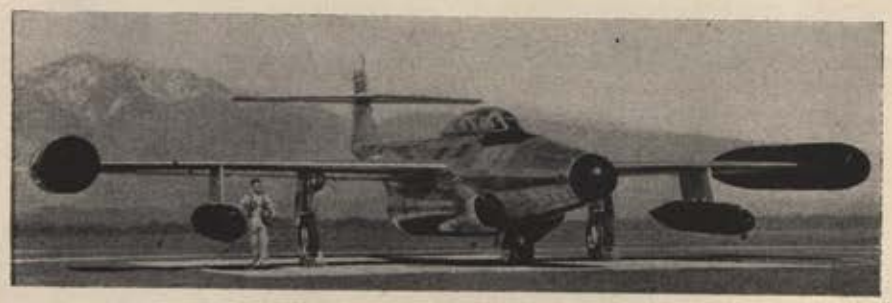
—Edmund F. Hogan

TECH TALK

The **Atomic Energy Commission** and **North American Aviation** will jointly finance a new **nuclear power reactor** as part of a program to develop competitive nuclear power. The new reactor—to cost about $10 million—will be located in the Santa Susana mountains of California. It will be a "sodium-graphite" type, generating 20,000 kilowatts of energy. Scientists and engineers in NA's Atomic Energy Research Department believe that this type of reactor is promising as a means of producing economical power. Construction is slated to begin soon with completion in about two years.

A total of 3,400 pounds of test equipment is installed in **Boeing's new jet transport-tanker** to collect data during the 707's test flights. The equipment occupies the forward part of the airplane's passenger deck and includes oscillographs, photo recorder, Brown temperature recorders, and a tape recorder to determine sound level. According to company officials, the test program is running **ahead of schedule** and is progressing "extremely well." Four other aircraft manufacturers are submitting designs for a military jet tanker to the USAF—**Douglas, Lockheed, Convair, and Fairchild.**

Boeing's new all-jet Stratotanker-Stratoliner, now undergoing extensive flight tests. Statistics: span — 130'; length — 128'; gross weight — 190,000 lbs.



The range of the Northrop F-89D has been increased by jettisonable fuel tanks slung under the wings. Attached to the wing tips are permanent rocket pods.

There has never been much chance for a pilot to escape from a crippled plane at altitudes much below 1,000 feet. Now, a British firm has come up with a **new seat-ejector and parachute device** that is said to be capable of saving the life of a pilot whose plane has come within fifty feet of the ground. The new seat is exploded out of the cockpit at the rate of sixty mph. Half a second later, the seat automatically fires a cartridge that opens a small parachute. Two and a half seconds later, the main parachute opens. The mechanism has been timed to a tenth of a second and its inventor, the **Martin-Baker Aircraft Co.**, says that it will work within a hundred feet of the ground in dives and half that distance in level flight.

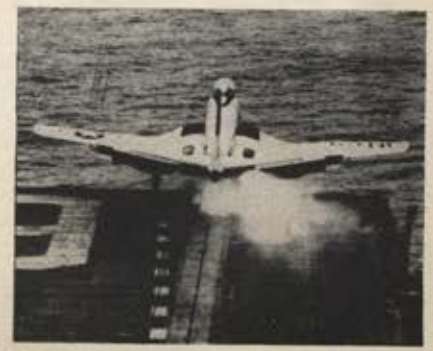
Mach eleven is pretty fast—about 8,360 mph at sea level. However, by using lower temperatures in the test section of a wind tunnel, **Mach eleven** was reached at about 2,900 mph by scientists at the **California Institute of Technology's Guggenheim Laboratory.** The hypersonic tunnel (Mach five is arbitrarily taken as the beginning of the hypersonic range) was built under an Army Ordnance contract and is jointly operated with the AF's Air Research and Development Command.

The range of the **Northrop F-89D Scorpion** will be increased with the installation of new **jettisonable fuel tanks** under the wings (see cut). The tanks are nearly fifteen feet long and add more than two tons to the plane's weight when filled but are said to have no appreciable effect on the speed of the interceptor. When the fuel is expended, the tanks can be ejected by use of an explosive cartridge—fired by the pilot of the two-man airplane. The tanks are the product of the **Pastushin Aviation Corp.**

The bleacher-like structures shown on **Lockheed's Marietta, Ga.,** flight line are jet **exhaust deflectors** that catch turbojet engine gasses and noise and diffuse them upwards. The steel louvres in the deflectors are curved and set at an angle to the jet blast to eliminate dust clouds and prevent rocks and other small objects from

(Continued on page 113)

What look like bleachers on Lockheed's Georgia flight line are really jet exhaust deflectors. Steel vanes divert jet blasts and sounds into the air.



The British-invented steam catapult shooting this F2H-3 off a US carrier has greater power but takes up less space than former launching devices.

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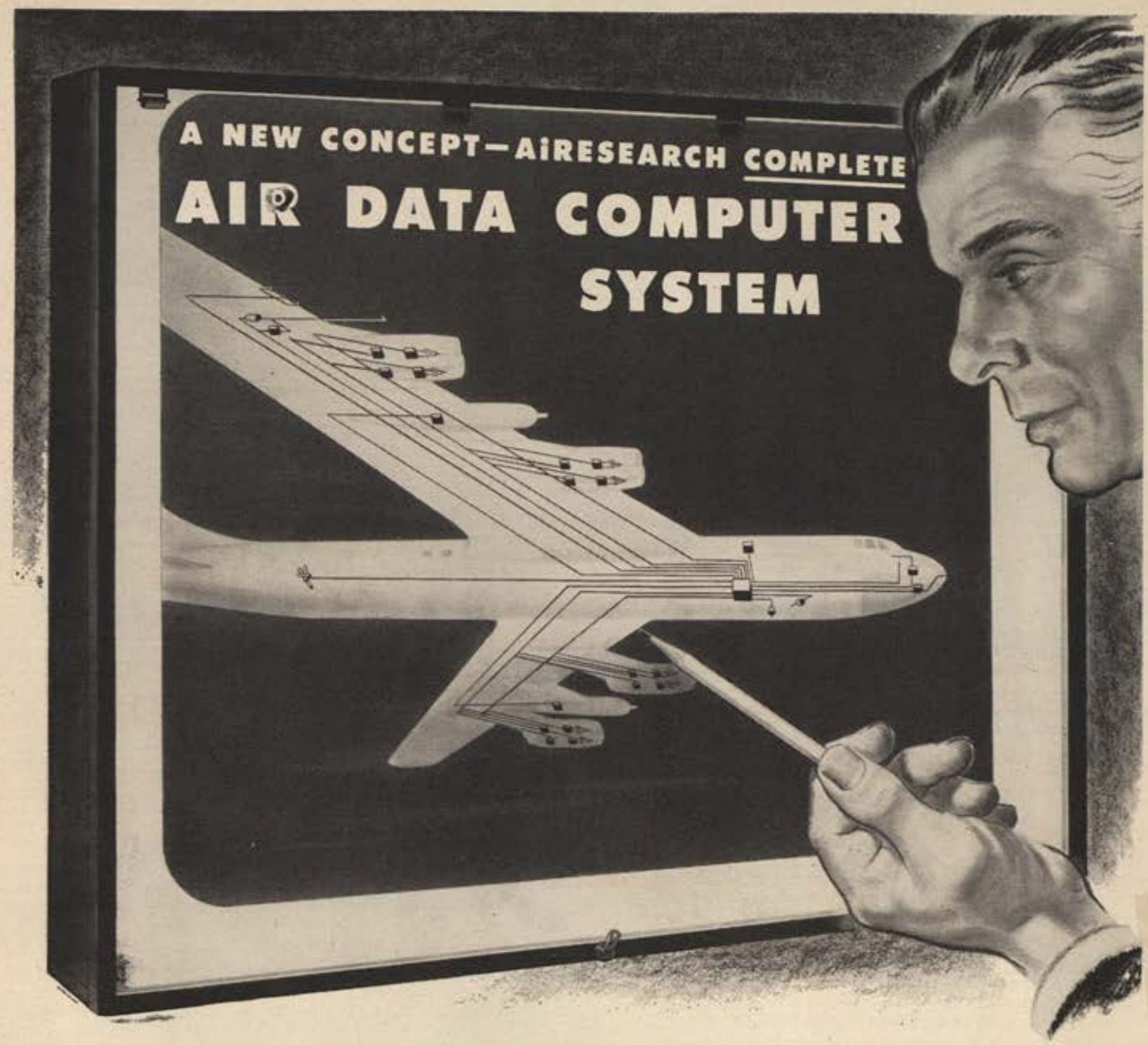

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These Waspaloy turbine blades have had an acid bath to bring out grain size of each for closer inspection.

being blown. Workers at the plant report that a normal conversation can be carried on in the quiet zone back of the fence—even when jets are running at full power.

The Navy recently tested its **new steam catapult** at sea aboard the *USS Hancock*. The first jet launched by the British-invented "steam slingshot" was a **McDonnell F2H-3 Banshee** (see cut). The device was first tested by the Royal Navy in 1951, and plans call for its installation in all US carriers except the smallest types. The new "cat" will enable the Navy to launch aircraft carrying much heavier loads than can be handled by the hydraulic types now in use.

A new **nickel-based alloy**—Waspaloy—developed by **Pratt & Whitney** and being used in turbine blades for the J-48 turbojet, is said to stand severe stresses of high-temperature operation better than previously used blade materials. During production, the blades are given an acid bath to bring out the grain size of each blade for easy inspection (see cut).

TECH NOTES . . . France's first jet transport, the **SE 210 Caravelle** has its engine nacelles on either side of the fuselage just forward of the tail. This positioning is said to reduce cabin noise . . . A chemical developed by a London firm — **Chlorobromomethane** (CB) — has been introduced into special fire-fighting equipment for airfields. A big advantage of the new chemical is that strong winds assist it in putting out flames instead of fanning the fire . . . A **beacon** that would be ejected from a plane on crash impact, erect itself, and send a distress signal is being tested by ARDC at the **Wright Air Development Center** . . . **"universal landing gear"** that permits landings on water, snow, ice, and mud as well as on runways has recently been approved for service use on light aircraft by the Navy and Marine Corps.—END

weight in morale and he is by no means an idler or a dead weight.

I'd put a man or two in charge of asking, "How come there is no concurrent travel on this shipping order?" I'd reverse the practice of assuming concurrent travel was something that happened only in the "Old Army." I'd explore the mystery of why waiting time for quarters overseas varies from a few weeks to as much as eighteen months. It would seem that if Sergeant Smith were leaving his quarters and Sergeant Jones were enroute to fill his job and house, there could be an even swap. Hello and goodbye.

I'd establish a permanent, light-heavyweight division to guard the purity of the King's English. First and continuing assignment would be to restrict severely the use of the word "personnel." My Air Force would favor words like people, troops, officers, men, persons, he, she, him, her, or they, to name a few.

Anyone caught committing "the undersigned" or "subject personnel" would be obliged to write "me" or "him/her/they," at least 1,000 times. Likewise, "concur" would become "agree." "Firm-up" and "head up" would be drastically tailored. It would be a capital offense to mark up good white paper with some such pompous garbage as, 'It is the opinion of the undersigned, etc." when such frank and forthright statements as "I think" or "My opinion is" are available in good supply.

Finally, I'd put out the word to the song-writing trade that I was in the market for a new song. At least for new words to fit the same tune, anyhow. A sober reading of the lyrics of the present Air Force song is an embarrassing experience. "We live in fame, go down in flame." Adolescent, and not at all symbolic of the Air Force or its mission. Same tune, new words, please.

That's what I'd do if I had an Air Force to tinker with.—END

The name's new but the style should be familiar to readers of AIR FORCE. *Frank Clifford's been writing for us for a year now, but under the name M/Sgt. Norman Winfield. Among his articles have been "What's Wrong with the AF Non-Com?" (Sept. '53), "Why Not a Professional Non-Com Corps?" (Nov. '53), "The Cause of the Pause" (Jan. '54), and "How a Non-Com Sizes up His Officers." (March '54). We'll have more to say about Sergeant Clifford when we run his next article, in a coming issue.*

These men are judging a military band!

Doesn't look like a parade, does it? Looks more like an electrical laboratory. As a matter of fact it *is*—a lab in Stromberg-Carlson's Sound Division—but it represents one good reason why band music sounds so good when you hear it reproduced on radio or records.

That's an oscilloscope—an instrument you probably associate with radio, radar, electrical experiments and the like. Actually, these technicians' interest in the wiggling lines on that screen has direct influence on the quality of music that you hear in your living room.

You see, most modern recordings capture and impress on the surface of a disk *all* the music that an artist created. Many record players, however, reproduce as little as one-half of it. When the equipment *is* capable of re-creating the full range of sound necessary for lifelike reality, it is said to be "high fidelity."

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Congratulations to the United States Air Force! Your triumph over time and space gives new security to the free world.

With global air power an actuality, logistic and operational difficulties will become a major issue. The Fletcher Aviation Corporation report, *Maximum Tactical Utility Through Standardization of External Fuel Cells and Suspension In-Flight Refueling*, outlines a workable solution to this phase of the issue.

Colonel John B. Henry, pilot of lead aircraft in the record-smashing flight, is shown flanked by Major General Walter C. Sweeney, Jr., Fifteenth Air Force Commander *(right)*, and Major General Robert H. Terrill *(left)*, Fifteenth's Deputy Commander. This was the longest such flight ever made.

Behind our global air power is an army of scientists and inventors... all spurred by a common incentive... the American Patent System.

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where the Air Force gets its slang

By T/Sgt. Bill Wallrich

EVERY trade and profession has a distinctive vocabulary. Doctors, used car dealers, bankers—all use a jargon of their own, one designed to fit their special interests and needs.

This is equally true of the United States Air Force.

Despite the fact that the Air Force is as yet too young to have become steeped in tradition, it is already aware of tradition. This because of a past where deeds exist and a future composed of brittle certainties. Of this, tradition is formulated and jargons are born.

The AF's is composed of slang ("puzzle palace" or "concrete cobweb" for Pentagon and "three bullets on a knife" for P-38); technical terms and specialized cliches ("JOC mission" for a Joint Operations Controlled napalm strike in Korea, and "that's all she wrote" for that's all there is or that's the finish); Pentagonese and militarisms ("to implement the finalization of the pipeline cut-off date"). Unlike the language of the other services, the AF's has had less than fifty years to develop. Of necessity, this forced pace has brought about an amalgamation, a borrowing and imaginative editing, the existence of crudities and strange adaptations, that normally would not exist in a more slowly and internally developed jargon.

"After-gafter" for an afterburner could only be the product of the jet age, and yet it employs the principle of rhyming slang perfected decades ago by the Australian "Diggers." "TO" for "tech order" for a technical order is simply abbreviation for convenience, but to call the same orders "OCS material" or "comic books" is definitely facetious. The "stick jockey" of yesterday has been supplanted by the "stove-pipe jockey" or "blow-torch artist." The "three-point landing" is a thing of the past. Today they are called "grease jobs" and "cream jobs."

This jargon of the Air Force, like the religion of ancient Rome, is extremely adaptive. It has assimilated words and phrases from the cow camp and the campus; city slums and Kansas wheat fields; jargon mouthed by sailors from the era of sails and of soldiers who fought with crossbow and claymore.

On flight lines and in BOQs one can hear the language of Chaucer and that of waterfront hoodlums. Thieves' cant and tradesmen's argot equally have been intermixed with the sporting cliches of the football field and baseball diamond. From the fraternity house to the crap game; from the carnival shill to the cloistered aerodynamical engineer, the Air Force has taken its workaday vocabulary.

Despite archaic words, survivals of other days and wars and occupations, the jargon of the Air Force is a living language. Just as "canteen" slowly became the "PX," in time PX will be supplanted by "BX" for Base Exchange, which today is almost universally ignored. Popular names for service shoes such as "boondockers," "buffalo chasers," "clod kickers," and "beetle crushers" will go on and on. But also new terms such as "Li'l Abners" for such shoes spring up and may be rapidly and universally adopted. Obviously, words which tend to take their existence from current regulations fade away rapidly once their parent regulation is done away with or changed. "One-forty-eight-and-a-half" becomes "Section Eight." And it's now "Christine Clause."

In actuality, little jargon as such has been borrowed from either the Navy or the Marines. However, unusually apt or expressive items from the aviation sections of the Navy and the Marines are once in a while to be found. Non-aviation slang, if military, used by the Air Force will almost invariably be Army in origin.

Save for a few words adopted by American aviators serving with the French air arm during World War I, only a few words have been directly taken from foreign military organizations. The one big exception has been our Air Force's voluminous borrowing from the British Royal Air Force and, to a lesser degree, from the RCAF.

Especially during the World War I, American airmen adopted innumerable words and phrases from the British—material still in common Air Force usage. "Ack-ack" (from the British phonetic alphabet of the time) for anti-aircraft guns or projectiles, and "brag rags" for ribbons; "Jerry" for a German and "jink" for violent aerial evasive action, are typical of these

(Continued on page 121)

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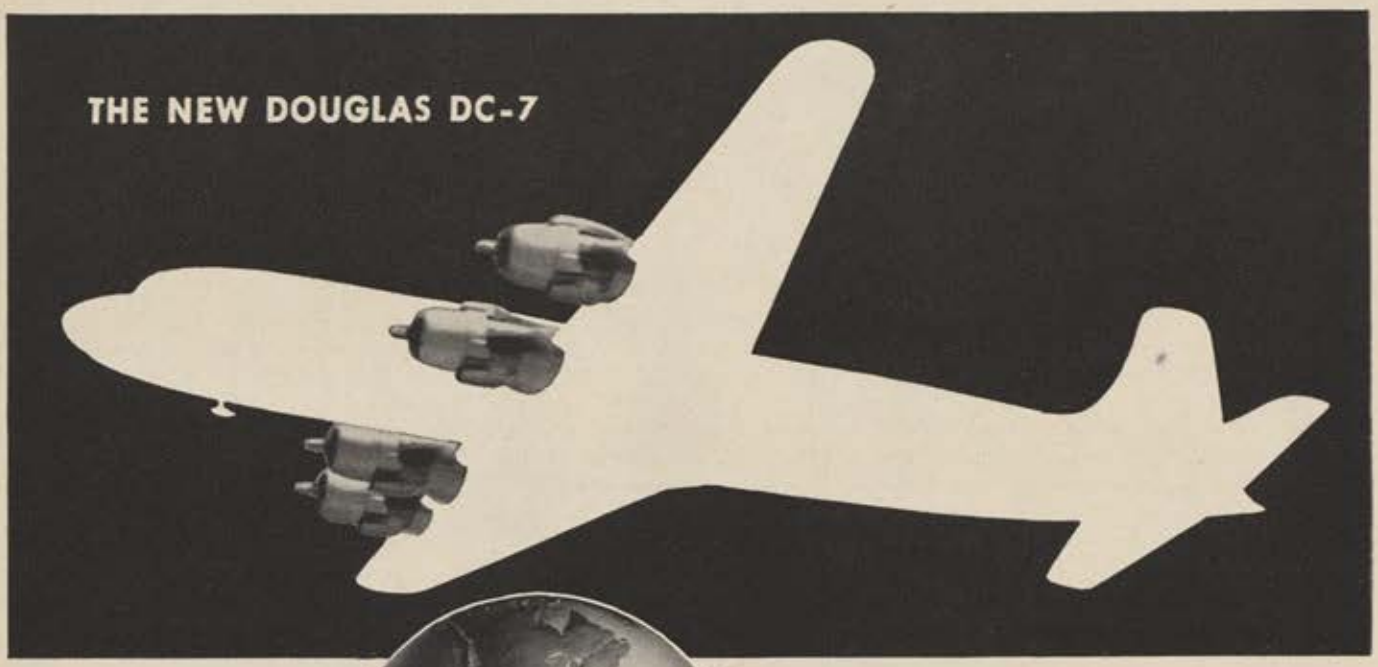

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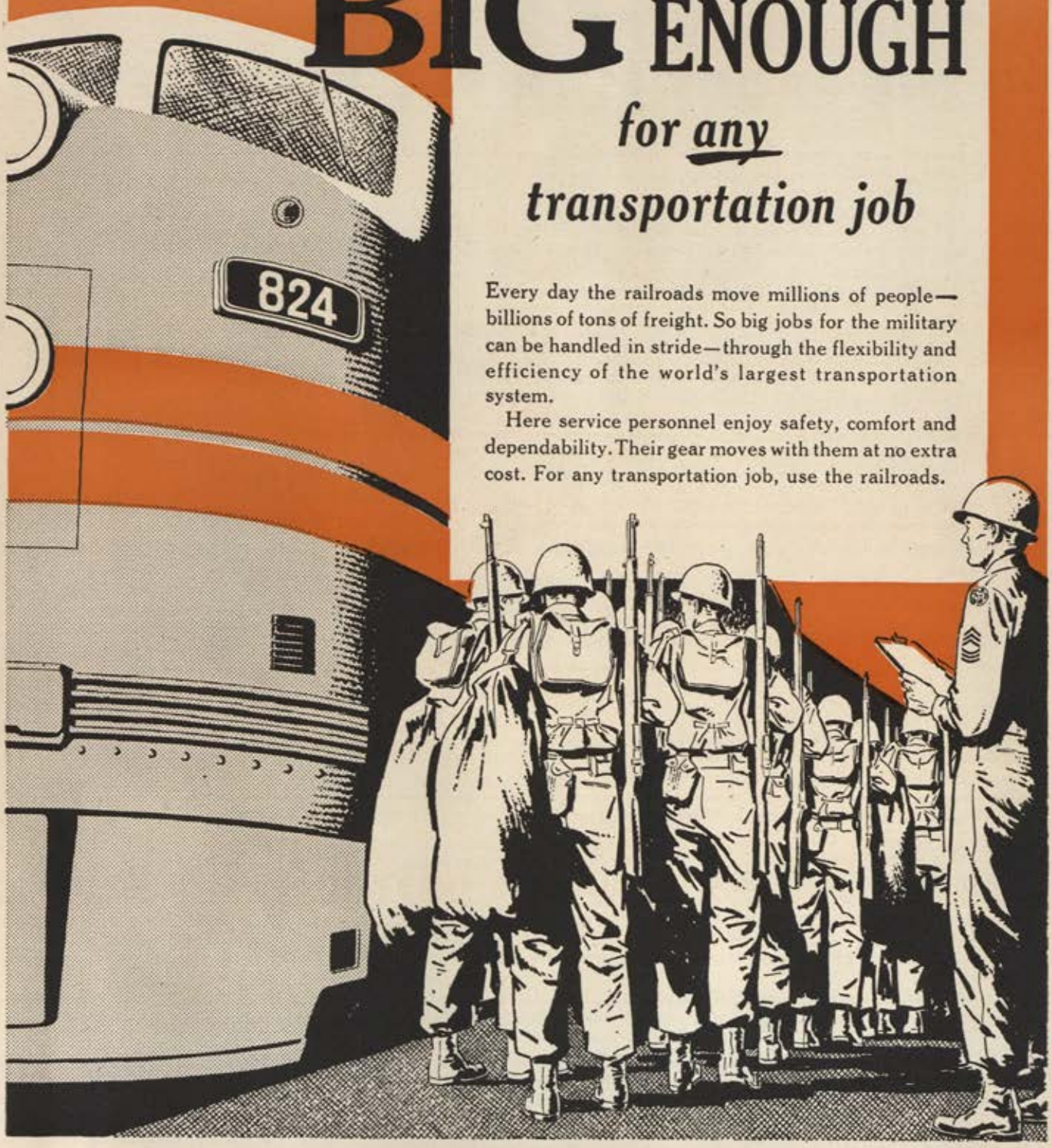

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SLANG——————CONTINUED

early British terms that are still used.

The assimilation of English slang and colloquialisms continued up through World War II, especially on the part of the 8th Air Force stationed in England. However, during the Korean conflict, this tide of aviation slanguage was reversed. In the Far East it was the British airmen who borrowed and used typical current American Air Force jargon.

Of great importance in this development of Air Force jargon has been the almost constant association of flight with the act and art of war. The airplane was invented but a few short years before the outbreak of the first World War. Almost entirely due to this fact were the initial rapid advances made in the art of flight, in aircraft design and construction.

War has served this same function ever since. Since 1914, practically every aspect of aviation has been constantly associated with the preparation for or actuality of war. And war, with the mental and physical mores so unlike normal civilian life, is possibly the greatest producer of the need to create and use new language forms. To the casual observer, at times even to the student, the origins are obscure.

For example: "boondocks." Does it date back to the Louisiana maneuvers held just before the outbreak of World War II? Or, as has been argued, does it belong to the Navy, having been coined from the abbreviation "Bu-Docks" for Bureau of Docks? Or, is it related to the very ancient military word "bundocks" for expendable military supplies used for trade purposes in obtaining liquor or women? This last term has been traced back to the Second Crusade.

And how about "clobber" for crash or to hit viciously? Circa 1850 it meant old clothing no longer usable as such. Later it became thieves' cant for the stealing of clothing off washlines. Perhaps this latter sense of a hit-and-run attack could have started the line of verbal evolution that ended up with the World War II and Korean "clobber." Who knows?

At other times the origin of words and phrases are pretty obvious. "V-girl" for a Times Square slut; "Piccadilly Commando" for her London sister; "paper palace" for any headquarters building; "wheel house" for the Pentagon; "paragraph trooper" or "chairborne commando" for a headquarters clerk—need no explanation.

As mysterious as the origin of certain words and phrases are the habits of others. For unfathomable reasons

(Continued on following page)

SLANG—CONTINUED

some items are retained in popular usage long after their purpose for creation is gone. Equally incomprehensible are those elements of jargon that suddenly appear, spread rapidly throughout the Air Force world, only to disappear from use just as fast.

A good example of the former is "slum-burner" for a mess hall cook. "Slum" and "slumgullion" as military slang for a cook's stew date back to the Civil War and are probably older. By the end of the first World War, "slum" for stew was almost obsolete, but "slum-burner" for cook had been coined and was quite popular. Today, "slum" is never used but "slum-burner" is heard more frequently than any of its closest rivals for popularity such as "hash-masher," "bean-bandit," or "belly-robber."

Typical of the type of jargon that flashes incandescent for a brief popular moment only are such terms as "SNAFU" for Situation, Normal, All Fouled Up, which had a considerable vogue during World War II and led to such other variations as "TARFU"—Things Awful, Really Fouled Up—and "FUBAR"—Fouled Up Beyond All Recognition; "OHIO" for Over the Hill In October, which was suddenly eclipsed by Pearl Harbor; "flying prostitute" (no visible means of support) for new and radically designed aircraft; and "foo fighter" for those strange globes reported by heavy bomber men in the ETO during World War II.

According to Carl Sandburg, slang is language that takes off its coat, spits on its hands, and goes to work. But this is not always true of Air Force jargon. Frequently words and phrases are coined out of boredom and as gags, as satire or biting sarcasm, the need for identification or to create a feeling of unity and unit.

This last is most important in the development of any jargon. In the Air Force, the raw but observant recruit, or the simply shy and homesick recruit, will almost invariably attempt to merge with his newly assigned unit as rapidly as possible. Few men like to stand out, to have their companions *too* aware of them. Therefore, most men seek the anonymity of the ranks.

To thus merge as well as to become identified can most easily be done through language. The newcomer listens to the old timers, he listens and learns and in a very short time is speaking of "bucking the line" and of "sweating Uncle Sugar day" (looking forward to pay day). His language rapidly becomes interlarded with such

(Continued on page 125)

nose for trouble

The big black nose of the CF-100—and what's inside it—is truly a mark of distinction. For it identifies the all-weather interceptor from the day fighter and, in the case of the CF-100, as Canada's Aerial Defender against bomber attack across the North.

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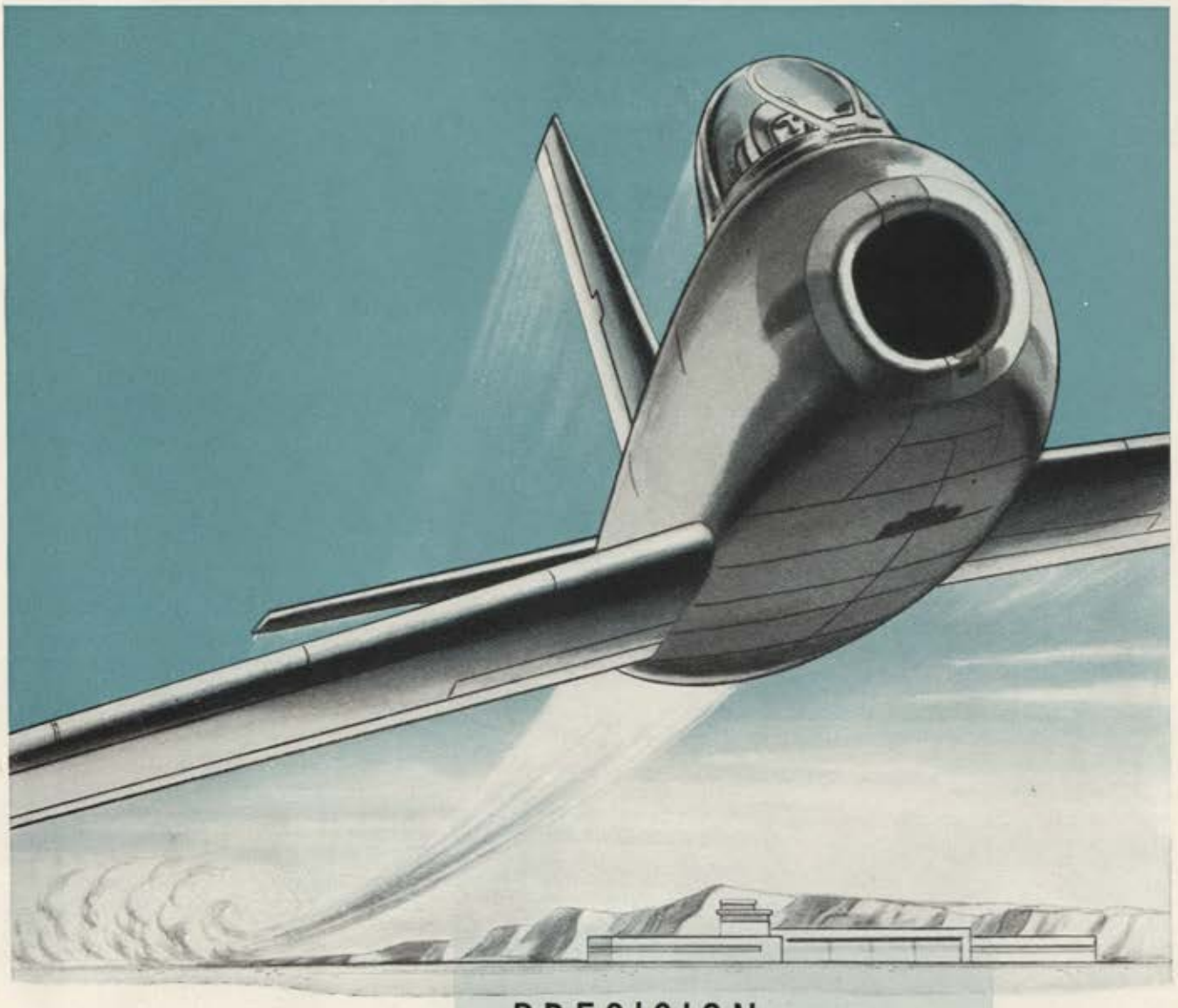

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SLANG——CONTINUED

terms as "skosh" for small or little; "T-bird" for T-33 jet trainer; and "zilch" ("He shows me zilch") for nothing.

However, and here the obvious linguistic progression gets all twisted up with itself, the very same newcomers, coming as they do from all walks of life and frequently possessing above-average IQs and educations, bring with them elements of language that are in turn adapted by the "old timers"—adaptations that in time are taken over by other newcomers who in turn will also refresh the over-all jargon with *their* importations. As the saying goes, a real fine-type bag of worms.

From the very beginning of military aviation, there has existed a bond of group activity and accomplishment among those in the air arm. From World War I on, the airman's love of his aircraft and respect and recognition for all the others so recently initiated into the brand new fraternity of flying, has set him apart from all others—military as well as civilian.

In fact, during World War I, such was this feeling of uniqueness combined with innate comradeship, that it was even extended to the enemy pilot and to his aircraft. An incredible, incongruous code of aerial chivalry developed.

However, with the advent of the heavy bomber and the bombing of cities brought about by the second World War, there came a sudden end to this near-medieval code of aerial ethics. The era of man-to-man derring-do was over. Now aerial combat, for the most part, became a complicated mathematical business—a business based upon logical, cold-blooded rules and patterns rather than upon sentimentality and the earlier brotherhood of flight.

From the earliest days, many words and phrases are still in existence exactly as created. "Cockpit" and "joy stick" (slowly dropping out of the semantic picture); "cow pasture" for a small, local flying field, and "to fly the iron beam" meaning to use railroad tracks as a means of navigation, are typical.

Other words and phrases, naturally, have been twisted and warped to meet changing conditions and concepts. The "ground pounder," the "wingless wonder," the "streamlined brick" will always be with us. But as an example of the word that has been completely shifted away from its original definition, take "goldbrick"—the shiftless, lazy individual whose name existed through two wars. This individual, the

(Continued on following page)

"goldbrick," is no more. The "goldbrick" of today is a six-pack carton of canned beer.

"Bird colonel" for a full colonel and "railroad tracks" for captain's bars will live on and on, but when was the last time you heard someone use "alligator bait" for poor food or "Army of Terrified Civilians" for the ATC (Air Transport Command)? The "blotter job" of World War II, meaning a bad and fatal crash, became an "auger job" (to bore plane-shaped holes in the ground) of Korea, or even the slightly more recently (perhaps revived) "bought the farm" ("so-and-so bought the farm over Wonsan").

Stars and Stripes, back in 1918, said: "Universal slang in this man's army is as hard to attain as universal peace in this man's world." True once, but no more, not at least as far as the Air Force goes. What with the constant flow of sonic aerial traffic, the TDY jaunts of SAC, today's rotation policies, and the simultaneous world-wide publication of service publications, a word coined at Suffolk County Air Force Base on Long Island one day could well be in universal AF usage within a matter of weeks.

For example, at the outbreak of the Korean brawl the Air Force ran into the Far Eastern word for boss or chief, which was "honcho," or "honcho pilot"; a section head at FEAF Headquarters became its "honcho." In an incredibly short time the word spread world-wide. From Air Defense Command "hot rooms" to a supply dump in Germany it would be difficult to find an individual who has been in Air Force blue over ten days who would not immediately know the meaning of honcho, in or out of context.

Granted that the Air Force has pirated its slang from any number of sources, but strangely enough it has very rarely adopted items thought up and used by many professional journalists.

The so-called "pickle-barrel bombing" of World War II, and journalistic coinages such as "bird men," "flying foxholes," and "G.I. Janes" have always gone over with the Air Force like the traditional lead noon balloon for Rangoon.

To date, little or nothing has been done toward collecting, preserving, or studying this jargon of the Air Force. Dictionaries of criminal slang and the like are in print; learned papers are written on the jargon of early Western cowhands, the soda jerk, and North Woods loggers. Perhaps the very newness of the Air Force's jargon precludes such.

But still, it could be of great value. The language used by any group is a reflection of its history, past and present. Traditional words, especially slang, as well as the latest words to be pressed into service by a group are highly indicative of the structural and creative changes being made within the organization.

And so you have it—a very brief "walk-around" of the jargon of the Air Force. Youngest of the services—but the lustiest. Every action today based upon tomorrow's needs and the day-after-tomorrow's ideas. A young Air Force but one old enough to have become an entity, to possess a vocabulary all its own. And this vocabulary, perhaps unwittingly, is but one more bond that draws together those in the fraternity of flight.—END

Bill Walbrich collects AF slang as a hobby. Now stationed at Suffolk Co. AFB, N. Y., he wrote about "Bedcheck Charlie" for us last September issue.

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SILVER MEDAL WINNERS

AFA awards are presented to outstanding AF-ROTC cadets

AF-ROTC programs—now active in 188 colleges and universities in forty-six states, D.C., Puerto Rico, and Hawaii—provide basic military knowledge and develop attributes of character and leadership among students. This year, as in the past six, Air Force Association's Silver Medal went to outstanding cadets in an AFA-sponsored program to encourage these attributes. Winners are chosen by their respective PAS&Ts on the basis of scholarship, leadership, initiative, military bearing, resourcefulness, and neatness.

Typical of this year's winners is Henry Martin (right) of Loyola University, Los Angeles, Calif., who's receiving his medal from AFA member Brig. Gen. Donald E. Stace (ret.). More winners on the next page.

Col. Lloyd H. Tull, PAS&T at Clemson Agricultural College, awards medal to outstanding Cadet James K. Henderson.

The President of Duke University, A. Hollis Edens, gives the AFA medal to Cadet Lt. Col. Eugene M. Anderson, Jr.

Cadet Douglas G. Dendy receives the medal from Lt. Col. Walter Williams, PAS&T at Mississippi State College.

At the University of Oregon, Forest G. Easton gets award from Ray Hawk, Assoc. Director of Student Affairs.

At Pennsylvania State, AFA President Kenney congratulates George W. Black as Lt. Col. J. W. Dieterle looks on.

Lloyd Vandervort, AFA representative, pins medal on Thomas D. Reinhold at Western Reserve University ceremony.

Cadet Joseph Cox of the University of Wichita receives his award from Honorary Cadet Col. Marylin Smith.

At Yale University, PAS&T Col. Louis C. Adams, Jr., presents the AFA medal to Cadet Lt. Col. Elliott C. Lawson.

Robert O. Weidenmuller of the Newark College of Engineering is congratulated by PAS&T Lt. Col. David Tudor.

Ronald L. Copsey (son of Maj. Gen. Copsey) receives award from Lt. Col. Malcolm M. Heber, the Amherst College unit's PAS&T.

Cmdr. of Cambridge Research Center, Col. Michael J. Ingelido, pins award on College of the Holy Cross Cadet Paul M. Martinek.

San Juan AFA Sqdn. Commander Mihiel Gilormini pins medal on Arcadio V. Ramirez at A&M College, Mayaguez, Puerto Rico.

AFA's Organizational Director Gus Duda congratulates Paul B. Stroup at George Washington University's ceremony in D. C.

THIS YEAR'S LEADERS

AS THE school year drew to a close this spring, AFA Silver Medals for 1953-54 went to outstanding AF-ROTC cadets in military ceremonies on college campuses from Puerto Rico to Washington state. Selection of winners is made by those best able to judge the qualities of individual cadets—their own professors. AFA makes available to PAS&Ts a grading system to help the selection. The Silver Medal has been awarded annually since 1948, and about 700 cadets have received the award so far. Below are the names of winners and their schools reported to AIR FORCE Magazine by presstime.—END

University of Alabama, University, Ala. Frank M. Hardy.

Amherst College, Amherst, Mass. Ronald L. Copsey.

University of Arizona, Tucson, Ariz. Marshall L. Carson.

University of Arkansas, Fayetteville, Ark. William T. James.

Brooklyn College, Brooklyn, N. Y. Robert Albert Holzer.

Bowling Green State University, Bowling Green, Ohio. James Koehler.

University of Buffalo, Buffalo, N. Y. Edward C. Scanlan.

California Institute of Technology, Pasadena, Calif. Hugh G. Leney.

Catholic University of America, Washington, D. C. Arell E. Weaver.

Clemson Agricultural College, Clemson, S. C. James K. Henderson.

College of Agriculture & Mechanic Arts, Mayaguez, Puerto Rico. Arcadio V. Ramirez.

Dartmouth College, Hanover, N. H. Howland Shaw Russell.

University of Denver, Denver, Colo. John Robert Shaw.

Davis & Elkins College, Elkins, W. Va. Nicholas Glenn Milanovich.

DePauw University, Greencastle, Ind. Dean L. Berry.

University of Detroit, Detroit, Mich. Edward W. Koerner.

Duke University, Durham, N. C. Eugene M. Anderson, Jr.

Emory University, Emory, Ga. Joel F. Pierce, Jr.

Florida State University, Tallahassee, Fla. Dossey C. Merritt.

Franklin & Marshall College, Lancaster, Penna. Donald U. West.

George Washington University, Washington, D. C. Paul Stroup.

Georgia Institute of Technology, Atlanta, Ga. Walter Caldwell Smith, Jr.—outstanding senior, 1954, and Lynwood A. Johnson—outstanding junior, 1954; John Will Gay, III (1953 winner).

Grinnell College, Grinnell, Iowa. Thomas W. Carpenter.

Grove City College, Grove City, Penna. Scott Johnston.

College of the Holy Cross, Worcester, Mass. Paul M. Martinek.

University of Idaho, Moscow, Idaho. Gerald G. Leigh.

Illinois Institute of Technology, Chicago, Ill. Hugo J. Miller.

State University of Iowa, Iowa City, Iowa. Herbert N. Faintish.

Kent State University, Kent, Ohio. Robert D. McFerren.

University of Kentucky, Lexington, Ky. Wallace E. Mitchell.

Lehigh University, Bethlehem, Penna. John C. Bailey.

Louisiana Polytechnic Institute, Ruston, La. Freeman E. Smith.

Louisiana State University, Baton Rouge, La. Gerald C. Coleman.

Loyola University, Los Angeles, Calif. Henry Martin.

Manhattan College, Riverdale, N. Y. Edward J. Grenier.

University of Minnesota, Minneapolis, Minn. George P. Rice.

Mississippi State College, State College, Miss. Douglas G. Dendy (1954 winner). Lester R. Terrell (1953 winner).

Montana School of Mines, Butte, Mont. Edwin J. Duncan.

Montana State University, Missoula, Mont. Robert J. Jasken.

University of Nebraska, Lincoln, Neb. Donavan L. Tadken.

Newark College of Engineering, Newark, N. J. Robert O. Weidenmuller.

University of North Carolina, Chapel Hill, N. C. Don W. Geiger.

North Carolina State College of A & E, Raleigh, N. C. Ernest Sanford Dean.

Ohio State University, Columbus, Ohio. Royal C. Albridge.

University of Oklahoma, Norman, Okla. Weldon Saylor.

University of Oregon, Eugene, Ore. Forest G. Easton.

Pennsylvania State University, State College, Penna. George Black.

College of Puget Sound, Tacoma, Wash. Charles G. Adams.

Queens College, Flushing, N. Y. Joseph R. Brostek.

Rutgers University, New Brunswick, N. J. Clifford C. Stults, II.

St. Joseph's College, Philadelphia, Penna. Thomas J. Duffy.

San Jose State College, San Jose, Calif. Donald F. Smith.

University of the South, Sewanee, Tenn. Philip B. Whitaker, Jr. (1954 winner). William Hamlet Smith (1953 winner).

South Dakota State College, College Station, S. Dak. William K. Schaphorst.

Southern Illinois University, Carbondale, Ill. Edwin R. Krutsinger.

Southwestern Louisiana Institute, Lafayette, La. Robert E. Johnson.

Stanford University, Stanford, Calif. Donald J. Mungai.

University of Tennessee, Knoxville, Tenn. Billy F. Nunley.

Texas A & M. College, College Station, Tex. Feholin E. Tutt.

Trinity College, Hartford, Conn. Ronald F. Storms.

Tuskegee Institute, Tuskegee Institute, Ala. Aaron W. Smith, Jr.

University of Utah, Salt Lake City, Utah. David W. Noall.

University of Virginia, Charlottesville, Va. Thomas A. Frazier, Jr.

State College of Washington, Pullman, Wash. William H. Brown.

West Virginia University, Morgantown, W. Va. Vincent H. Johnkoski.

Western Reserve University, Cleveland, Ohio, Thomas D. Einhold.

Municipal University of Wichita, Wichita, Kan. Joseph Cox.

Williams College, Williamstown, Mass. Peter G. Cook.

University of Wisconsin, Madison, Wis. John C. Merriman.

Yale University, New Haven, Conn. Elliot C. Lawson.

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This radical new power plant is not ready for general use. Manufacturing and metallurgical problems must be solved before it can be made available to the public. Still Chrysler engineering has so greatly advanced the gas turbine engine that its eventual use on the road can now be considered seriously.

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We invite you to discover for yourself the excitement and money's worth that you can have right now in the 1954 Plymouth, Dodge, De Soto, Chrysler and Imperial cars at your dealer's. Pay him a visit and try the many dozens of driving advances that put you ahead on the road. You'll find these cars have already wrapped up much of the future of motordom and are placing it right in your hands—today!

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Squadrons Vie for Top AFA Awards

NATIONAL AWARDS COMMITTEE HAS TOUGH JOB OF CHOOSING WINNERS FOR THE YEAR

SQUADRON OF THE MONTH

Twin-Cities Squadron
Minneapolis and St. Paul, Minn.

CITED FOR

outstanding success in the field of Squadron programs and membership. For bringing to the attention of a large number of people the aims and mission of the Association, AFA salutes this Squadron.

Since the 1953 Convention, the programs and projects sponsored by AFA units all over the country have grown along with the formation of new squadrons. Some of these programs will earn for their sponsors awards at this year's Convention. The 1953 winners of the **President's Trophies,** which go to the "Squadron of the Year" and the "Man of the Year," included the **San Francisco Squadron** and **Julian B. Rosenthal,** AFA's National Secretary. The Squadron was recognized as a "model" of AFA activity for its outstanding programs, and Rosenthal received his award for his work in the development of the Association on both a national and local level. The National Awards Committee has the difficult job of choosing these winners and the winners of the five Unit Plaque Awards. The Unit awards are given for achievement in the fields of Youth Aviation Education, Reserve Affairs, Civil Aviation, National Defense, and Membership.

During the past year, many Youth Aviation Education programs aimed at interesting young people in aviation careers were sponsored. Among these were the Awards Banquet, sponsored by the **Lansing, Mich. Squadron,** which focused area attention on the AF-ROTC program; the Youth Education Day sponsored by the **DuPage (Ill.) Squadron; Pasadena's** ROTC program which honors outstanding cadets and drill teams from among colleges in the area; **Queens Squadron's** sponsorship and training of three Air Explorer Scout troops; and many others.

In October 1953 the **Air Reserve Association** merged with AFA. As a result, the programs of ARA Chapters which became AFA Squadrons reflected an important phase of AFA's over-all mission —that of promoting an adequate **Reserve program,** for national security. Outstanding programs in these activities have been sponsored by the **Rainier Squadron** (Wash.), the **First Reserve Squadron** (Long Beach, Calif.), the **Mohawk** (Kansas City) **Squadron,** the **Ken Fogle Loop Squadron** (Ill.), and many others.

In the endeavor to maintain a high interest in the field of **Civil Aviation,** the **Wright Memorial Squadron** (Ohio) sponsored its sixth annual Wright Glider meet. Contestants from all over the Midwest competed for trophies, and attendance totaled well over 12,000 for the three-day affair. Model meets such as those promoted by **Chicago Squadron 101** and **Cuyahoga Founders Squadron** (Cleveland), are also an important phase of Civil Aviation activities.

In the field of **National Defense**—including Civil Defense—there have been many good examples of community-minded AFA units. Members of the **Pasadena Squadron** not only help man the Ground Observer Corps Post, they helped build it. The **Santa Monica Squadron** has assisted in "Skywatch" since its inception; and the **Pittsburgh Squadron** has devoted many hours to the development of the program. The **San Diego Squadron** sponsored tours to nearby Air Force bases to better acquaint city officials with the problems of the AF.

In the field of **Membership,** it is difficult to make a choice between an AFA unit that sponsors one well-managed membership campaign and a unit that develops its membership and then maintains that level. A successful Squadron must have a well-directed program to obtain new members and retain the maximum number of regular members.

Since it would be impossible to mention all units that should be recognized, we have stuck to actual examples of the various fields of activity open to AFA Squadrons. There are some activities and programs which do not fit into any of the five fields—such as the **Santa Monica Squadron's** sponsorship of the California Wing convention of 1954. Activities such as this are taken into consideration by the National Awards Committee when considering units for national recognition.

The **Twin-Cities Squadron** is AFA's Squadron of the Month for September. Composed of members from St. Paul and Minneapolis, the Squadron is outstanding in several fields of activity and its latest program received a great amount of favorable publicity for the Association in that area.

In June, Squadron Commander **William G. Kohlan** presented the Squadron trophy for aviation achievement to **Sherman Booen,** local television and radio performer. Booen's weekly TV program, "The World of Aviation," for the past three years has brought the development of aviation to public attention. In accepting the award, Booen said, "The Air Force Association is the one civilian group that has done the most for airpower in building an adequate national security." Other AFA leaders taking part in

(Continued on following page)

Lake Charles Sqdn. Charter is given Cmdr. Everett Scott by F. O. Rudesill, Louisiana Wing Cmdr. Also pictured are T. B. Herndon, State Aviation Director (at left), and (far right) Brig. Gen. Raymond Winn, 806th Air Div. CO.

AFA President George C. Kenney presents Charter to Ken Fogle Loop Sqdn. Cmdr. Harold G. Carson, as Mrs. Jean Fogle looks on. Colonel Fogle was Kenney's intelligence officer in the Southwest Pacific during World War II.

Presenting Twin-Cities award to Sherman Booen is Squadron Cmdr. William Kohlan. Others are Vern Boline, Merle Else, and Wing Cmdr. Bob Carlson.

the televised and recorded ceremony were **Merle S. Else,** North Central Regional Vice President; **Robert Carlson,** Minnesota Wing Commander; **Vernal Boline** and **Edwin Kube,** both past officers of the Squadron.

Ralph Whitener, AFA's Program Director—in Omaha in July while planning the National Convention—visited Lincoln to meet members of AFA's newest Nebraska Squadron. Approximately fifty members came to the meeting. **Glenn Yaussi,** a vice president of the National Bank of Commerce and Squadron Commander, was elected delegate to the Omaha Convention during the meeting.

Cleveland's **Cuyahoga Founders Squadron** at the July meeting saw pictures of an "unidentified flying object." **Ralph Mayher,** an ex-Marine, took the pictures while on duty in Miami Beach in 1952. He discussed his observations with the Squadron during the dinner-meeting at the Nanking Restaurant. **Melvin Fenrich,** Squadron Commander, announced the annual Squadron picnic on August 29 at Roundup Lake Park in Mantua, Ohio.

(Continued on page 137)

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Recently, funds for the construction of a new USAF base in the San Diego area were approved. Realizing the importance of public acceptance, AFA's **San Diego Squadron** invited the top civic, business, and public information people of the area to be their guests on a tour of March AFB to show them the workings of the Air Force. **Edward C. Kranch,** past Squadron Commander, was program chairman of the trip, which was made through the courtesy of **Maj. Gen. Walter C. Sweeney, Jr.,** Commander of the 15th Air Force.

The organizational meeting of the new **Ogden, Utah, Squadron** was successful according to **Paul M. Fisher,** Utah Wing Commander. **Gen. Edwin W. Rawlings,** Commander of the Air Materiel Command, spoke to the 180 persons at the dinner meeting. Also present were **Brig. Gen. Manning E. Tillery,** Ogden Air Materiel Area Commander; **Thayer Tutt,** AFA Rocky Mountain Regional Vice President; **George B. Holbrook,** Central Utah Group Commander; **William J. Farmer,** Northern Utah Group Commander who was MC for the event. **Ernest H. Balch,** local Chamber of Commerce President and AFA member pledged support of the Chamber to the new Squadron. Commander of the Squadron is **Harry J. Dayhuff,** 3929 Raymond Ave., Ogden. Other officers are **Marvin Fischer,** Vice Commander; **Harold Flygare,** Secretary, and **Wilford Thornock,** Treasurer. The Council is composed of **T. L. Bartlett; S. F. Anderson,** and **J. P. Buller.** The vigorous organizational campaign of the Utah Wing has already resulted in the formation of two Squadrons. A third, in Salt Lake City, is well on the road to formation.

Col. Bernt Balchen, well-known USAF expert on polar explorations, spoke to the **Capital Squadron** at a dinner meeting in the new Washington Aviation Club on June 23. Program chairman for the third in the Squadron's series of lectures by notable figures was **Ed Kirschner.** Squadron Commander **William F. Kraemer** announced that the next event on the social calendar would be a dinner-dance at the Army-Navy Country Club.

President George Kenney is shown with a group of Great Lakes Regional leaders during Illinois Wing Convention. Regional V-P George Anderl is at far left.

CROSS COUNTRY . . . Great Lakes Regional Vice President **George Anderl** presided at the latest quarterly conference of that region on May 23 in **Mishawaka, Ind.** . . . Six AFA Squadrons in the **Greater Los Angeles Group** have each contributed to a "kitty" which will go to the Squadron that gets the most members by December 31, 1954 . . . A former AFA Squadron Commander, **Capt. George G. George,** Lansing, Mich., was killed in July in a plane crash near Albuquerque, N. M. . . . Conventions: **Colorado Wing**—Oct. 2, Broadmoor Hotel, Colorado Springs, Colo.; **New Jersey Wing**—Sept. 18, Berkely-Carterest Hotel, Asbury Park, N. J.—END

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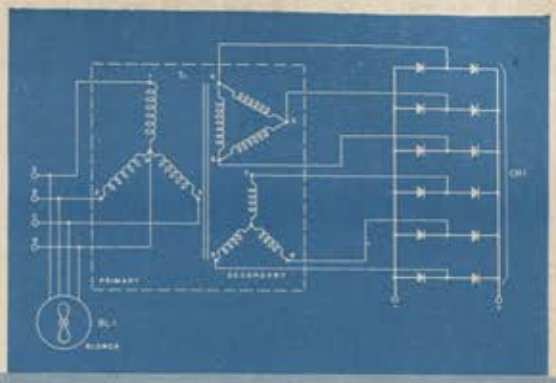

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★ INDEX TO ADVERTISERS ★

THOSE WERE

In picking beautiful planes, everything counts, from the Fokker Monoplane, the first real pursuit, to today's supersonic North American F-100.

By Len Morgan

THUMBING through a magazine not long ago, I saw a picture of an unfamiliar but slick-looking fighter job. The caption indentified this eye-catcher as the Curtiss P-40Q and described it as being, without question, the finest-looking fighter ever assembled.

Now, we all have our favorites, whether we're talking about movie actresses or baseball clubs, and I'm the last one to break up a good session of hangar flying if you start reminiscing about an old beauty you flew once. As long as you're reasonable about the thing, that is. Let's not get carried away like this caption writer.

The most beautiful fighter ever put together—that's what he said. That is a very broad statement—about like saying that Assault was the most beautiful horse ever to run in a Kentucky Derby.

This is not a matter to be considered hastily. You have to go back to such old timers as the Fokker E-1 which, under favorable conditions, could be pushed up to eighty mph, and include such present day marvels as the North American F-100, which hurtled through the sonic barrier during the first minutes of its maiden flight. A lengthy list of other great combat craft—many of which qualify for the label "good-looking"—fall somewhere in between.

That P-40Q was a genuine beauty —we will not argue about that—but when you speak of the best-looking fighter ever built you bring to mind a host of stout fighting craft—the Fokker D-7, Curtiss P-1, Boeing F4B-4, Seversky P-35, Hawker Hurricane, Lockheed P-38, and North American F-86—each of which has, in its own way, an immense appeal for the serious connoisseur. Now who would pick a single ship from this fabulous roster and scratch off all the rest?

To analyze so broad a subject properly and give to it the attention it merits, it is necessary to look at the periods of flying history. How can you reasonably compare a Spad with a Spitfire, or a Spitfire with a Sabrejet? Fair comparison can be made only between aircraft of the same general type that were in the air at about the same time.

Let's start with the Wright Brothers in 1903 and consider the years leading to World War I. True, there were no fighters then, but any serious talk about beautiful planes requires a look at all types of all periods.

We may think of this first period as **Early Aviation**—that quaint and dangerous era when pioneering aeronauts toyed with the Wright invention, scarcely knowing what they were trying to make of it, never dreaming of its incredible future. Appearance-wise, at first glance, those frail stick and linen craft had little to offer. This first impression is wrong, for early aviation books record a number of promising designs, a handful of which were definitely not hard on the eyes. The neatest of them all, the **Bleriot XI,** emerged in 1909—six years after Kitty Hawk. It won world acclaim for its builder when he flew it across the English Channel. A dainty little ship (weight, 485 pounds; span, twenty-eight feet), it was the first monoplane to enjoy general acceptance. With its beautifully-formed wing, slender fuselage, and trim tail group, the Bleriot reflected in every detail the amazingly advanced thinking of its inventor and looked good when standing alongside the huge, unwieldy creations then common on European landing grounds. The general arrangement of its components – single-wing, power plant in nose, pilot in enclosed cockpit, two-piece trailing tail and three-wheel landing gear – was identical with what was to become common practice in later years.

The **World War I** period took the airplane out of the hands of sports-

Beautiful Planes

There are swarms of contenders in the aerial beauty parade. Here is one man's opinion of the winners through all periods of flying history

Favored by modelers—the WW I English SE-5. A simple wing plan and a slender fuselage made it look good from almost any angle.

The Army's Curtiss P-6E had elegant lines—the work of a sensitive mind.

men and experimenters. Top engineering brains were assigned the job of making it fly faster and more reliable. By 1918 it bore little resemblance in performance or appearance to its pre-war ancestor. Several bombers saw action, but none was worth more than a passing glance. The day of attractive large airplanes still lay far ahead. It was strictly a fighter war as far as the fancier is concerned. While there is something good to be said for most of the old favorites, the **English SE-5** won this stage of the contest, hands down.

The SE-5 looked good from any angle. The fuselage was slender without being skinny, the wing plan simple but shapely and the tail was satisfactory. There was a complete lack of fancy innovations in the design. Neither loose-fitting nor muscle-bound to the view, the SE-5 looked husky but not heavy. And there was a cocky air about the ship which it was entirely capable of backing up with the right man on the stick. Small wonder it has been, and is yet, a favorite with modelers.

The third logical period to consider may be termed, **Between the Wars.** The peaceful twenties and thirties produced a number of worthwhile military designs, practically all of which were fighters. Aircraft of the medium and heavy bombardment classes started coming into their own as distinct types. A large (for those days), twin-engine biplane with widespread fixed gear, the **Keystone B-6** was uninspired but by no means unattractive. Those of us who spent the thirties impatiently peering through the airport fence remember seeing it as late as 1937, its crew riding outdoors, fully exposed to the elements.

As long as there are airplanes and enthusiasts to admire and remember them, there is going to be a running argument about the fighters of those peaceful years. It will center, of course, about the Army's **Curtiss P-6E** and the Navy's **Boeing F4B-4. To** have changed as much as a stitch in the fabric of either would have been a change for the worse, so close was each to sheer perfection. Although there was little similarity between them, each was, in itself, a final crowning achievement in biplane design.

Obviously the work of a sensitive mind, the P-6E was almost too good looking. Dressed up in Air Corps blue and yellow it was a dazzling, almost gaudy, showpiece. But the elegant lines showed through the outer glitter, revealing the true beauty under the paint.

The F4B-4 was basically no more glamorous than its twin-sister, the Army's P-12E, but somehow the scrappy little Boeing looked her neatest when decked out in the Navy's prewar finery and ready to be taken aboard the **Saratoga** or **Lexington.** While no conscious attempt may have been made to produce a pleasing appearance, her designers left literally nothing to be desired, even by the most finicky enthusiast. Until the second war, nothing else built anywhere came close to these thoroughbreds from the stables of Curtiss and Boeing. Those were the ships!

The same period saw some good looking civilian planes. The still-active gull-wing **Stinson Reliant** was head and shoulders above all competitors in the private flying field and has yet to be outdone by any other craft in its class. Lockheed and Doug-

(Continued on page 143)

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las began to turn out some decent machines. One was a real beaut—the **DC-3.** Far ahead of anything else on the passenger ship market, the Three was every inch a queen from the moment it was first rolled out into the California sunshine. Fortunately, the many modifications and improvements it has known have been mostly internal, leaving the exterior lines unaltered. The sweptback leading edge, shapely nose, graceful cowling, and superbly-molded empennage are the same, and so they should be for how can they be improved? The Three set the pace for a decade of transport design, its familiar nose contour having become the trademark of Douglas transports from the DC-4 through the new DC-7. Other builders have openly copied it.

A bit weary now and feeling her age, the Grand Old Lady of the air does not get about as she used to but stays closer to home, leaving the heaviest duties to her high-stepping daughters. These modern girls go further and get there faster, but they are so clumsy in such flying niceties as landing in short fields and picking their way down through a really tight ceiling! They are more glamorous, perhaps, but they aren't more beautiful. Despite a trace of wrinkles, the Old Lady is still as pretty as any of them.

World War II, as a period in air history, gets the credit for many airplanes that were actually envisioned and flown in the thirties. The famed **Hurricane,** for example, was actually designed in 1934. Many of the so-called "World War II planes" were at least in the mock-up stage when Germany invaded Poland. We may properly think of them in connection with WW II, however, without getting technical about dates.

From the first days of the war the British were very much back in the running in the matter of fine looking aircraft, at least in regard to fighter types. The novel **Westland Whirlwind,** bulldogish **Hawker Typhoon** and classic **Spitfire** were samples of the new look.

For sheer beauty we need look no further than Britain and the US. In the light and medium bomber category **Martin's B-26** had no peer. The Twenty-six was a rarity among multi-engine craft of any class in that it looked every bit as handsome when approaching to land with its wheels, gear doors and flaps extended as it did in cruise with everything tucked away. Name another to which the same compliment can be paid!

The **Boeing B-17G** was not a good-looking bomber on all counts but it took first place among the heavies of World War II. When viewed in flight from the side, the Seventeen was a delightful sight. It was a bit disappointing when observed head-on or from above. Beauty was there but you had to look for it.

Once again, it was a war of fighters to the discerning connoisseur. The finest of them all was the Supermarine Spitfire with **North American's P-51D** running a very close second. Neither ship was perfect. The Spit's narrow gear was an eyesore, the Fifty-one's belly airscoop a detraction. The Fifty-one exploited the straight line while the Spit was a study in curves. A remarkably clean-cut design, the Fifty-one was hard to touch but it was definitely not quite a match for the compact grace of the dashing little Spitfire. After watching the two famous ships in flight together—in tight formation and then in mock combat, as was my experience—there could be no doubt about this.

Yes, the late-model **Curtiss P-40s** looked sharp but they are remembered more for their individual features—nose cowling, rudder profile, prop spinner, etc.—than for over-all beauty.

The final period to consider, **Post World War II** includes the Korean war. With the Axis powers out of the running, most of the entries come from England or the United States. France is back in business building airplanes but has not yet produced any real beauties. Canada's mushrooming aircraft industry has come up with one definitely worth looking over, the **Avro C-102 Jetliner.**

The honor as best-looking postwar airliner goes to Douglas for its magnificent **DC-7,** the latest in that great

(Continued on following page)

Best known fighter of mid-30s—Boeing P-12E.

A bit weary now and feeling her age, the Douglas C-47 (DC-3) is still beautiful.

The Supermarine Spitfire—finest in WW II.

Among bombers, the Martin B-26 had no peer.

The Boeing B-17 Flying Fortress took first place among the heavies of WW II.

BEAUTIFUL PLANES—CONTINUED

company's fine line of transport equipment. The Seven, like all the other Douglasses, looks just a little bit better than its predecessors. It is difficult to imagine an improvement on the Seven, but that's what we have been saying about Douglas ships ever since the DC-1 first flew. Lockheed, for many years the builders of fine looking aircraft (Orion, Vega, 10, Lodestar, etc.), must have honorable mention for their widely-used **Constellation** series. Dolled up in the bright colors of TWA or Eastern, the new Super Connie commands attention wherever it flies, for it is a striking craft from any angle. It looks as fast as it is but does not present a total effect as pleasing as the big Seven.

Postwar medium and heavy bombers are a mixture of good, bad and indifferent. Russia's six-engine **TuG-75,** a turboprop heavy prototype for the intercontinental Model 31 atomic bomber, is about the best idea ever to emerge from the other side of the Iron Curtain, judging from the few drawings of it that have been smuggled out so far. Since the power plants are known to be of German design it may be assumed that the airframe is at least partially the work of outside engineers who were "invited" to serve with the Russians after the war. None of the Russian planes, as we know them, can match their Free World counterparts in the matter of beauty.

For the most part, post-war bombers can lay little claim to beauty. Our own **North American B-45 Tornado** is a fair-looking ship and without doubt as good as anything in its class.

Among the heavy and very heavy models, **Avro's 698 Vulcan** is as smooth as anything yet revealed. Our B-36, as impressive as it may seem to the layman, will be remembered because of its tremendous size, like Britain's huge **Bristol Brabazon** (now being scrapped).

Fortunately for those of us who enjoy resting our eyes on a beautiful flying machine, we have not yet reached the predicted age of pilotless fighter craft when an "interceptor" will resemble a piece of stove pipe with wings. The air today is filled with a score of really worthwhile peashooter designs so we must enjoy them while we can. The day may not be far off when they will be only pleasant memories.

While American engineers turned their attention almost completely to jets after the war, English plants continued to turn out some prop-driven craft, the best of which is the **Hawker Fury,** an unusually slick radial job intended for naval work. **McDonnell's F2H-2 Banshee** and **Lockheed's F-94C Starfire** are at the top in US models together with **Republic's F-84G.** None rate with the finest of all postwar fighters, the **Gloster Meteor Mk-4,** which is not likely to be surpassed in the field of jet-powered "conventional type" fighters. In delta-wing configurations, Gloster again takes the prize with its faultlessly-molded **Javelin,** beating out our own neat **Douglas F4D-1 Skyray.**

Now, back to where we started:

(Continued on page 147)

North American's P-51 was a clean-cut design, exploiting the straight line.

A sister of the fighter above was the cause of this article — the P-40Q.

While most of the really beautiful planes have come from England and the US, the Canadians have come up with a real beauty too—the Avro C-102 Jetliner.

The honors for the best looking postwar transport goes to the DC-7. The Seven, like all the other Douglasses, is an improvement on its predecessors.

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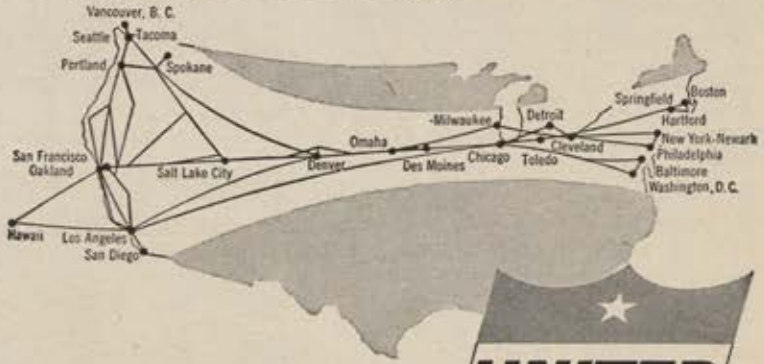

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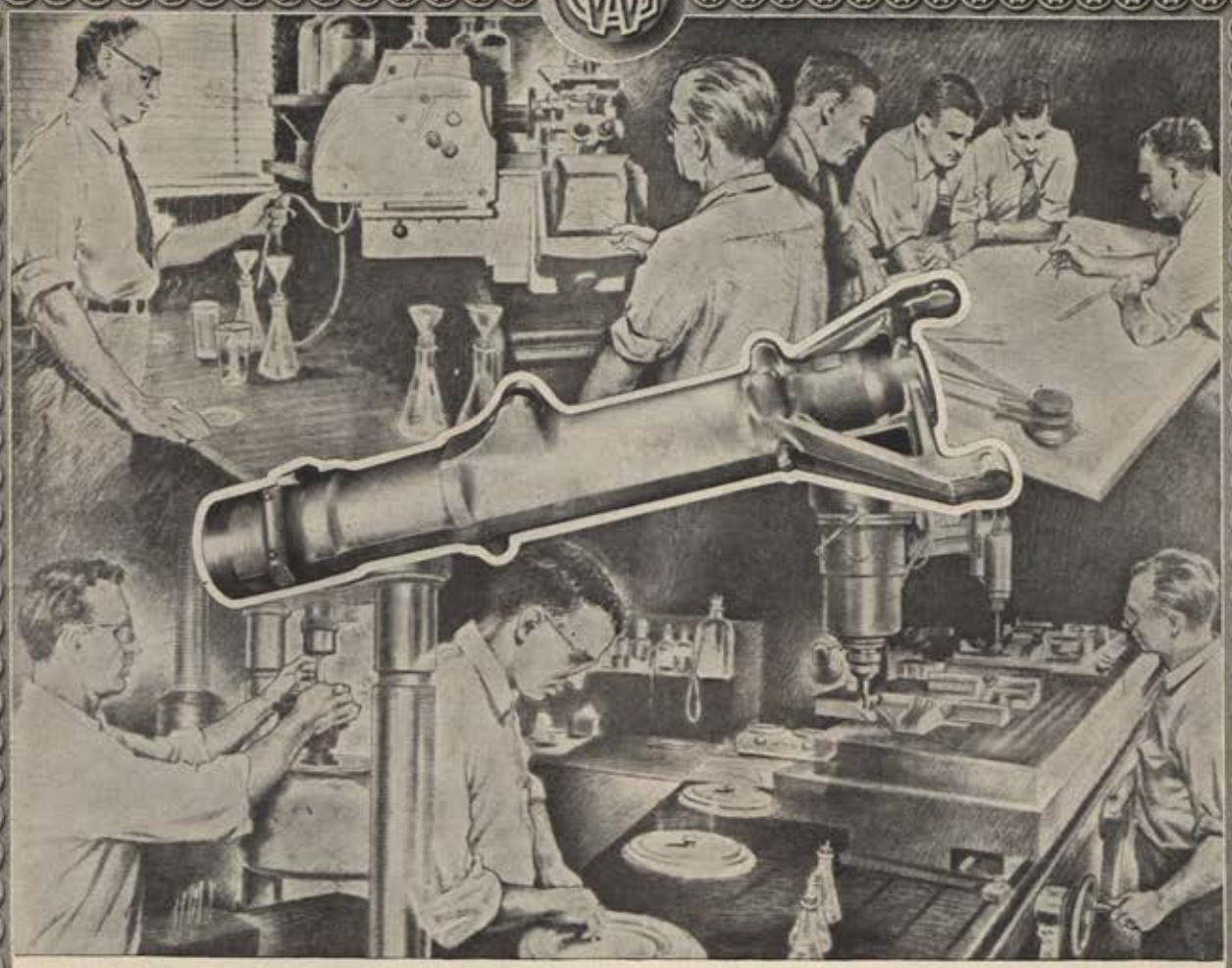

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where does the P-40Q fit into the picture? It doesn't; at least, not in my book. To be eligible for consideration as the beauty favorite of its class and period, an airplane must have established itself as a useful and successful design. The P-40Q, as slick as it must have looked under close inspection, cannot qualify, for it was never put to the test. Official Army Air Force records show that only one was procured. It would be impossible to consider each of the thousands of planes which have been flown since 1903. No one person can have details on all of them. If the field is to be this broad there will always be someone turning up with a picture of some forgotten but good-looking craft of years ago. It seems logical to limit this business to those ships that have enjoyed reasonably successful flying careers—and even this leaves hundreds of types to look over.

The **Knight Twister** was a delightful little biplane, the development of which as a private ship was hampered mainly by cost. **Luscombe's Phantom** was one of the cutest two-place private ships ever to fly. The Curtiss A-18, Fisher P-75, Vultee P-66, McDonnell P-67 and Douglas O-43 are among the many beautiful military ships that either knew limited use or no acceptance at all. One of the finest transport ideas of all time was the **Republic Rainbow** which, for some reason, never made the grade with the airlines or services. The **Douglas D-558-1 Skystreak** research ship, which hung up a world's speed record of 650.6 mph in late 1947, was in many ways as perfect in outer shape as any monoplane of any type.

But these ships and many others never attained general usage in their fields. Some died on the vine for lack of funds, others disappeared from the scene because better types emerged at the same time. The Skystreak was an exception in that only one model was needed and ordered, and it acquitted itself admirably in the mission for which it was built.

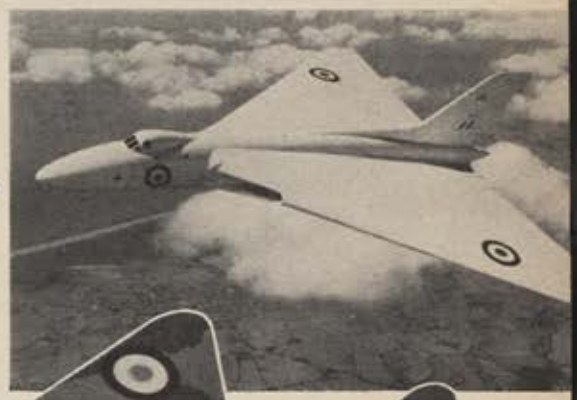
Many of the well known ships of the past owe their popularity to twists of fate. Some were the only types ready for production when a war broke out or were pushed a bit more in competition against other ships whose builders had less influence with buyers. Others were simply born to good times and a ready market. Whatever the reasons behind this plane's wide use and that one's quick trip to obscurity, some made the grade and some failed to make it. My list is drawn from those that made themselves known when they flew. They are remembered today for more reasons than their unusual beauty.

The fragile Bleriot of 1909, the SE-5 over France, the Keystone, P-6E and F4B-4 of the depression years, the DC-3, best known of all aircraft, the Reliant, the B-26 and B-17 crossing the Channel with the Spitfire flying top cover, the plush DC-7, the Vulcan, and the Meteor and the Javelin. That's the picture over the years. These were the most beautiful of them all, I say.

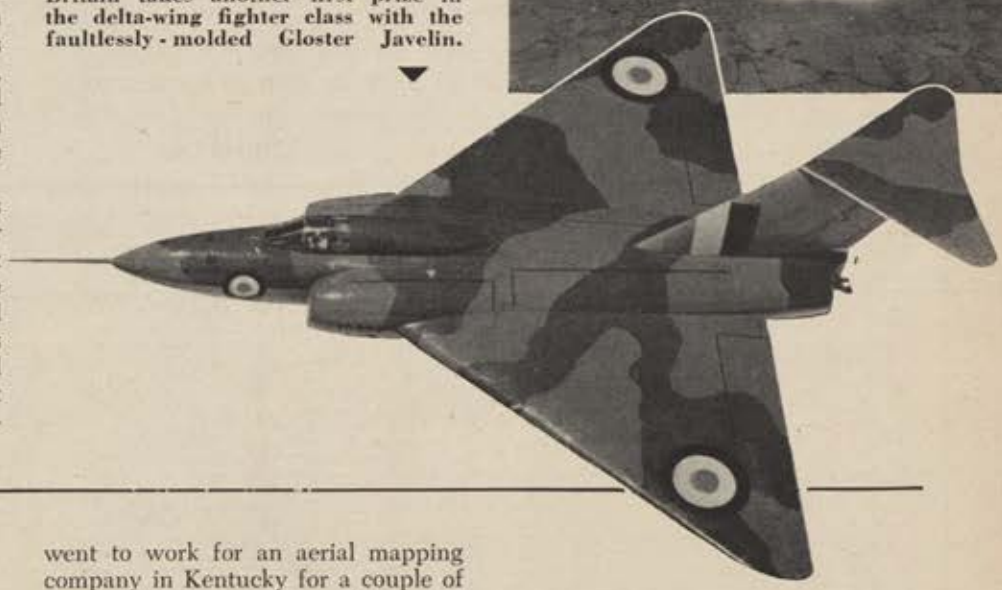
What do you say?—END

Lockheed's Super-Connie: as fast as it looks.

North American's B-45 is tops in its class.



The world's first operational delta-wing bomber, Avro's 698 Vulcan, is as beautiful as anything yet shown.



Britain takes another first prize in the delta-wing fighter class with the faultlessly-molded Gloster Javelin.

About the Author

Len Morgan started flying in 1941 when he was 18—with the Royal Canadian Air Force in Ontario. Sent to London and later to Egypt shortly after Pearl Harbor, he served with the RAF until late 1942 when he transferred to the USAAF at Cairo. After twenty months overseas, he returned to the US for duty with ATC and as an instructor. Discharged in 1945, he went to work for an aerial mapping company in Kentucky for a couple of years. Then he went to college and joined a unit of the Kentucky ANG until he took a job in 1949 with an airline in Dallas, Tex. He now flies as a co-pilot on Convair 340s, is married, has two children—a boy and a girl—and is a part-time author. He's presently at work, he reports, on a boys' book about aces of all wars. His hobby is collecting old aviation books.

THIS IS AFA

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OBJECTIVES

• To assist in obtaining and maintaining adequate airpower for national security and world peace. • To keep AFA members and the public abreast of developments in the field of aviation. • To preserve and foster the spirit of fellowship among former and present members of the United States Air Force.

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