



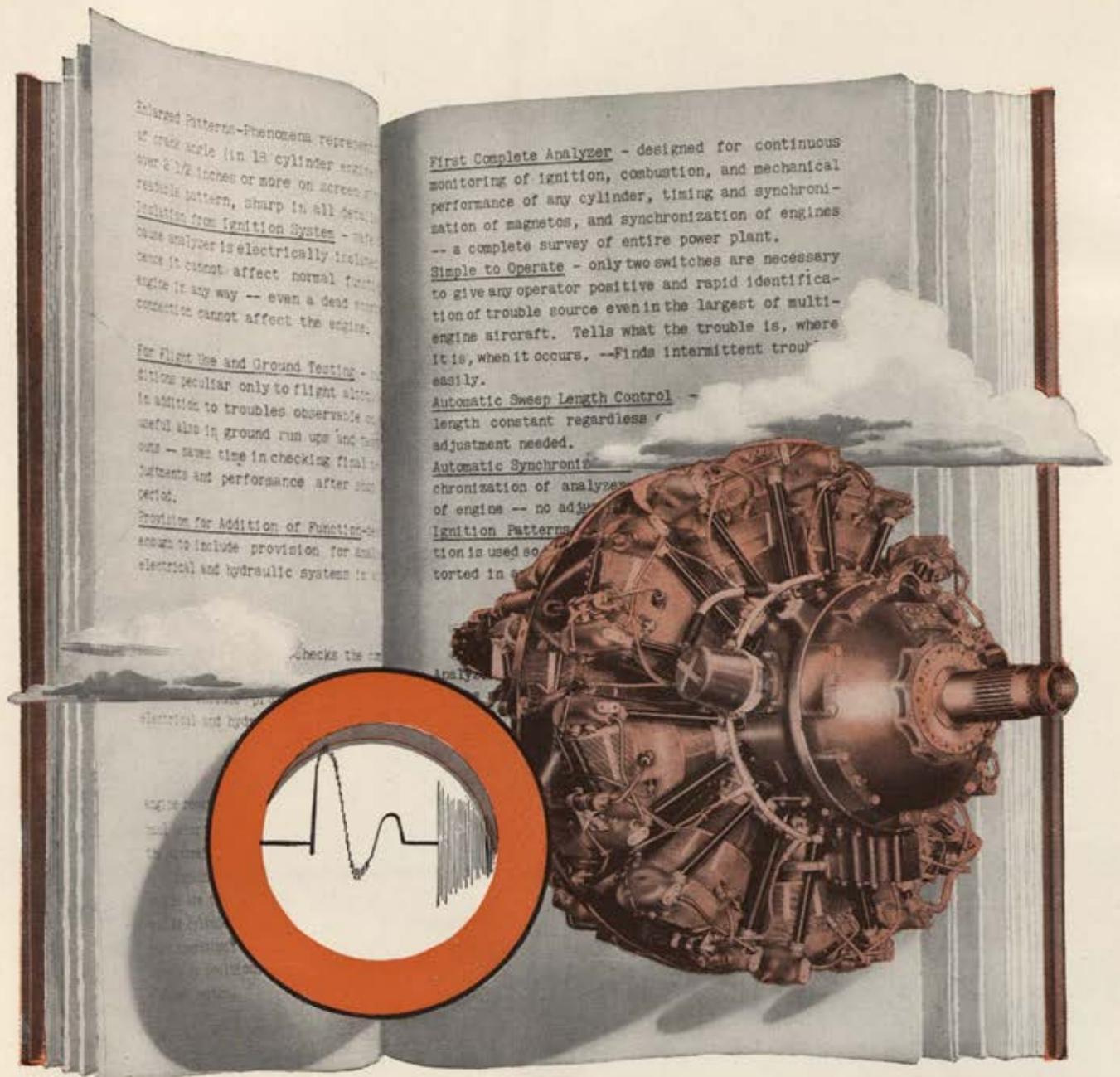
AIR FORCE

THE OFFICIAL JOURNAL OF THE AIR FORCE ASSOCIATION, SEPTEMBER 1948



THE GREAT AIRLIFT
OF 1948
See Page 24

AIR FORCE DAY ISSUE



Reading Time

TWO SECONDS!

Flying Time

MORE HOURS!

READING TIME... TWO SECONDS. The Sperry Engine Analyzer visualizes aircraft engine performance as fast as that.

In the Analyzer scope, the flight engineer can examine graph-like patterns that detect, locate and identify *every* engine, magneto or ignition irregularity that occurs during flight or pre-flight check-up.

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You know the meaning of **AIR FORCE DAY**

As a member of the Air Force Association, sponsor of Air Force Day, you understand *Air Power*. You've seen it in action. You know what a vital role it plays in keeping America peaceful.

In short, you know the meaning of Air Force Day.

And on Air Force Day, September 18th, you're in a good position to tell others; to help the public appreciate the significance of Air Power; to help build the support it takes to keep your Air Force equal to its vital mission.

What's more, you can talk to the young men in your community about your experience in the Air Force—and about the opportunities available to them through the Aviation Cadets, the Aviation Career Plan and Officer Candidate School. By interesting high-type men in Air Force careers, you pay your highest tribute to the service and its members.

You will want to take part in Air Force Day events, too. AFA plans include air shows, demonstrations, displays and a dinner in Washington, dinners and special events in each of the 48 AFA State Wings. In addition, the AFA will co-operate with Air Force Bases and civic organizations in making the celebration nation-wide.

Air Force Day, September 18, 1948

U. S. Army and U. S. Air Force Recruiting Service



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► Here a pair of electro-magnets is "shaking the truth out of a turbine blade." It is being *shaken* in this laboratory test to determine its true natural vibration frequencies—the dangerous frequencies that exist when a very small force causes a large deflection.

► The blade is oscillated by high frequency magnetic impulses. As the speed of the magnet excitation is increased, the blade is made to vibrate at its various natural frequencies. A photo-electric cell serves to locate these frequencies precisely, while a

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► Modern research such as this determines blade stamina in a much shorter time than would otherwise be possible and provides accurate data from which engineers can design turbine blades and many other vital aircraft engine parts that do not possess harmful vibration characteristics.

► Another example of the painstaking research behind the development of Wright aircraft turbine and reciprocating engines.



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AIR FORCE

THE OFFICIAL JOURNAL OF THE AIR FORCE ASSOCIATION

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EDITOR and PUBLISHING DIRECTOR. James H. Straubel

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Since the inception of our series of advertisements covering aviation distinctive insignia, requests for such insignia have been numerous; therefore, we are devoting this space to a listing of those which we can supply. Quotations will be furnished upon request.

In Stock: Available in Any Quantity

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	38th Recon. Squadron
	1st Wing-GHQ Air Force
	2nd Wing-GHQ Air Force (Large and Small)
	18th Wing-GHQ Air Force
	19th Wing-GHQ Air Force
	4th Composite Group (Old and New)
	6th Composite Group (Left and Right)

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AIR MAIL

Extremely Perturbed

Gentlemen: I am highly "T'd off." As a former pyramidier who assisted in the erection of the pyramid of Spam cans in honor of "Killer Kane," I was naturally extremely perturbed to read your



article about the 98th Bomb Group (May) and nary a mention of one of the best damn CO and pilot in the USAF. When and what is John R. Kahe doing now?

Cliff Auger
Worcester, Mass.

• In the short account of the re-activation of the 98th, we made no attempt to cover the unit's complete wartime history, nor to include the names of all the men who contributed to its illustrious record. He is now serving with the 3502 Base Unit, Chanute Field, Ill.—ED.

Airport Available

Gentlemen: I am constructing, at considerable expense, an airport on my rice farm on the western outskirts of Houston. I fully realize that in building this airport, including blacktop runways and tamps and heavy steel hangars, I am, with my own cash, contributing to the defense of the US. To do the job properly, I find that the returns will not be sufficient to make my airport a paying enterprise, but I have set my mind to do this job and I intend to finish it. However, I wonder if our government and the Air Force branch in particular has not provided for situations like mine in order to see to it that individual enterprise will be guided and helped. I can quite see that in a not too distant future, Uncle Sam may want to use my airport for CAP activities and even for basic training, and I imagine that it would be important to the Air Force to see that I complete an airport with Air Force specifications.

E. W. K. Andrau
Houston, Texas

• Our sources indicate that the USAF has no funds available to assist in the building of privately-owned airports. However, Air Installations Division, Headquarters USAF, Washington, D. C.

will, if you furnish full details, advise you as to military requirements for various types of fields, and will also tell you insofar as possible whether or not there would be a tactical need for the installation in the event of an emergency.—ED.

First Command

Gentlemen: In your May issue story on General Vandenberg, mention was made of his assignment to the 3rd Bombardment Group (L), then the 3rd Attack Group, with the statement that he later was given his first command as CO of the 6th Pursuit Squadron. According to the historical records of the 90th Bomb Squadron, of the 3rd Bomb Group, General Vandenberg received his first command as CO of the 90th Attack Squadron during November, 1925. The 3rd Group, including the 90th Squadron, was stationed at Kelly Field, Texas, at that time and 2nd Lieutenant Vandenberg served as Commanding Officer of the 90th until June 3, 1926. In fact, during a portion of this time he was the only officer in the Squadron which had a complement of approximately 100 enlisted men. Prior to assuming command of the 90th, General Vandenberg served as Adjutant of the 3rd Attack Group under Maj. Harvey B. S. Burwell.

Lt. Arthur F. McConnell, Jr.
3rd Bombardment Group
APO 328

• The records of the 90th Bomb Squadron are correct. The historical record at the Pentagon (from which the information was taken) have been corrected accordingly.—ED.

Tax Exemption

Gentlemen: Would you be so kind as to tell me if any legislation has been sent through Congress which would extend



the \$1500 income tax deduction for members of the armed service?

Robert D. Messenger
Rome AFB, N. Y.

• At present the exemption is scheduled to expire this year. However, Congress is now considering an extension of the exemption on a temporary basis

on the theory that to withdraw the exemption would, in effect, constitute a reduction in pay. If the measure is passed (there is better than a 50-50 chance), it will probably be applicable only until such time as there is a general pay rise for both officers and men.—ED.

Where Do We Stand?

Gentlemen: Looking over a Lockheed F-80 a short time ago, a factory representative helping the crew with some trouble wanted it known he had been to Alaska with the speedy jets. I made



the remark, remembering Pen Pearse's article (June) that F-80s were grounded in Alaska. The answer I got to that was, "You believe the magazine. They have more information than we do." I would like to know where the magazine and I stand on this.

Robert P. Esarey
Burbank, Calif.

• You're both right. Shortly after jets were assigned to Alaska they were grounded for a matter of a few weeks. It was during this period that Pearse was in Alaska and made his report. Since then, however, the restrictions have been lifted and the planes are flying once again.—ED.

Bonus

Gentlemen: Does the Territory of Hawaii have a bonus for veterans? If so, would I be eligible for same? I moved to Honolulu in 1940, where I lived, worked, registered for the draft, and voluntarily enlisted at Hickam Field on December 17, 1941. I was released from Letterman General Hospital April 8, 1948, and do plan to return to Hawaii in the future.

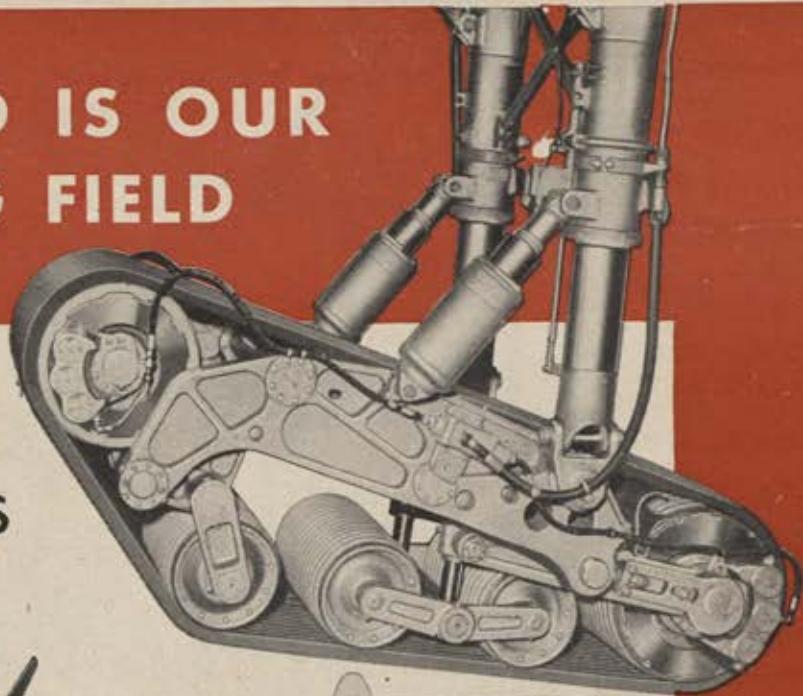
Jack Knuppenburg
Bellingham, Wash.

• Hawaii has a \$300 bonus for veterans receiving 10% disability compensation or more, who were residents of the Territory for at least 6 months prior to enlistment. Write to Territorial Council on Veterans Affairs, Office of Director of Veterans Affairs, Honolulu, T. H.—ED.

(Continued on page 6)

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WITH THE *AMAZING NEW*

Firestone "FLYING
RUNWAY"*

JUST THINK of the possibilities—an air force landing almost anywhere it chooses—its runways "tailor-made" by its landing gears!

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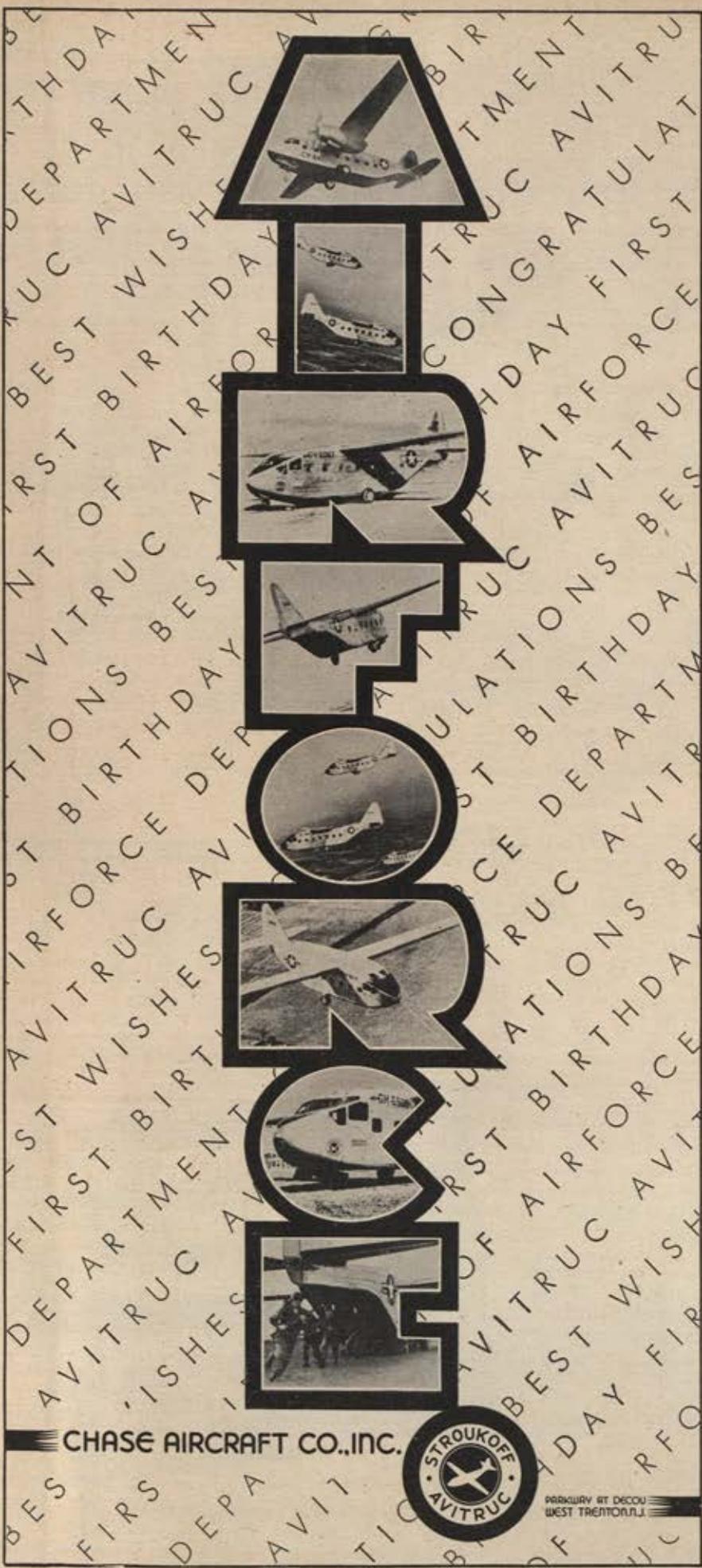
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AIR MAIL

(Continued from page 4)

Credit Where Due

Gentlemen: In your feature "The New Air Force" you state the F-86 is powered by an Allison TG-190. This is an error and I consider it unfair to General Electric Corporation not to give them credit for a great engine.

Donald K. Simmons
San Diego, Calif.

• Reader Simmons is correct. The production model of the F-86 is powered by a General Electric J-35, with 4000 pounds thrust.—ED.

Right Caption, Wrong Picture

Gentlemen: As a resident of Colorado and 1st Sergeant of the 120th Fighter Squadron, Colorado Air National Guard, I am sure the caption under the picture on page 31 of the July issue is wrong. The picture was taken on Air Force Day 1947, all right, but at Lowry Air Force Base, Colorado, and not at Worcester's Municipal Airport.

Norman L. Girdler
Aurora, Col.

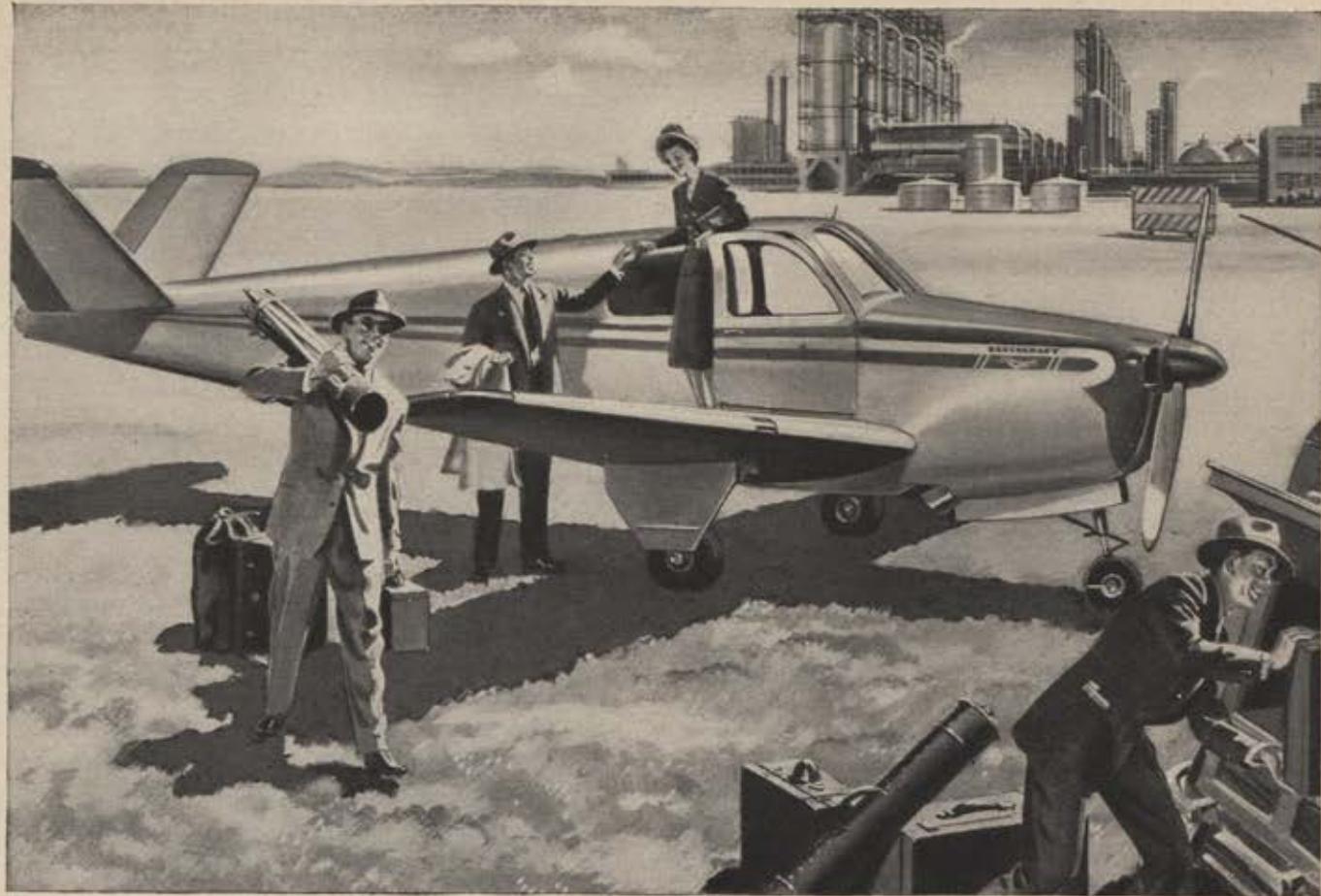
• Right you are. The picture selected by the editors was of the Worcester base, and the caption was written accordingly. But somewhere along the way to the engraver, the Lowry picture was substituted by mistake. Our apologies.—ED.

All Smeat

Gentlemen: I am taking the liberty of writing you pertaining to "Operation Assembly" in your July issue. The impression that the Douglas C-74 pictured on page 41 was used in the exercise is misleading. It was on static display. The Glider picture caption states that the gliders arrived over the battle scene minutes after paratroopers jumped. This is a little erroneous, as it was nearer to being hours. It could have been done, but the 82nd had the problem of moving a considerable distance over land on foot, cleaning out the buildings and clearing the entire airport of guerillas before the gliders could safely land their equipment. The story also gives credit to the 9th Air Force for dropping jeeps and howitzers. This was done by plane and men from Wright Field. I don't intend this to be considered as a beef on my part. It is submitted merely as a matter of information.

Maj. A. A. Smedley, Jr.
9th Air Force PIO

• We regret we were unable to send a reporter of our own to cover the event. As it was, AIR FORCE had to rely for most of its background information on reports it had every reason to regard as authentic. Our thanks to Major Smedley for putting the record straight on these three points.—ED.



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It triples my business!"

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Top speed, 184 mph
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Salute to the U.S. Air Force



Captain Charles E. Yeager

OCTOBER 14, 1947 the United States Air Force made aviation history.

On that day Capt. Charles E. Yeager streaked through the skies in the Bell X-1...the first man to fly faster than the speed of sound. Already this achievement has been hailed as second in importance only to the first flight by the Wright Brothers.

To the Air Force, the National Advisory Committee for Aeronautics, and all others who worked for the success of this effort, we offer sincere congratulations. We are tremendously proud to have been associated in that effort, designing and building the supersonic X-1.

We salute Capt. Yeager for the feat which brought him the Mackay trophy. "The completion of this mission", the citation reads, "required superior professional ability, coolness and courage, and reflects highest credit upon himself and United States Air Force."



Mackay Trophy

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AIR views



As planes of the U.S. Air Force thunder through our peaceful skies in celebration of AIR FORCE DAY, they carry a message of hope to all peoples.

For, with the authorization by Congress of a 70-group air force, notice is served that this country is determined on a course of leadership in peace and freedom for people everywhere.

Here at Douglas—as in laboratories, drafting rooms, plants and on testing fields across the nation—developments speed this action of Congress.

Working closely with Air Force design engineers, technicians and strategists, Douglas continues to create the kind of dependable aircraft which have served the military so well for a quarter of a century.

Since 1924, when Army pilots in Douglas World Cruisers first circumnavigated the world by air, we have been privileged to supply a large share of all U.S. combat and transport aircraft.

Newest in the Douglas family is the C-124. This giant all-purpose transport is designed to accommodate large ground force equipment. Two and a half times the size of the C-54, it will fly a maximum payload of 50,000 pounds 1,200 miles and return to base without refueling. Also now in work is the Douglas DC-6A—an all cargo version of the DC-6 passenger plane—capable of flying a 15-ton payload at 300 m.p.h.

As these projects go forward—together with our activity in guided missiles, rockets, supersonic jets, commercial and military transports—we of Douglas have but one single goal: effective aeronautical progress. To us this is the meaning of AIR FORCE DAY—every day!

Douglas W. Douglas

PRESIDENT
DOUGLAS AIRCRAFT COMPANY, INC.
SANTA MONICA, CALIFORNIA



RENDEZVOUS

Where the Gang gets together

13TH PR: Would like to hear from Clarence H. Baldwin, from whom I last heard when he was with the 13th Photo Recon. Squadron, 8th Air Force. *Robert O. Roberts, 5 Norton St., Granville, N.Y.*

ERROR AT TINKER: On March 8, 1948, at Tinker AFB, Oklahoma, someone took my B-4 bag by mistake. It contained my Private Pilot's license, a brown leather toilet kit which has sentimental value to me, as well as several items of government issue including irreplaceable flying equipment. If the person who made the error realizes his mistake, I would be glad to pay return postage. I would also like to offer a small reward for information leading to the recovery of this property. *S/Sgt Douglas A. Griggs, 54th Troop Carrier Sqdn, APO 942, c/o Postmaster, Seattle, Washington.*

TCS REUNION: The undersigned are desirous of contacting as many former officers of the 17th Troop Carrier Squadron as possible to facilitate plans for a Squadron Reunion. Please write the undersigned: *Thayer S. Warshaw, 34 Sunset Ave., Lawrence, Mass., or S. R. Strand, 73 Bay State Rd., Boston, Mass.*

AFRIKANDER: Would appreciate help in reaching Donald Rogers, an Air Force pilot who was stationed at Khartoum, Africa, in 1944. His home was in Pennsylvania. *Robert B. Hall, 2252 W. 11th St., Chicago 43, Ill.*

FIGHTER ROUNDUP: The 48th Fighter Squadron of the 14th Group is planning a reunion and we would like to collect the addresses of all the members who were with us in Italy, so we can print a

complete roster. Please send names and addresses to *Robert C. Groom, 730 Kirkwood St., Dubuque, Iowa.*

RENDEZ PLIZZ: I would like to inquire if anyone has information on a proposed reunion of the 398th Bomb group. I would like to attend it, and see the boys from my old outfit. *Dale E. Brown, Route 8, New Castle, Pa.*

8-BALLS: 8th Photo Recon, Ye Olde Flyin-Fit-in-Fifth Calling all EIGHT-BALLS. Particularly interested in locating Squirt Parlaman, 1st Lieutenant, that is, believed present habitat somewhere in the State of California; last heard of, demoted himself from P-38 to throttle jockey midget racing, and banged himself up pretty badly. He might be interested to know Eightyball, his canine copilot, is still holding her own at Johnson Field, Japan (IRMACAWA), and has had several additions since Squirt left. Eightyball is quite a gal incanine society, has flown all photo-missions as copilot and mascot with her master during the war, of course now retired, but the old gal still loves the smell of high octane and tries her darndest to climb aboard any P-38 that may now blow in—alas not very often. Incidentally, Squirt, I happened to run across the Jap Air Force General that you backed up against the wall one particular night—no hard feelings. He inquired about you and sends best regards, had a good laugh over the incident, said he was behind the eight-ball too because he could not speak English and you could not yakat-yak Japanese, so all's well that ends well. Drop me a line should you read this; I promise to answer all

letters. *Maj. Chas. E. Casey USAF (R), A2 Hickam Comp Wing, APO 953, San Francisco, Calif.*

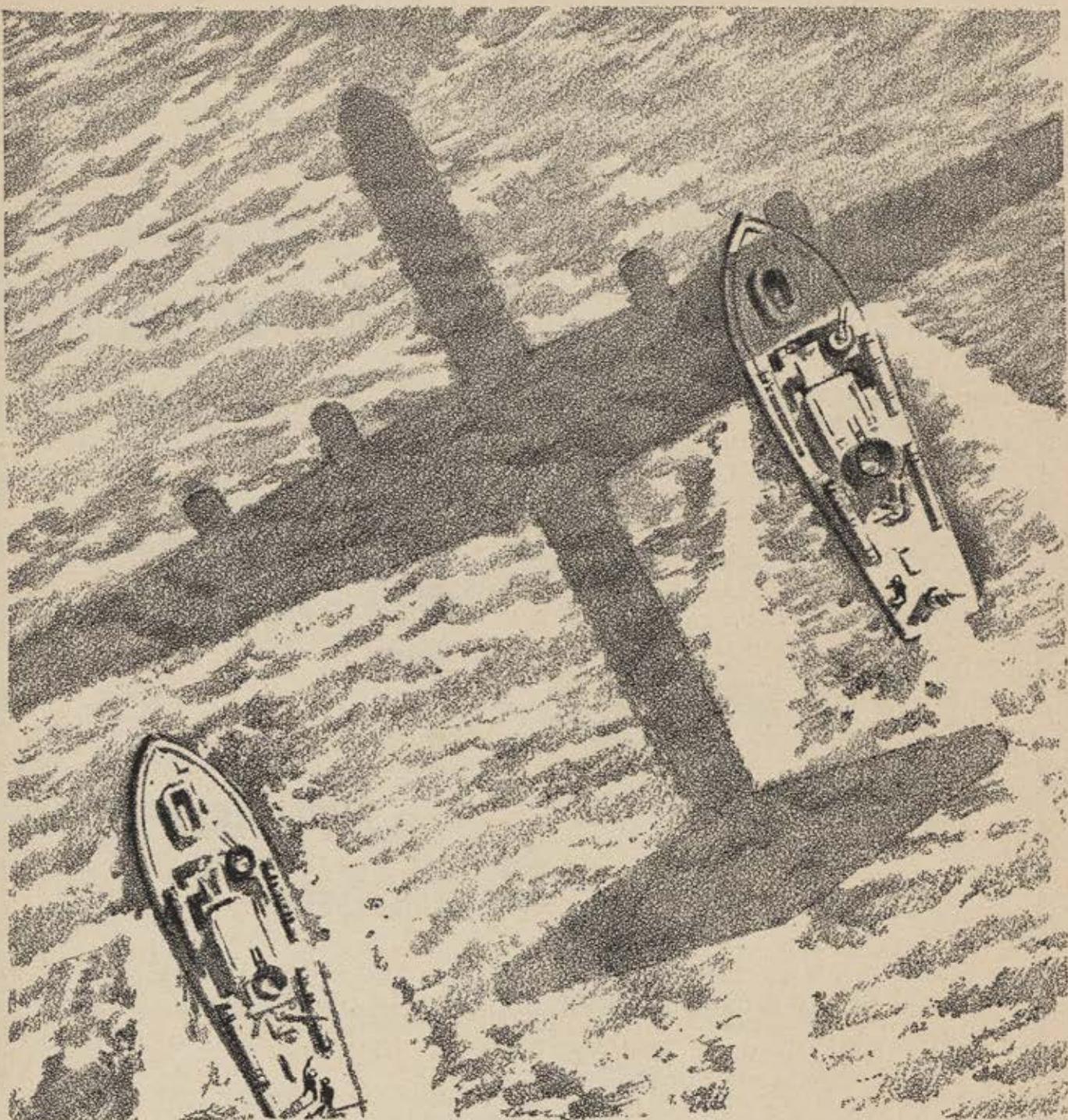
LOST OR STOLEN: Former WAC Sgt. Margaret C. (Ginger) Honeycutt, a cute redhead from Georgia. Stationed in London and Paris in 1944 and 1945. Worked in the Chief of Claims Office. My roommate during the buzz bombs in England. Anyone having her address please notify me. *Mrs. Ralph Gibbs (formerly T/Sgt. Ica Gilbert), 1777 Main St., Riverside, Calif.*

REUNION: I'd like to hear from any former member of the 15th Combat Cargo Sq., 4th Combat Cargo Gp., who can tell me if, when and where there is to be a reunion this year. I'm anxious to get this information as I haven't seen anyone from this outfit since I left it in Burma to return home in August, 1945. *Albert V. Neely, Box 169, Bloomington, Ill.*

NEEDS EVIDENCE: Would like to hear from any members of the 42nd or 54th Troop Carrier Squadron, APO 942, in order to gain evidence to substantiate my disability claim. *Richard L. Hampton, 601 N. Baker St., McMinnville, Ga.*

PARTED IN SICKNESS: I would like to get in touch with Aaron D. Howell. We started through AM school in Amarillo together. We were in class 11-30-43, but because of sickness, we both were sent to the hospital and finished in different classes. He went to Seattle and we corresponded but got separated and I would like to find him. *Lewis H. Curry, Box 999, Jal, N. M.*

LOOKING FOR SOMEONE? ANY ANNOUNCEMENTS TO MAKE? WRITE RENDEZVOUS AND RENDEZVOUS READERS WILL WRITE YOU.



WASP MAJORS POWER THE CONSTITUTION •

Lockheed Aircraft's huge Constitution, one of the largest transports ever to take to the air, is now being readied to serve the U.S. Navy. Powered by four dependable Pratt & Whitney Wasp Major engines, capable of developing 14,000 horsepower, this 92-ton giant is able to carry nearly 200 people and thousands of pounds of cargo aloft—safely and swiftly.



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SATURDAY EVENING

SEPTEMBER 25

MADISON SQUARE GARDEN

Where Stars of Stage, Screen and Radio Join Air Force Men and Women
in the Mammoth Show Highlighting AFA's Annual National Convention

Big event of the Air Force Reunion on AFA's convention schedule will be the official presentation of awards to show business by the US Air Force. The awards will honor stars who entertained Air Force personnel overseas during the war. And a group of these stars—people like Bob Hope, Al Jolson, Frances Langford, Joe E. Brown, Bill Robinson, Dinah Shore—will be on hand to accept the awards in behalf of their fellow performers, and to present their most popular skits and shows. It's just one of the events on the huge Reunion program, but one you won't want to miss.

Extra Tickets Available!

Convention registrants get one ticket to the Garden Reunion. Extra tickets are available at \$1.20 each. Contact AFA's Reunion Committee, Room 275, Hotel Commodore, New York City



America must lead in aircraft design

In speed, range and load-carrying ability, America's newest military airplanes must continue to be superior to those of any other nation. Whether or not we have the biggest Air Force, world peace and national security demand that we have the best.

Our leadership in aircraft design has its roots in the national character and the democratic system of free competition. America's aircraft industry has attracted thousands of the

keenest young men in the country. They combine soaring imagination with disciplined skill. Daily they dare the impossible—and make it work.

Why? Because our competitive system gives them incentive. Boeing engineers are constantly aware that they must exceed an alert, vigorous competition. Such incentive gave America the B-17 Flying Fortress and the powerful B-29 when they were most needed.

Any system that blunted that incentive would inevitably retard progress in the air.

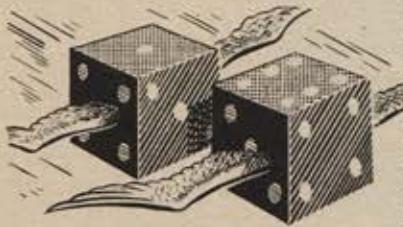
Boeing is proud of its pioneering record in design, and of the engineering integrity that gives stamina to Boeing-built aircraft. Today's mighty B-50 Superfortress, the XB-47 Stratojet, the C-97 Stratofreighter and L-15 Scout liaison plane, like the famous B-17 and B-29, are pledges of still greater Boeing planes to come.

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14

IN | RESERVE



The SOP of AR and NG

Gentlemen: How do I go about obtaining a commission as a pilot in the Civil Air Patrol? I have a valid commercial pilot license and am thirty years of age. Held the rating of Staff Sergeant at the time of discharge from the Air Force.

Dwight B. McLain, Jr.
Chattanooga, Tenn.

● *Information on commissions in the CAP can be obtained most quickly by writing (in Mr. McLain's instance) to the Commanding General, Fourth Army, Fort Sam Houston, Texas.*

Gentlemen: Please give me some information on transferring from the National Guard to the Air Force Reserve.

Jerry Land
Detroit, Mich.

● *There are no transfers as such between the National Guard and the Air Force Reserve. If you are an enlisted man in the National Guard you must request discharge for purpose of enlisting in the Air Force Reserve. After you are discharged from the Guard you then apply at the nearest recruiting station or Air Force Base for enlistment in the Reserve.*

Gentlemen: What are the educational requirements to obtain a reserve commission? I have a little over two years of college credit. It is not technical knowledge, merely that of the arts and sciences. Is this sufficient to apply for a reserve commission? I have all the other requirements necessary. I graduated from Scott Field radio school. What opportunity is there for obtaining a commission in communications? During the war there were communication cadets. Is this organization in effect?

Edwin C. Range
Buffalo, N. Y.

● *To be eligible for direct appointment in the AF Reserve you must have had six months active service in the AUS or one of its components between 7 December 1941 and 30 June 1947, in either grade of Warrant Officer, Flight Officer, or one of the first three enlisted grades, and must not be over twenty-eight years of age. No such thing as Communications Cadets now. If you meet requirements and get appointed, no doubt your background as Radio Operator will qualify you for a Communications MOS.*

Gentlemen: The Air Force is actively campaigning for young men to enter their pilot training program and I desire to do so. There is, however, a catch to the situation. I was washed out of the aviation cadets during the war. I had 51 hours of flying time. The cause of elimination was listed as "slow flying progress." Since my discharge I have obtained a pilot's license which I think proves I can fly. I have never had an accident. Isn't there a chance that the Air Force would reinstate me as a cadet or would favorably review my case?

William J. McKinstry
Buffalo, N. Y.

● *We regret that the present policy of Hq. USAF is that former aviation cadets who were washed out of the program for purposes such as you have indicated, may not apply or be accepted again for training.*

Gentlemen: According to all information I can get, there is no such thing as a warrant officer in the Reserve. If I'm wrong will you tell me how I can get in?

Dominic Zangar
Lancaster, Pa.

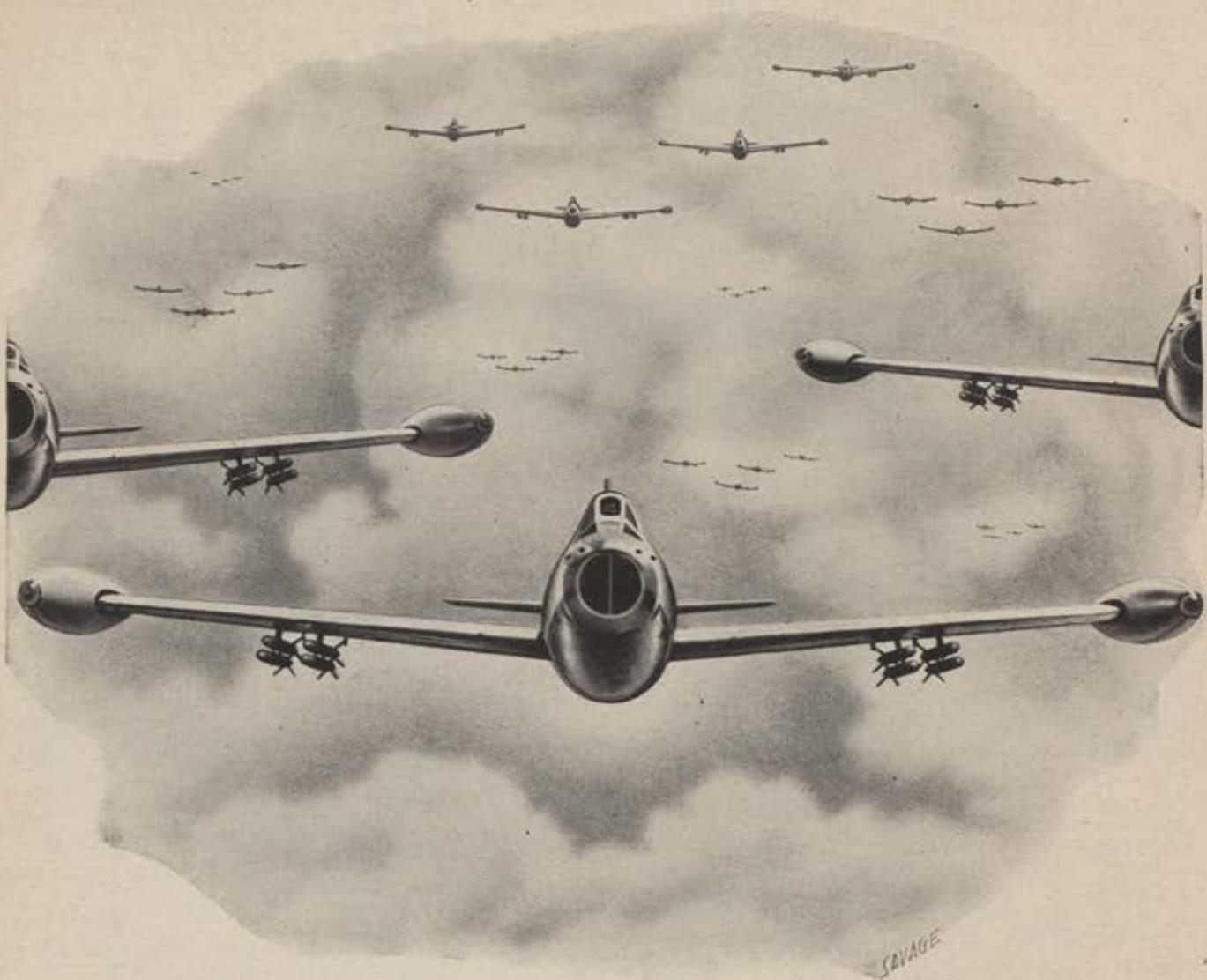
● *The USAF is awaiting Congressional action which will authorize the appointment of former AUS warrant officers into the Air Force Reserve. As of this date, the grade of warrant officer is not authorized in the Air Force Reserve. Former AUS warrant officers who desire may be enlisted in one of the first three grades in the Enlisted Reserve Corps.*

Gentlemen: I am a M/Sgt. in the Air Reserve and would like to know what may be in store for me in the way of promotion or activity. Last January I applied for ORC and the application was returned recently without action for the reason that my 28th birthday at time of appointment will have been passed. Is it probable that a change will be made in age limits or any waivers of age in appointment be granted?

Raymond Emrick
Paris, Ill.

● *Hq. USAF is presently formulating policies which will authorize the appointment in the Air Force Reserve of personnel who possess professional and technical specialties.*

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When you see a jet propelled Air Force fighter or bomber plane speeding overhead . . . consider the time and effort taken to get it there. ¶ The REPUBLIC F-84 THUNDERJET first flew in February, 1946. Leading up to that important day, well over 500,000 engineering manhours were spent in putting together what was then known about the vexing problems of jet propulsion and high speed performance to create the first of these now-famous 600 mph jet fighters. ¶ Since then, several hundred Thunderjets have taken their place with various groups of the USAF . . . Another half-million engineering manhours have added greatly to the performance and utility of the F-84 . . . To keep abreast of changing operational techniques, more than 400 major design improvements have been made between the first prototype and today's F-84C. ¶ And that's not all. New jet developments, along with new experiences in actual Air Force operations, are expected to require at least 300,000 engineering manhours per year, in order that the THUNDERJET will consistently satisfy ground crews, pilots and commanders . . . maintaining its leadership among the modern planes assigned to guard our peace and security.



"This Is the Year of the Thunderjet"

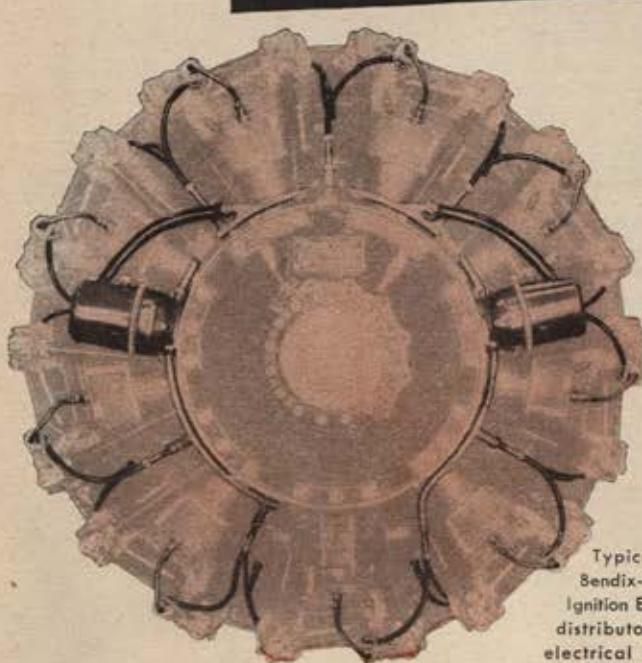
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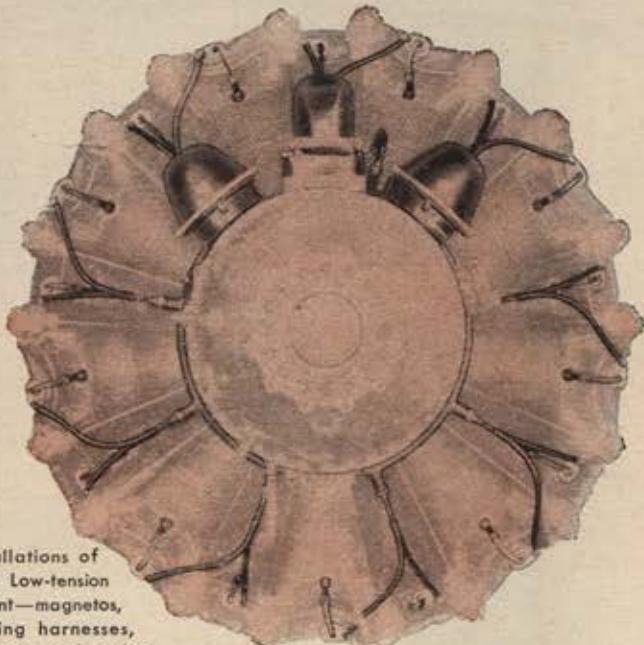
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IGNITION EQUIPMENT



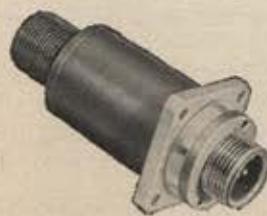
Typical installations of Bendix-Scintilla Low-tension Ignition Equipment—magnets, distributors, wiring harnesses, electrical connectors and radio filters—on recent and leading engines.



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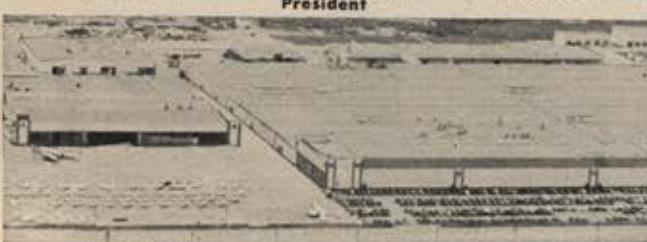
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THIS ISSUE

When the editorial staff sat down to plan this Air Force Day Issue there were the usual conflicting opinions on what should go where and why, but on one rather basic point we all agreed. As a staff member put it, "Whatever we do let's not run the same old thing." Let's not, he might have explained, drag out the airpower cliches and attempt to reassemble them into a 1948 model. Let's not cover the Air Force command by command, with little or no reference to current trends in national and international affairs. And let's not adhere to the annual practice of running to the Pentagon and arranging for Air Force Day articles bylined by Air Force Generals; that's like asking someone having a birthday to bake his own birthday cake and give himself presents, and this is, after all, a birthday we're celebrating. But it wasn't necessary for the editorial staff to hear the explanations. We had read too many Air Force Day issues and heard too many Air Force Day speeches like that.

We are not claiming that this—the first Air Force Day number we have published—is due to set the publishing world afire, but we don't mind saying that we are happy about a few departures from "the same old thing."

For example, we thought you'd get a kick out of the fact that the authors of what you might call our two airpower policy articles in this issue are not of the Air Force family—that both served in wartime with the good old US Navy.

John G. Norris served with the Navy air wing in England, was aboard an aircraft carrier during the invasion of Southern France, saw duty with the Navy at Iwo Jima. We were interested in John Norris, now a staff writer for the Washington Post and one of the top ranking newspapermen in the nation's capitol, because he has long specialized in military affairs. National defense is his beat, and recently it took him to Berlin to study and cover Operation Vittles. To us Vittles was a "must" for our Air Force Day Issue, and no one was better qualified for the on-the-spot analysis we desired than ex-Navy man Norris. We assigned him to do an article on the big airlift as it relates to the role of airpower in our military and diplomatic affairs. His answers appear in *Airpower in the Cold War* on page 24.

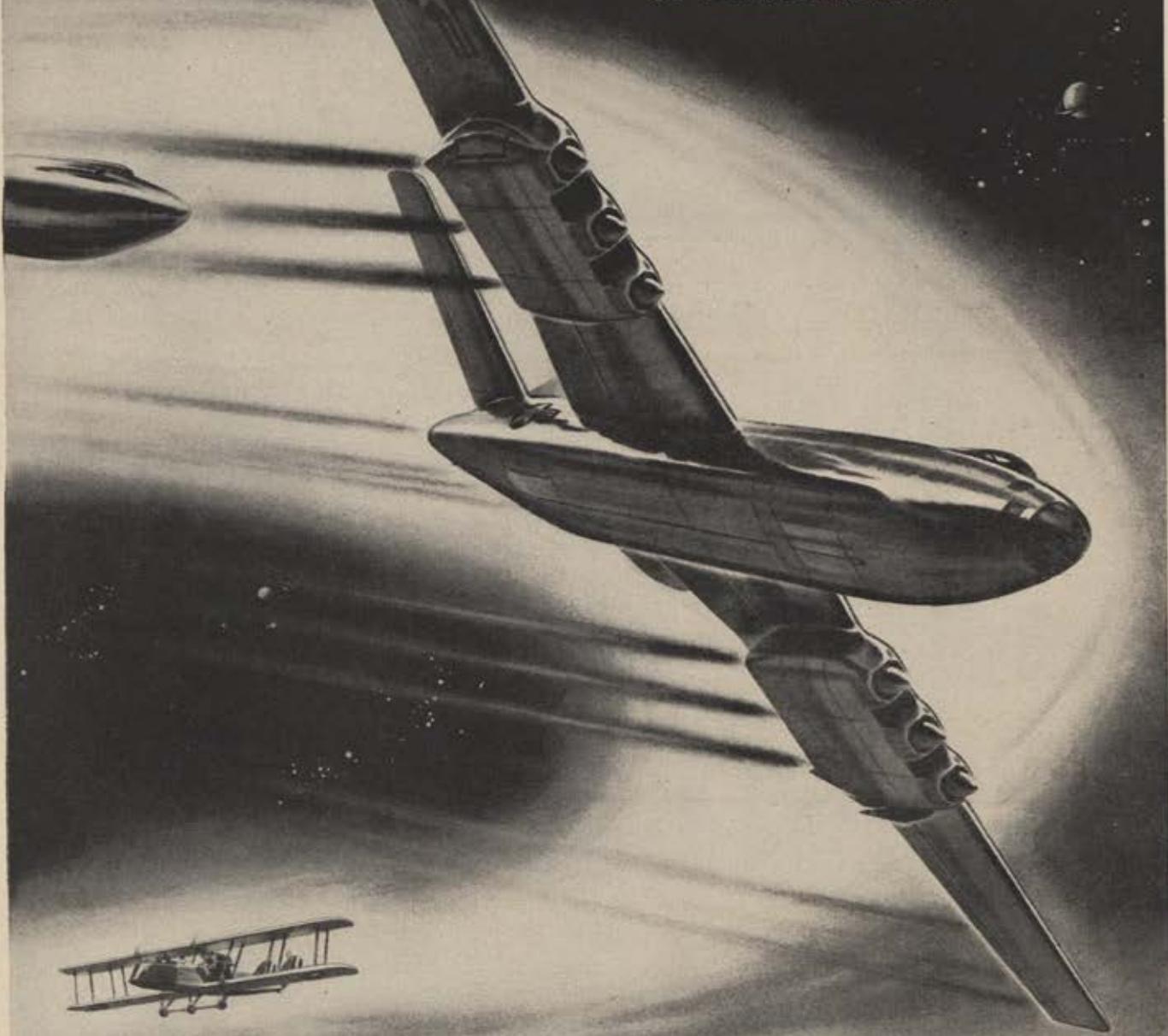
Bernard Brodie is Associate Professor of International Relations at Yale University, Research Associate of Yale Institute of International Studies, and Senior Consultant in National Defense to the Legislative Reference Service of the Library of Congress. All of which means that Dr. Brodie is an expert on national defense, and a very busy man. His specialty is the atomic bomb—its impact upon military strategy and politics. He has directed a course on this subject at the National War College, and his latest book, *The Absolute Weapon*, is widely recognized as the outstanding job done to date in this field. Dr. Brodie is also a Navy veteran. He saw wartime service with Navy Ordnance, in the Navy's special warfare branch, and for a time served as an advisor in the office of Navy Secretary Forrestal. But in our search for an article on the potentials of the atomic bomb regarding the future role of the Air Force and the defense structure in general we immediately sought out Dr. Brodie. His busy schedule at Yale keeps him away from the typewriter these days, but we are able to present an article by Dr. Brodie on the subject we were after. It appears by special arrangement with the University of Chicago, which will publish it in book form as part of a technology symposium. Dr. Brodie's outstanding article, will appear in four parts, beginning with *A-Bombs and Air Strategy* on page 44.

We wish we had space to tell you more about what we mean by shying away from "the same old thing" in this Air Force Day Issue, but you can see for yourself.

—The Editor

When planning planes of the future

REMEMBER MARTIN'S YEARS OF LEADERSHIP!



YESTERDAY... Army's first multi-engine bomber, the MB, was built by Martin in 1918. So advanced was the design that it remained the Army standard until the mid-twenties. Sensational in its day, the MB was also used for mail, night flying and passenger service experiments. With these Martin bombers in 1921 General "Billy" Mitchell sank the captured German battleship *Ostfriesland*, proving the potency of airpower.

TODAY... Martin continues to pioneer in advanced designs. Martin XB-48 is first six-jet bomber ever flown... pioneered the tandem-type landing gear developed by Martin and now used on other modern high-speed bombers... has 20,000 lb. bomb load. The Martin XB-48 is now undergoing exhaustive Air Force tests.

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1929

...when DOUG DAVIS won

the first Thompson Trophy Race, his Travelair "Mystery Ship", with a Wright Whirlwind engine, averaged 194.90 m.p.h. around the closed course. It marked the first time that a civilian plane had defeated military ships in speed competition.



1936

...when MICHAEL DETROYAT



of France became the only foreign pilot to win a Thompson contest. His sharp-nosed Caudron-Renault racer averaged 264.26 m.p.h. and publicized to the world the advantages of streamlining and retractable landing gear for faster flying.

1946

...when the first postwar

Thompson contest was flown, and the first jet-powered planes competed in a Thompson Trophy Race. The "J" Division of the race was won by MAJOR GUS E. LUNDQUIST of the Army Air Force in a Lockheed P-80 "Shooting Star" at the brilliant average speed of 515.85 m.p.h.



1932

...when the famous

JAMES H. DOOLITTLE set a new closed-course speed record that stood for four years. He flew a stubby red and white Gee Bee "Super-Sportsster" and averaged 252.68 m.p.h. for ten laps of the 10-mile Thompson Trophy Race course.



1938

...when the colorful



ROSCOE TURNER set the prewar record of 283.41 m.p.h. and gained added fame as the only pilot to win the Thompson Trophy twice. In 1939 he won the trophy a third time, stepped from his big Turner-Laird Special, and announced his retirement from air racing.

1947

...when COOK CLELAND,

World War II ace, flying a stripped-down Navy "Corsair", averaged 396.13 m.p.h. to set a new record for piston engine planes. There were "over 3,000 horses under his cowl" and his speed exceeded by nearly 113 m.p.h. the prewar record of Roscoe Turner.



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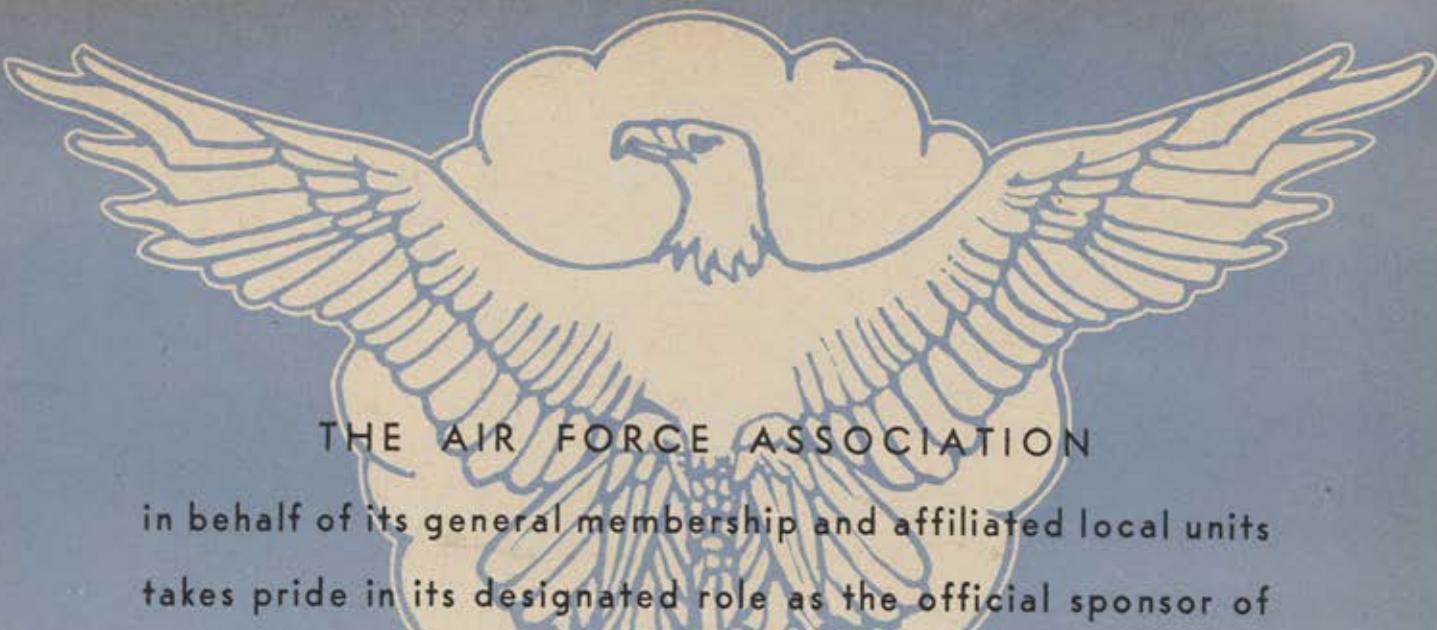
more equipment and more supplies than its worthy predecessor. As an ambulance plane it is equipped to carry 36 litter patients and attendants.

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THE FORTY-FIRST YEAR OF MILITARY AVIATION
AND THE FIRST ANNIVERSARY OF THE AUTONOMOUS

UNITED STATES AIR FORCE

and The Air Force Association takes this opportunity to thank
the many individuals and organizations throughout the nation
who are cooperating in the sponsorship of Air Force Day events

AIRPOWER



Although flights to Berlin were rarely considered "milk runs" during the war, they have become just that in post-war Operations Vittles as evidenced in above picture of two US airmen tying Danish milk in Douglas C-47 bound for blockaded Berlin.



The Air Force's European boss, Lt. Gen. Curtis LeMay, right, personally flew one of first Vittles flights to Berlin.

Trucks, planes and supplies crowd apron at Frankfurt. To make Vittles work US must fly 5000 tons a day to Berlin.



in the COLD WAR

USAF recognized as first line of defense as airplanes instead of battleships are called upon for diplomatic show of force

By John G. Norris

BERLIN

Airpower is playing a new and major role in the "cold war" between the East and West.

For the first time in history, the United States is employing its Air Force as a diplomatic weapon. Heretofore, diplomatic missions involving the military were a virtual monopoly of the Navy. Whenever a show of force was required, or aid needed abroad, the State Department sent a cruiser or a squadron of warships.

Today, in keeping with its coming of age as the nation's first line of defense, the USAF has taken on two big assignments in international affairs.

One is what has been called "the return of the American Air Force to Europe"—the arrival of two groups of Strategic Air Command B-29s in England along with some jet fighters. The second is the Berlin airlift.

Whether or not world developments result in the bombers coming home and an end to Operation Vittles before this story appears in print, these two demonstrations of American aerial might will have made their mark on history.

Both in the Admiralty in London and the US Navy library in Washington there are whole sections devoted to the "Navy's role in diplomacy," including volumes which trace such functions back to the dawn of civilization. The first chapters of the "role of airpower in diplomacy" are being written here.

At this moment the assignment of the groups of B-29s to bases in Britain appears to be for an indefinite stay. Lt. Gen. Curtis LeMay, Commander of the US Air Force in Europe, says they are over here for normal, routine training. He refers questions about the length of their stay and diplomatic aspects of the mission to Washington.

But there is no question that the dispatch of the bombers to English bases—putting them within range of most Russian cities—was a key move in the "cold war." It served to remind the men of the Kremlin that whatever the comparative strengths of the East vs West ground forces in Europe, Anglo-American airpower cannot be disregarded.

Ninety heavy bombers—the two



Yankee humor manifests itself even in the grimist of jobs. Above, US ground crewmen inspect "Vittle Statistics" chart which keeps daily tab of sorties and tonnage flown by participating squadrons together with percentage of planes in commission.

Air Force C-47s stand in line at Berlin's Tempelhof airport as their cargo of food is unloaded into waiting Army trucks. As fast as possible the USAF is substituting C-54s and even C-74s for 47s. White lines result from lights of moving trucks.





AIR POWER IN THE COLD WAR

(Continued)

groups in England and the one in Germany—are a force to be reckoned with. Each bearing an atomic bomb, they might destroy a great part of Eastern Europe should the USSR precipitate a war; and while available evidence indicates that America's stockpile of A-bombs still is back home, the Kremlin has no real assurance of this.

There has been every indication, in fact, that the "return of the USAF to Europe" has had considerable effect on Russian military men.

Dispatch of the jet fighter group from Panama to Furstenfeldbruk is in a slightly different category. It was planned months ago and is not connected with the Berlin issue. The flight of the Selfridge Field P-80s across the Atlantic, however, served notice that we could reinforce our Air Force in Europe in a hurry. In an emergency, the fighters wouldn't wait for perfect weather.

Operation Vittles similarly has impressed Europeans with the potentialities of Anglo-American airpower. Russian chiefs here never expected anything like it.

In fact there is good evidence that they expected a Czechoslovakian type of coup d'état when the blockade of Berlin was imposed in late June. Soviet officials believed we had only a week's reserve of food in the western sectors, reports in our hands indicate. Actually we had a six-week supply.

Meanwhile Operation Vittles was getting underway. General LeMay put Brig. Gen. Joseph Smith in command of the task force handling the airlift.

In Austria, south of troubled Berlin, a flight of 16 F-80s pass in formation above Superfort getting new engines.

One of biggest problems in Operations Vittles is maintenance of aircraft. Here mechs at Rhein-Main give C-54 quick once over. About 60 percent of planes are kept operational. Boss LeMay says "man with wrench" is backbone of operation.

He did an excellent job. Later, Maj. Gen. William Tunner, Deputy Commander of MATS who ran the Hump airlift from India to China during the war, was ordered over to help.

The job handed the USAF and RAF also should teach our own experts much. It should shed considerable light on the practicability of future large scale airborne military operations and provide some answers to the question of whether airpower can ever operate independent of ship or rail supply.

There have been other such tests—the Hump and the Battle of the Bulge—but this was unique. To date Operation Vittles still is short of the Hump delivery record.

But it promises to outstrip it. The two operations are dissimilar for the China job was under all-out wartime conditions and there none of the limiting factors of the present task—narrow air corridors, shortage of airfield and air space at the destination. On the other hand, the distance today is shorter and there are no Nip fighters harassing flights.

To keep the western sectors of Berlin going through the winter, Vittles must bring in an average of 5000 tons of supplies a day. That is considerably more than at present. This contemplates lifting only concentrated foods—flour, dehydrated potatoes, canned meat and fish, dried eggs and milk, etc.—and the rock bottom amount of coal to keep life going.

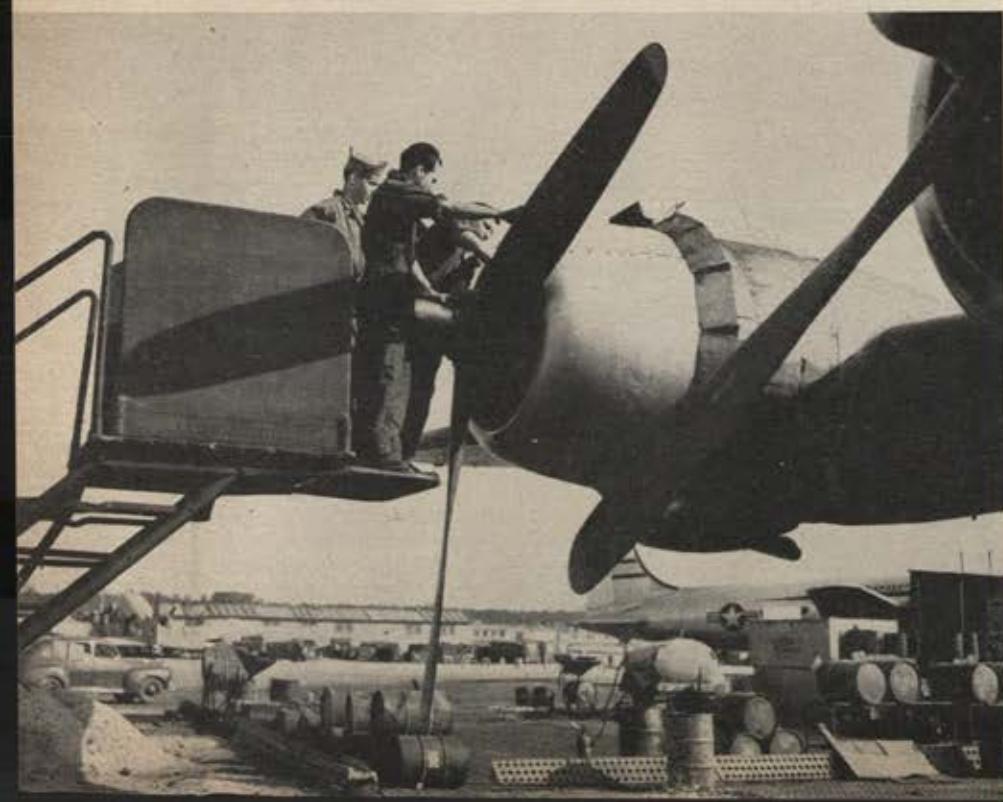
It will provide for keeping the water and sewage systems operating, bakeries and hospitals going, and a few hours of gas and electricity a day for cooking. It allows for almost no house heating, only the operation of "warming halls" to keep people from freezing during the winter. No industry can continue with this bare minimum of coal.

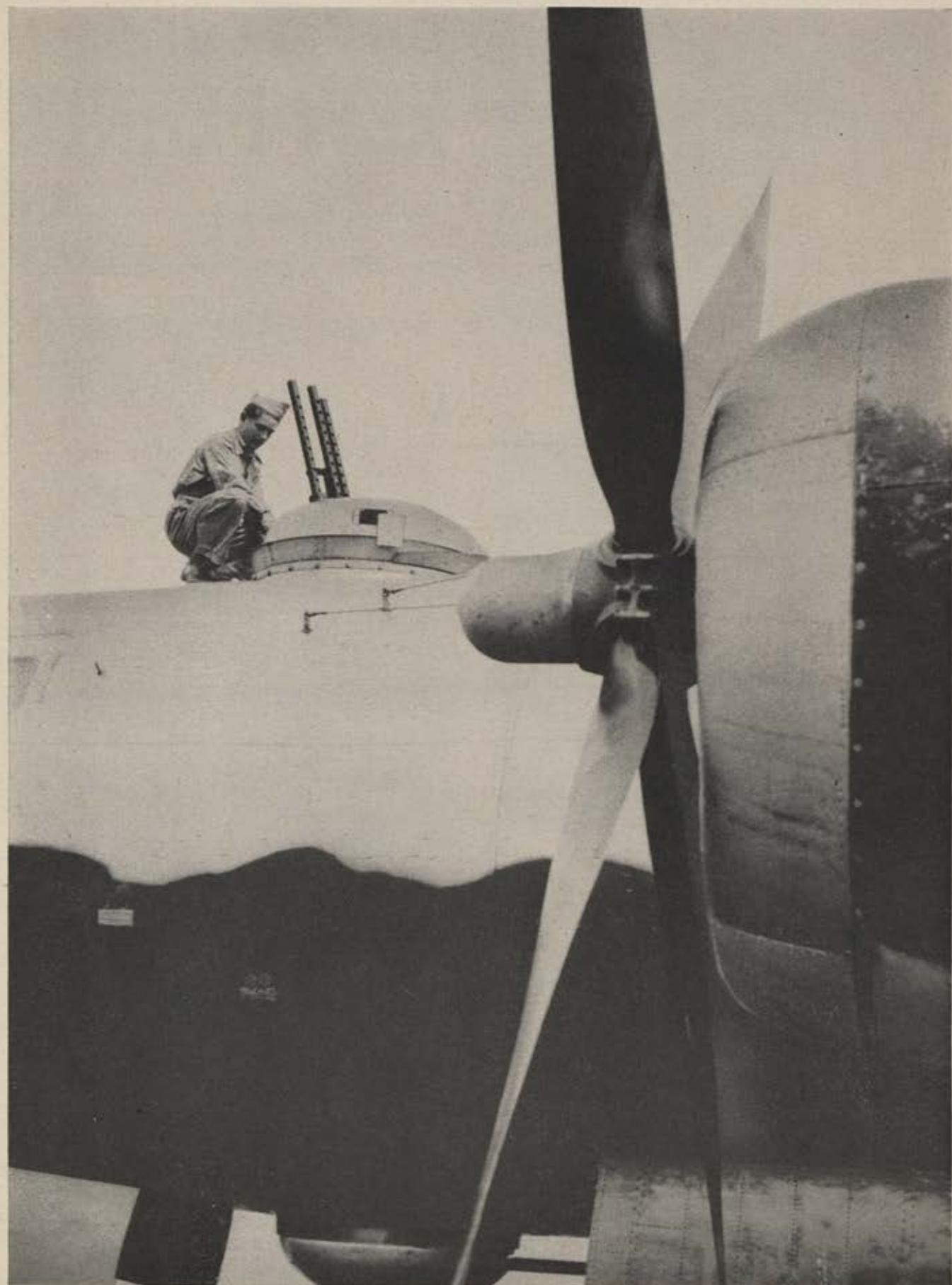
To date, the people of Berlin appear to be willing to put up with great hardships if the Western powers will remain. They'd rather suffer cold and limited rations than have us withdraw and live under the iron fist of Communism.

The Berliners take hope from the continuous roar of the "rosinenbrummer" over the city. They call the airlift planes that—raisin flies—for the first one brought in raisins. Many letters from Germans are received by American headquarters thanking us for refusing to back down to the Soviets.

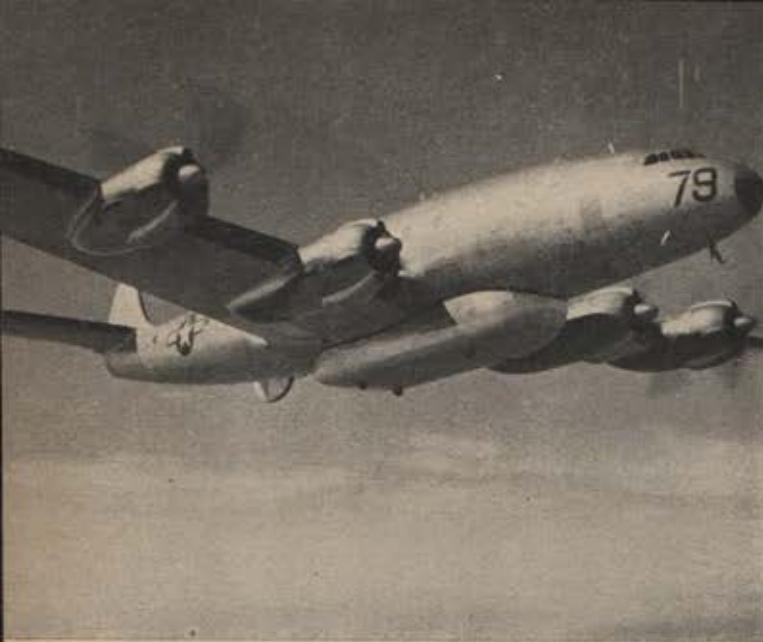
One came from a former Luftwaffe pilot, who offered to help, telling of his long air experience. According to a story going around, when General LeMay was shown the letter, he replied: "Sure, put him to work. We can use some help—rolling that second runway at Tempelhof."

This reporter flew into Berlin on the airlift aboard a C-54 of the 54th Troop (Continued on page 70)





The 1948 method of discouraging aggression—an armorer of the USAF in Europe adjusts the top turret guns of his B-29.



Air Force version of the Lockheed Constellation is the C-121, above, which will carry about 100 troops at speeds well over 300 mph. Note detachable Speedpak with wheels under fuselage.



Boeing's B-47 Stratojet, above, was unwrapped last Fall. It's six J-35 engines give it a top speed well in excess of 500 mph. Pending further testing, USAF has ordered only two experimental models. Most radical of the big planes introduced last year was the Northrop YB-49, below. Powered by eight jet engines it is expected to have best range and speed in USAF's heavy lineup.



The Year's NEW PLANES

Air Force of the future is previewed in new planes which have been unveiled at the rate of almost one a month.

A good indication of the speed with which aerial technology moves is found in the Air Force's recent announcement that eleven new planes were added to the USAF string in the past twelve months—nearly one for every month. Allowing an average of three years for the design and development of each model, this would mean that at any given moment the Air Force has a minimum of 36 types under study. Actually, of course, the figure is much higher because for every design USAF engineers accept at least one other is discarded somewhere along the way as being impractical.

Without exception all of the new combat planes—including the two new bombers—were jets, a fact which lends little support to the Air Force's repeated proclamation that it is far from "through" with reciprocating type craft. Of all eleven aircraft it would be difficult to select one as "plane of the



World's largest landplane, the Consolidated XC-99 has a wing-span of 230 feet and a length of 182 feet. It can carry 400 fully equipped combat troops. Top speed is well over 300 mph.

The XR-12 is new five-place helicopter built for Air Force by Bell Aircraft Corp. Craft has top speed of 105 mph. Range is 300 miles. It can climb at vertical rate of 450 ft. a minute.





Most radical of all new craft is McDonnell XF-85, a wheelless jet fighter which is housed in bomb bay of bomber it protects.

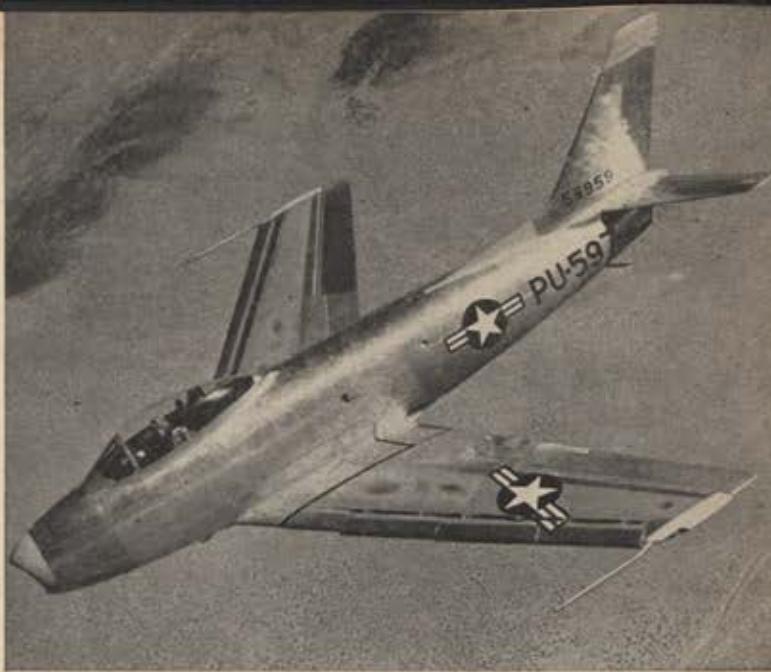
year." From a standpoint of being unique the McDonnell XF-85 parasite, designed without wheels to be carried in the belly of a mother ship and used only in the target area for protection, would certainly cop first honors. In the bomber field it would be a toss-up between Northrop's jet Flying Wing and Boeing's B-47 Stratojet. The Consolidated XC-99, world largest land plane, and the Curtiss Wright F-87, a pretty good sized plane itself, would also be tough to count out of the running.

All things considered, however, it is doubtful if this or any other country has produced a more phenomenal production type plane in recent months or even years than the North American F-86. As soon as it is given a chance the 86 will undoubtedly snag the world's official speed record with half of its powerful J-47 jet loafing.



New and improved version of the Fairchild C-82 is the C-119, above, designed especially for troop carrier work in new "air transportable army." Plane has maximum payload of 31,000 lbs.

Only new glider to appear during year was Chase CG-18A Avitru, below, all-metal assault craft equipped with cargo ramp. Ship has capacity of 8000 lbs., can carry 30 fully equipped troops.



Probably world's fastest production-line plane is North American F-86. Using J-47 engine, ship can do well over 650. Wings are swept back at 35° angle. Design range is about 1000 miles.



A two-place adaptation of the F-80 was introduced by Lockheed and USAF in the TF-80 above. Plane will be used to acquaint student fliers with jet operations and with split-second navigational problems incident to high-speed flight. Below, the husky Curtiss Wright F-87 all-weather fighter which is about as heavy as B-17. Production model will have only two engines.





Contrast in symmetry and age is provided by severe lines of ancient Japanese rice paddies and graceful curves of new Lockheed F-80s from Yokota air base in flight near Tokyo.



Twenty-four thousand pounds of bananas were shipped from Pacific islands to 8th Army for trans-shipment to troops in Korea. On display above, one twenty-four thousandth of load.



POOP FROM THE PACIFIC

The Far East Air Forces have achieved combat readiness and every man on every island knows why

By Charlotte Knight

TOKYO:

Here at Headquarters of the Far East Air Forces you have the feeling that business has picked up considerably since Air Force Day a year ago. And the business of this command, let there be no mistake, it is "combat readiness."

Readiness for what? No one really knows, of course, any more than they do in Berlin or in Washington. But the disturbing headlines of the day are being read here with full knowledge that a hostile air attack would greet you with a bare 30 minutes warning.

The Far East has never ceased to be, psychologically at least, a "firing line." And it is impossible to ignore the reports of Soviet air force concentrations in eastern Siberia, of airbase construction programs on an accelerated scale in Manchuria and the Maritime Provinces and the Kuriles. Remembering how the forces in the Far East were demobilized into virtual obscurity after VJ-Day, it would hardly be the fault of the men in the Command if they were unable to defend these outposts on short notice. And yet, three years after the end of combat, the spectre of Pearl Harbor hangs over an organization such as this, and there is a driving determination never to be caught flat-footed, come what may.

Lt. Gen. Ennis C. Whitehead, who commands FEAF and sparks the sense of urgency you feel down through the ranks, implies that for the first time in three years his men—if called upon to do so—could stir up quite a bit of trouble for an aggressor. In an exclusive statement for *AM FORCE* he has said, "The Far East Air Forces have reached a state of combat readiness so that combat units can now perform their assigned missions in accordance with performance criteria established by higher authority." That may sound innocuous enough at first glance but, coming from a battle-hardened leader like Whitehead, it means plenty.

In fact, it seems significant that within this past year one has heard more and more talk about *counter-offensive*, less and less about *defensive* operations. It is not that the defense of these Far East bastions has ceased to be a prime objective. It is the realization, while speculating on our vulnerability to a Soviet air offensive, that some of the

Considerably less disheveled than it was four years ago, is Clark Field, (left) now headquarters of 13th AF.

USSR's choice Siberian targets are within easy striking range of American bombers now based on Okinawa and here on Japan.

Such speculating is not, of course, done with any sense of anticipation. That should be an unnecessary statement, except that 10,000 miles east of Stateside one can't help wondering how the people are thinking about their national security.

Over here it means a lot to hear General Whitehead report that "FEAF has gained materially in combat effectiveness during the past year." For the gains have been frustrated by the toughest of handicaps—by shortages across the board in men and supplies, peacetime lethargy, budget cuts—and the gains have been won by men who have pushed through bottlenecks with wartime ingenuity, by flight crews who at many bases have logged more flying hours than they did at the height of combat, by Air Force men and their families at places like Korea and Guam and Okinawa who have done without the frills and often the normal conveniences of living so that the Command's business goal—combat readiness—could be realized.

Liaisons and Leaflets

During the spring election crisis in Korea, with its accompanying international hulabaloo, 5th Air Force planes at our Kimpo airbase did no special flying—under orders. There might be political implications, it was explained.

The only American planes actually taking part in the "big show" were the L-5s of the 24th Corps Air-Ground Liaison Section. While the bloody election riots were going on these little babies were all over the place—flying medicines, transporting police officials—doing a real job.

Before the voting they had been equally as active impressing the Korean population with the importance of taking part in the election. In their job of "getting out the vote" the bush pilots of the 24th Corps dropped thousands of leaflets on Korean villages.

In Japan similar liaison work is performed by the 158th Liaison Squadron, attached to the 5th Air Force, under Capt. Francis M. Shipley. Here, leaflet dropping is also a major duty, and the Squadron has been dropping an average of 500,000 circulars a month. The messages vary. Some urge farmers to turn





M/Sgt. Paul Alfred of Windsor, Mo., welcomes wife and armload of Kleenex to Okinawa. Sgt. is Asst. Line Chief.



Picked from the drink by air rescue, pilot Murray Winslow, left, declared, "I'm glad I was able to save my boots."



A flight of B-29s of the Far East Air Force against a background of Yokohama Bay.



Keeping abreast of late technical developments is part of occupation duty. Above, lecture at 5th AF engine school.

Information center students plotting aircraft tracks. Writing must be done backward to read correctly from front.

All that remains of once busy air terminal on once busy island in once busy Pacific.



Poop from the Pacific

(Continued)

in their rice to government warehouses, others campaign against black market activities, still others promote the early payment of taxes.

Okinawa Oddities

Men who were on Okinawa when, as they would say, "it was really rough," may be interested in these few observations based on a quick turn around the Kadena Air Force Base:

Kadena has a new mess hall for EM's, the only one of its kind on The Rock, complete with Stateside furnishings such as venetian blinds and fluorescent lighting, flower decorated tables and Okinawa girls as waitresses. . . . A motor scooter fad has hit Kadena as a solution to the ever-present transportation problem. Crew members of the 22nd Bomb Group got the idea in Manila, where the scooters were to be had, ordered a few, and then let nature take its course. As a result, motor scooters today are almost as common to the area as military vehicles. . . . Shark steak now appears on Kadena menus, thanks to a Special Service program whereby Okinawa fishermen are supplied boats for shark-fishing trips. . . . Grade schools patterned after the California school system are now in full operation for Air Force dependents. The Kadena school opened with an enrollment of 35 in the kindergarten and nursery, 14 in the first grade.

Back on Guam

There was a time when Guam meant only one thing to the Air Force—B-29s over Japan. It was as advanced as you could get to the enemy's homeland because Guam, along with other islands in the Marianas group, was the only direct point of contact with the Empire.

Today rows of crates and warehouses supplant the rows of Superfortresses. Guam is now a supply depot for the Far East Air Forces, virtually Stateside to the advanced units from a geographical point of view. Here there is centered a subordinate unit of the Far East Air Materiel Command. Here men provide supply and maintenance for FEAF's strategic air units, including the 13th Air Force in the Philippines, the First Air Division on Okinawa, and the nearby 20th in the Marianas.

Rare Birds

With aerial mapping an important phase of postwar activities in the Far East, the Eighth Photo Reconnaissance Squadron possesses the only Northrop Reporters in operational service. This hybrid, resembling both the P-38 and P-61, was designed for high altitude, long-range reconnaissance missions in the Far East, where conventional types had proved inadequate. The first Reporters were just beginning to roll off the pro-



Typical of the leaflets dropped to get Koreans to cast their ballots.

During spring election crisis in Korea most US planes were ordered to do no special flying. Purpose: to avoid political incident. But the L-5s were all over the place with medicine and police, and with leaflets which they scattered widely.

duction lines at the Northrop plant when General MacArthur accepted the Japanese surrender in 1945. With only 32 of the twin-boomed craft completed, contract cancellations shut down the project, and the Eighth photo outfit was selected to test the new plane. The Eighth has mapped the Japanese homeland and performed photo missions from Northern Hokkaido to Manila. It has taken almost as many aerial photographs as all other photo-reconnaissance squadrons in Japan combined.

To the Rescue

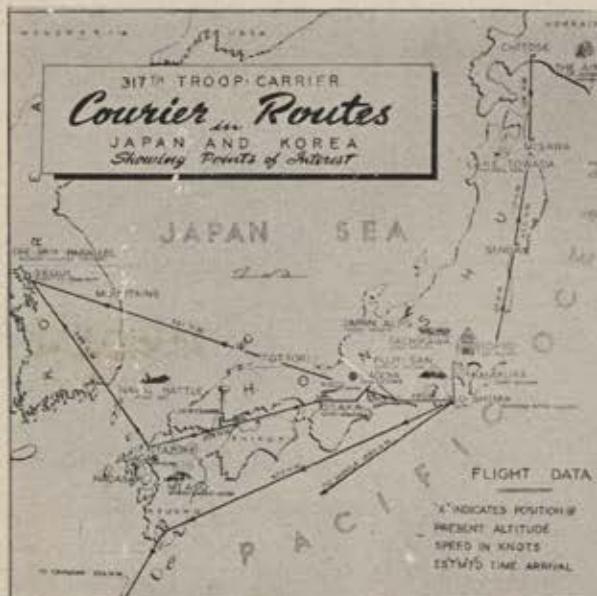
Air-sea rescue units of the Far East Air

Forces maintain their constant vigil along 20,000 nautical miles of ocean airways. Three emergency rescue squadrons do the job: the Second at Okinawa and the Philippines, the Third in Japan and Southern Korea, and the Fourth at Guam and Iwo Jima. They operate S-17s (specially equipped B-17 search planes), L-5s and helicopters. Each unit has rescue boat detachments assigned, and operates 63- and 85-foot crash boats.

In July the Fourth squadron was called out twice in eleven days to fish pilots out of the ocean off Guam, and twice delivered the goods under emergency conditions without a hitch.

Newest wrinkle in Far East air-sea rescue work is the assignment of two Para-Rescue Survival Teams to the Third rescue squadron at Yokota Air Force Base in Japan. Each team is composed of four enlisted men who have had specialized training in advanced medical treatment, precision parachute jumping, makeshift and regulation communication, and concentrated study in the art of survival under adverse conditions. Their mission: to parachute with medical equipment to the scene of aircraft crashes or other accidents in inaccessible areas that cannot be reached by conventional rescue means.

Intra-theatre transport is conducted along routes shown at left by 317th Troop Carrier. Right, GIs head for Tokyo.



UNIFICATION'S TEST FLIGHT



One of four subordinate MATS activities is the Air Rescue Service shown at work here with Sikorsky helicopter.

If there is any Air Force-Navy friction in MATS it is not evident as Lts. H. G. Wendell and G. F. Gossman study flight map. For record, Navy has hat on, tie out.

The route of Military Air Transport Service is 70,000 miles long, and every foot is a political tight-rope

Most unique of all commands in the armed forces today is the Military Air Transport Service, a hybrid outfit of both Navy and Air Force men which was activated at the direction of Defense Secretary James Forrestal last June to prove that unification would work.

MATS was a consolidation of the old Air Transport Command and of Naval Air Transport Service. Its boss, Maj. Gen. Laurence S. Kuter, is beholden by directive to Air Force Chief of Staff Gen. Hoyt S. Vandenberg. Any successor to General Kuter would be, according to plan, a Naval officer of flag rank who will be subject to the provisions of the same directive.

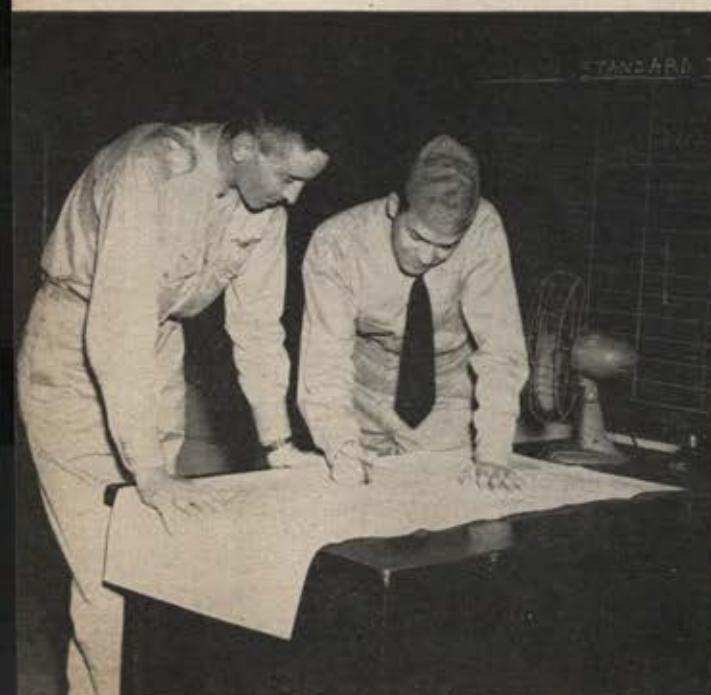
So far there is little indication that MATS will be any less successful or efficient than its two parental organizations. There is little reason why it should be. Few new responsibilities have been added, nor have any hamstringing regulations been evoked. The two big problems have been administration and the unknown of how well sailors and airmen would work side by side.

In regard to the first problem, a working arrangement has been established which includes the following: 70 percent of the Command's personnel will be Air Force and 30 percent Navy. Planes will be supplied by both Air Force and Navy (MATS will not procure its own craft) but for the most

part bases will be the property of the Air Force. Navy men will fly and service Navy planes and Air Force men will fly and service Air Force planes. Command will be exercised according to rank or office regardless of service. In so far as is practical, housing, messing, medical and similar facilities will be shared jointly. Since disciplinary regulations differ somewhat in the two services, court-martial jurisdiction will be exercised by the service concerned. MATS will operate over 70,000 miles of "trunk" lines; but both Air Force and Navy will retain and operate their own inter-theater or "feeder" line operations. Airways and Air Communications, Air Weather Service, Air Rescue Service and Flight Service will all be MATS directed.

As far as the second of the two main problems is concerned, the men of MATS have been guided by an order issued by General Kuter on the day of the Command's activation which said in part, "It is important that neither custom nor differences in uniform and insignia result in any failure within the Command, to understand the essential identity of position which Air Force and Naval personnel share as members of the MATS organization." To date there have been no perceptive violations of the General's order. On the contrary, Navy and Air Force men have exhibited what to many has been a surprising ability to work together effi-

As air shipments of huge cargoes to points outside the US become more and more frequent, the MATS job gets bigger and bigger. Here a group of GI's load the self-contained elevator of Douglas C-74.





Seventy thousand miles of Military Air Transport Service routes are traced above on an Air Force polar projection map.

ciently and to live together harmoniously. Reports indicate that this is especially true at the Command's operational level. A staff sergeant and a yeoman 2nd have little difficulty "hitting it off." For the most part their only serious arguments arise in the day room over whether or not five of a kind will beat a royal flush.

In addition to being the newest major command in the armed forces, MATS is undoubtedly the most carefully watched, not only by military men but by Congress as well, for there are many in Congress who concede that the unification bill of 1947 is not the final answer—that there are still many bugs to be removed. On paper the MATS mission is "to speed the movement of the military forces in peacetime, and to position and supply our offensive forces in war." It's a sizeable order, but no larger than the one that isn't on paper.

Two comely young ladies, one from the Air Force and one from the Navy, display the newly approved MATS insignia.





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Advance reservations for hotel rooms are pouring in. Make sure you'll have a place to shave and hang your hat by filling out the coupon on page 56 and mailing it today. Your reservation will be confirmed immediately. Send no money. You will be billed at the convention.

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COUPON AND HOTEL RATES ON PAGE 56

RESERVATIONS NOW!

INSIDE USAF

Since war's end United States airmen have become surprisingly quiet suburbanites with families, homes and a large stake in the future



Roll call at Davis-Monthan is at 7 A.M. S/Sgt. James A. Soergel of Ingomar, Pa., is second from left. To his left and slightly more alert are T/Sgt. Robert L. Lieber of Houston, and Pfc Joe Woolard of Washington, D. C., whose tie hangs from belt.

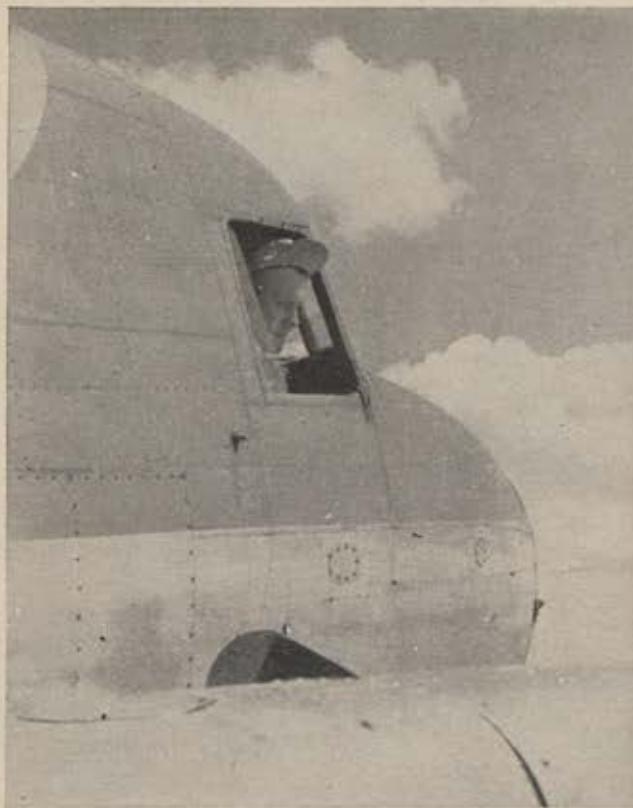
By Capt. Percy H. Kramer

Never, except in war, has the United States sent as many of its airmen off to the far corners of the world as it has today. At last count a total of 23 groups were permanently stationed beyond the continental limits. Other units were home only when they weren't on "rotation" in Germany or Japan. Of air, land and sea forces stationed abroad today, the air components have by far the predominating role.

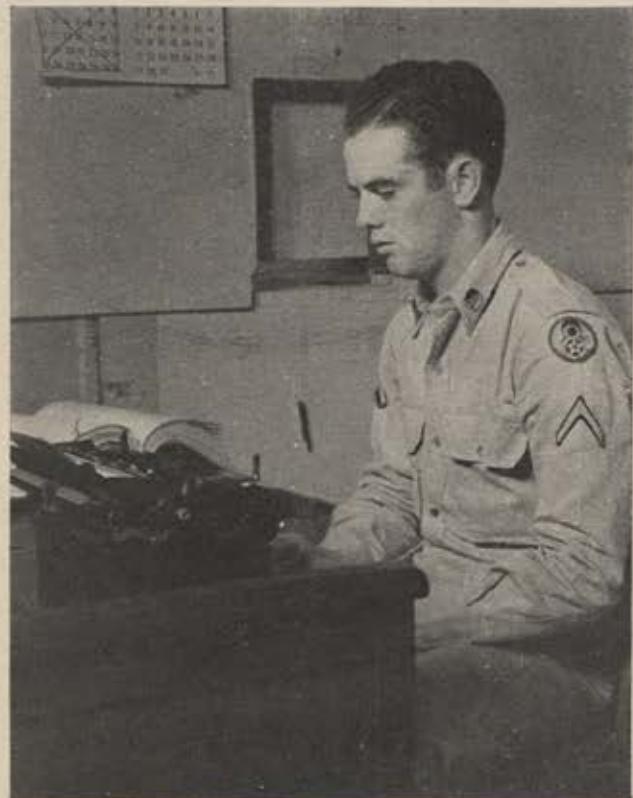
None the less, most of the Air Force is still at home. Except for a few top officers who are in more or less regular contact with headquarters in Europe and the Pacific, most of its members learn of the activities of their fellow airmen in Berlin or Tokyo the same way every average citizen does—through the newspapers and over the



Tucson's Mayor "Happy" Houston, right, gives Soergel and Col. James Selser, Davis CO, a few pointers on engine repair.



Sitting in the co-pilot's seat, Sgt. Soergel jockeys controls of C-47 of which he is a crew chief-engineer and in which he has flown 900 hours. Soergel is 30 and a member of Elk's Club.



Pfc Joe Woolard is only member of trio not married. He completed high school education through USAFI after entering Air Force. He is now engineering clerk, hopes to take pilot course.



A veteran of ten months duty in India as crew chief of a B-24, T/Sgt. Bob Lieber is now NCO in charge of base flight's Technical Orders section. He considers himself excellent hunter.



Contributing substantially to subdued atmosphere of post-war air base is fact that families have arrived on the scene. Here the wives buy groceries while the two sergeants hold the kids.



With a cigar and contented look, Sergeant Soergel sits down for an after dinner bull session with Diana Lee, his 21 month old daughter. Cigar will be lighted when meeting is adjourned.



Like all families, the Liebers and Soergels dream of new car. Here they get low-down on new Ford from Monte Mansfield whose father helped bring airbase to Tucson.

radio. Since wars end in fact, the Air Force GI has become the most average of all average citizens. He lives in a "community" a few miles outside half a hundred medium sized towns from Riverside, California, to Bangor, Maine. Having done without them for a matter of four years, he gets more than a normal kick out of his home, his family and the local Kiwanis or Rotary club. He thoroughly enjoys the business of being a "substantial citizen."

Except that its name is a little harder to pronounce than most, Davis-Monthan, outside Tucson, Arizona, is not unlike any other Air Force suburb.

In the same manner, the three men whose daily activities are pictured here, Sgts. James Soergel and Robert Lieber, and Pfc. Joe Wollard, are not unlike most other sergeants and privates first class. The genuinely fine relationship they have established with the people



Bill Pyle, Director of Tucson's famous Sunshine Climate Club and active Kiwanian, welcomes Sgt. Soergel to weekly meeting. Kiwanis club has done much to make Davis airmen feel at home.



Davis-Monthan is home of 43rd Bombardment Wing of 8th Air Force. Part of General George Kenny's Strategic Air Command, its restless planes are as familiar in Tokyo as Tucson.



With Sgt. Lieber's wife, Bette, at the organ, the Davis-Monthan choir rehearse hymn for Sunday morning chapel service. Pfc Woolard is at extreme left, Sgts. Soergel and Lieber at right.

of Tucson is best illustrated by the fact that when a GI's house at Davis burned to the ground a few weeks ago while he was away on a training flight, the people of Tucson chipped in and built and furnished a completely new home. More than a hundred and fifty firms and individuals contributed, and when the new home was turned over to the soldier, his wife and son, Mayor "Happy" Houston of Tucson said it was "just a token of the esteem in which the citizens of Tucson hold the citizens of Davis-Monthan."

Throughout the land, men of the Air Force are settling down and becoming regular suburbanites. There is only one difference. If the freedom of the people of Tucson or any other city in the US were ever challenged, the men of Davis-Monthan and tens of thousands more would be off in counter-attack before the morning sun.



Nowhere in the world are plates heaped higher with good food than they are in the Air Force. At Davis-Monthan, as throughout the Air Force, rule is take all you want—eat all you take.



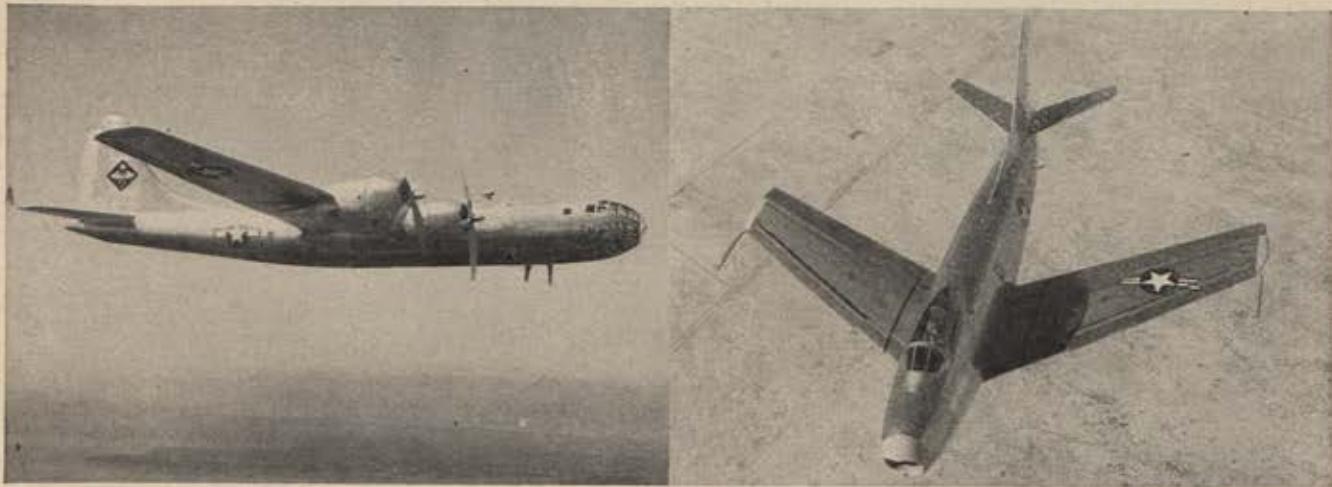
A happy quintette composed of Liebers, Soergels and Woolard explore some of Tucson's superb bridle trails. The sergeants have GI glasses, Pfc and wives do not.



Almost as much a part of every Air Force base as reveille itself is the day room pool table. Here Sgt. Soergel tries for the side pocket as Woolard and Lieber stand by unimpressed.



Going to a "movie in town" is a favorite pastime of Davis-Monthan personnel. Sgt. Lieber and his wife get a pair at the Rialto. Baby sitting is no problem. Families take turn-about.



Day after the Air Force's 40th birthday last year, the Pacusan Dreamboat shattered the international closed course record by a non-stop flight of 8,854.8 miles over a triangular course. Later in year a second B-29 record was established when SAC plane flew 5,792 miles with 10,000 pound simulated bomb load.

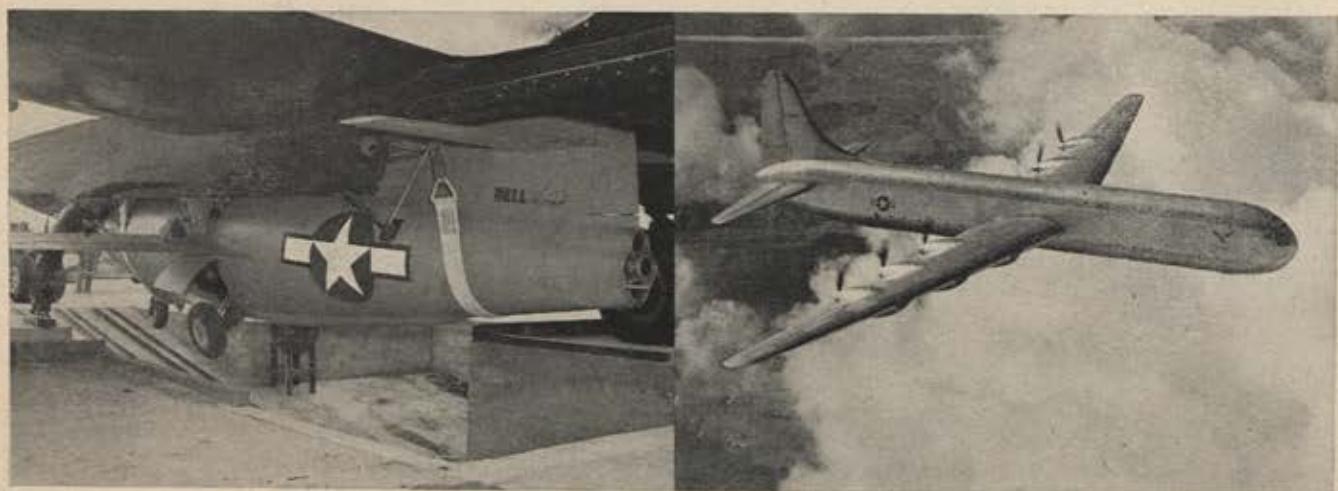
America's most powerful jet engine, the General Electric J-47, took to the air for the first time this past summer in a North American F-86 fighter. Rated thrust for the heavyweight is approximately 5000 pounds. Flight was made at Muroc Air Force Base, California, but no official time has as yet been given.

THE BIG 10 OF FLYING

Of the millions of miles the United States Air Force has flown since the last Air Force Day, these hops have been the most exciting

Most spectacular of this, or most any other years' flights, was the two-minute dash of the Bell X-1 last October which took Capt. Charles Yeager of Myra, West Virginia, through the sonic barrier for the first time in the history of man. Air Force Secretary Symington termed date of flight "rather basic day."

One of the most awe-inspiring of the year's ten big flights was the first hop of the Consolidated XC-99, world's largest land plane, at San Diego, California, last November. Size of ship is indicated by fact that center section of wing is thick enough for catwalk to permit crew members to inspect engines in flight.





Sister ship of the XC-99, the B-36, proved itself beyond expectation last July when it flew a simulated combat mission of 6000 miles at an average air speed of more than 300 mph. The plane took off at a gross weight of over 300,000 pounds, the heaviest air load ever lifted. Craft was production model.

For the most part, the year between Air Force Day 1947 and Air Force Day 1948 was notably lacking in the spectacular kind of aerial demonstration that captured the headlines time after time in the preceding 12-month period. The speed record of production type planes was not bettered, nor were any miles added to the existing distance mark.

Nonetheless the year will forever be distinguished in aerial annals for perhaps the most outstanding flight since the days of Kitty Hawk—that of the Bell X-1 on October 14, 1947, when Capt. Charles E. Yeager of Myra, W. Va., became the first known human to crack the sonic barrier. The speed he attained has not been released officially, but there have been educated guesses that it was well over 1000 miles per hour.

Two trans-Atlantic flights were high on the list of the year's achievements. One was the remote control hop of 2400 miles made by a C-54 without a pilot from Newfoundland to Brize Norton, England. The other was the spectacular flight of 16 jet F-80 fighters from the US to England made at a moment in June when tension ran high over the situation in Berlin.

Other outstanding flights are pictured on these pages. Missing are a number of hops still being withheld for security.

The first of what many experts confidently believe will be a series of distinguished flights was accomplished by Northrop's YB-49 eight-jet bomber at Hawthorne, California, last October. Performance of "the world's most powerful plane" has so far been kept secret. Engines have total thrust of 32,000 pounds.



Heaviest fighter ever built, the Curtiss Wright XF-87 grabbed one of the ten most outstanding flights of the year by virtue of its highly successful initial test run at Muroc Air Force Base, California, last March. Craft was designed to do over 600 mph., with range of 1500 miles and ceiling over 35,000 ft.



Not even the flight of the X-1 commanded the attention these F-80s got when they "moved out" from Selfridge Field, Mich., to England and Germany last July. Making the trans-Atlantic jump in easy stages, the Shooting Stars arrived in Scotland, above, without incident. They planned to stay about a month.

An indication of the progress being made in automatic flight was given the public last September when a Douglas C-54 Sky-master landed near London after flying the Atlantic without a single human hand touching the controls. Below, an Air Force officer points to some of the airplane's pre-set control gadgets.



A-Bombs

Part I

The impact of the atomic bomb on national policy has been evidenced most clearly in our almost frantic effort to secure the adoption of a system of international control of atomic energy. It is virtually impossible to find an historical precedent for the eagerness with which this nation has pursued an endeavor which, if successful, would deprive it of the advantages of monopoly possession of a decisive military weapon. To be sure, the monopoly is bound to be temporary, but that has always been true of new weapons. The point is that monopoly in weapons has usually been jealously guarded for as long as possible. Indeed, the US is even now behaving in the customary manner concerning all new weapons other than those based on the explosive release of atomic energy, a fact which in itself sufficiently demonstrates that the exceptional American position on atomic energy control is based on something other than national generosity. That "something other" is of course a well-warranted fear of living in a world which normally and politically is little different from the one we have known but which is characterized by multilateral possession of atomic armaments.

However, while the fear persists, the trend in the US has apparently been away from panic rather than towards it. The habit of living with the bomb would itself sufficiently account for that trend, though there have also been other factors at work which I will review. What the situation will be when the US acquires the knowledge or the firm suspicion that the Soviet Union too is producing atomic bombs is another matter, consideration of which we can also postpone for the moment. At any rate, our government has apparently hardened in its resolve that any international control scheme must contain within itself practically watertight guarantees against violation and evasion. And there is every indication that this resolve enjoys overwhelming public support.

This attitude greatly lessens the possibility that an international control system will be achieved. American leadership in securing formal suspension of the activities of the United

Since the UN has failed to outlaw the atomic bomb
we must learn to live with it—and since we must
live with it we must also learn to fight with it

Nations Atomic Energy Commission is open acknowledgment of that fact. Thus, we must look forward to a period of national adjustment with the prospect of living in an atomic age devoid of effective international controls. That does not mean that efforts to secure such controls will necessarily languish. But it does mean that other forms of adjustment will receive a good deal more public attention and support than they have thus far. It will mean particularly a heightened emphasis on anticipating the character of a war fought with atomic bombs, with a view both to taking all reasonable precautions against the terrible hazards of such a conflict and to securing victory if it must come. The latter goal may appear a mockery to many sensitive minds, but it is not likely to appear such to those responsible for national policy, especially since the argument that visible strength is the best guarantee against war is not easily refuted to the public satisfaction.

We must therefore attempt to predict, first, the effects of the atomic bomb upon the military services of the future, and second, the character and extent of civilian adjustment to military needs. Among the many variables which bear upon our predictions, the most important by far is summed up by the following question: "How many atomic bombs can one expect to find in existence any given number of years hence, and how will they be distributed among the nations?" All our conclusions depend upon the answer to that question, yet it is curious how consistently this issue has been slighted or ignored in the general debate on the destiny of the armed forces. It may be said in general that those who stress the completely revolutionary character of the bomb are tacitly presuming that in the not too distant future it will become relatively abundant, while the conservatives tend to pre-

sume that it will remain inordinately scarce. Neither side, however, shows much evidence of being aware of the specific presumption it has made, let alone of having weighed the validity of that presumption.

With our present lack of knowledge it is difficult to say what range of numbers must be regarded as representing abundance. In the paper prepared by the War Department in March 1949 on "The Effects of the Atomic Bomb on National Security," there is a reference to something called a "significant" number of bombs. The meaning of significant is then explained only as indicating that number of bombs which would "provide an important military capability." The Army may have specific numbers in mind when it uses such terms, but the chances are that it does not. We know that one bomb will not win a war against a major power (it took two to produce the surrender of an already defeated Japan) and the same may reasonably be held to be true of five or ten. But we have little idea what number is "significant," and even less conception of how many it takes to make the weapon "decisive." Much will of course depend on how the bombs are used, but then the number available will in large part govern the way in which they are used.

We do, to be sure, have a good deal of experience with strategic bombing from the recent war, and it would appear superficially that by merely computing the number of atomic bombs it would take (using the evidence of Hiroshima and Nagasaki) to wreak the destruction done with TNT bombs and incendiaries, we would have some measure of the number of atomic bombs necessary to achieve "significant" or "decisive" results. We have been told, for example, by the US Strategic Bombing Survey that with each plane loaded with 10 tons of TNT bombs and incendiaries it would have required some 210 B-29s at Hiroshima and 120 B-29s at Nagasaki to accomplish the damage done at each of those places with one plane carrying an atomic bomb. The same source suggests that if the more powerful Nagasaki bomb had been used at Hiro-

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and AIR STRATEGY

By **Bernard Brodie**

Associate Professor of International Relations, Yale University

shima the damage done to the latter city could have been equalled only by 270 B-29s loaded with 10 tons each of non-atomic explosives.

These figures are no doubt very useful in suggesting a means of arriving at the factor of increase of power of the atomic bomb over the TNT bomb—a far better means unquestionably than that of merely computing the relative amounts of energy released. But the difficulty is that the two types of bombs are not really comparable in strictly quantitative terms. In some respects the atomic bomb is more destructive than the comparison given above would indicate, in other respects it is less so. These points are significant:

- It is clear that while heat and blast effects are common to both atomic and non-atomic bombs, the element of radioactivity in the former introduces a new factor which is profoundly significant both for human casualties and for the enduring contamination of bombed areas.
- The fact that a given amount of damage can be effected in a far shorter period of time with atomic bombs than with conventional bombs has enormous implications in terms of the ability of the target state to repair damage and to adjust its defenses to the attack. For example, by the middle of 1944 Germany was still going strong, and it could hardly be said that the strategic bombing to which she had been subjected during the previous five years had yet accomplished anything like "decisive" results. For one thing, it had not been strictly cumulative. But if the same amount of destruction—or even half the amount—had been telescoped into say one week, it is hard to imagine how that nation could have been anything other than completely prostrate.
- The effective bombing range with an atomic bomb of a plane like the B-29 is, for reasons which will be mentioned later in this paper, potentially much greater than that of the same plane carrying ordinary explosives.
- There is the matter of psychological impact, the terror effects of the atomic bomb, the proportions of which we can scarcely begin to predict. True, in the recent war the human animal showed himself capable of adjusting to heavy bombing raids to an astonishing degree, but at least he was given



A-BOMBS and AIR STRATEGY (Continued)

the opportunity to get adjusted through the very gradualness with which the bombing attack reached its crescendo. Moreover, the knowledge that some two or three thousand aircraft were approaching a certain city was an unmistakable signal to the inhabitants of that city to repair to air raid shelters, and at least in part an "all clear" signal to the inhabitants of other cities far removed—both of which characteristics are likely to be absent in a situation where individual planes carry the means of destroying whole sections of large cities.

On the other hand, there are at least two factors, apart from the issue of possible scarcity, which suggest the necessity of discounting somewhat the "factor of increase of power" which might otherwise be attributed to the atomic bomb over the TNT bomb:

► There is the tactical question. A single plane may, as at Hiroshima, accomplish an amount of destruction comparable to that effected by 210 similar planes carrying ordinary bombs—provided it arrives over the target. But if the area is strongly defended, a force of 210 aircraft might be able to get the great majority of its planes through where a single plane would have no chance whatever. If planes bearing atomic bombs have to be attended by large numbers of decoys (perhaps armed with ordinary bombs) and fighters, the advantage of economy in logistics and operations otherwise accruing to the atomic bomb is largely lost. However, it is also true that under some conditions a single plane has a better chance of reaching its target than a large force.

► Since the atomic bomb in its minimum efficient size is necessarily of "city buster" destructiveness, there are relatively few targets on which its full destructive power can be utilized. Even Nagasaki, because of its configuration, suffered much less damage than Hiroshima, despite the fact that the Nag-

saki bomb was more powerful. When we say that a plane carrying an atomic bomb can do the same amount of damage as 200 or 300 planes carrying conventional bombs, we are speaking of an exceptionally favorable target. We must therefore consider the effectiveness of the atomic bomb partly at least in terms of the target. It happens of course that the most appropriate of indicated targets—that is, the large city—is an extraordinarily important one. The atomic bomb could be used on other targets if it were plentiful enough, but on most other targets its relative advantage over TNT bombs would not be nearly as great. On the other hand, we must ask ourselves whether it would ever have to be used on "other targets" after the main cities of a nation were destroyed.

These are only the more outstanding of the considerations which effect the question of how many bombs are "significant" and how many could be considered a "decisive" force. It can readily be seen that the magnitude of the terror created might well make a rather small number decisive, and then again it might not, depending largely on the preparation of the target population, psychological and otherwise, and on their degree of awareness or ignorance of what is going on (in this case ignorance might be an asset). In any case, there is a large problem area here demanding a great deal of intensive investigation. The essential question to be answered is: "How many bombs will do what?" And the "what" must be reckoned in over-all strategic results rather than merely in acres destroyed.

However, if our present knowledge is closely confined, our ignorance also has its limits. For the best of political reasons we are not being told the current rate of US production of atomic bombs, but even the most conservative guess would lead us to conclude that the number we will have accumulated

after say 10 years of production will certainly be "significant." And we know also that for purposes of planning, 10 years is not a long time (it is less than half the normal life expectancy of a cruiser). Thus, there is no time like the present to begin to think of how wars will be fought when the atomic bombs available to one or both belligerents will be numbered at least in scores, and possibly in hundreds.

As we project into the future the effects of the atomic bomb upon the armed services, we must distinguish between at least four different phases or conditions:

- American monopoly expressed in a small number of bombs,
- American monopoly with a relatively large number of bombs,
- the end of American monopoly, but with the US still enjoying a large margin of superiority over its major rival both in atomic bombs and in the means of delivering them,
- the end not only of monopoly but of significant American superiority.

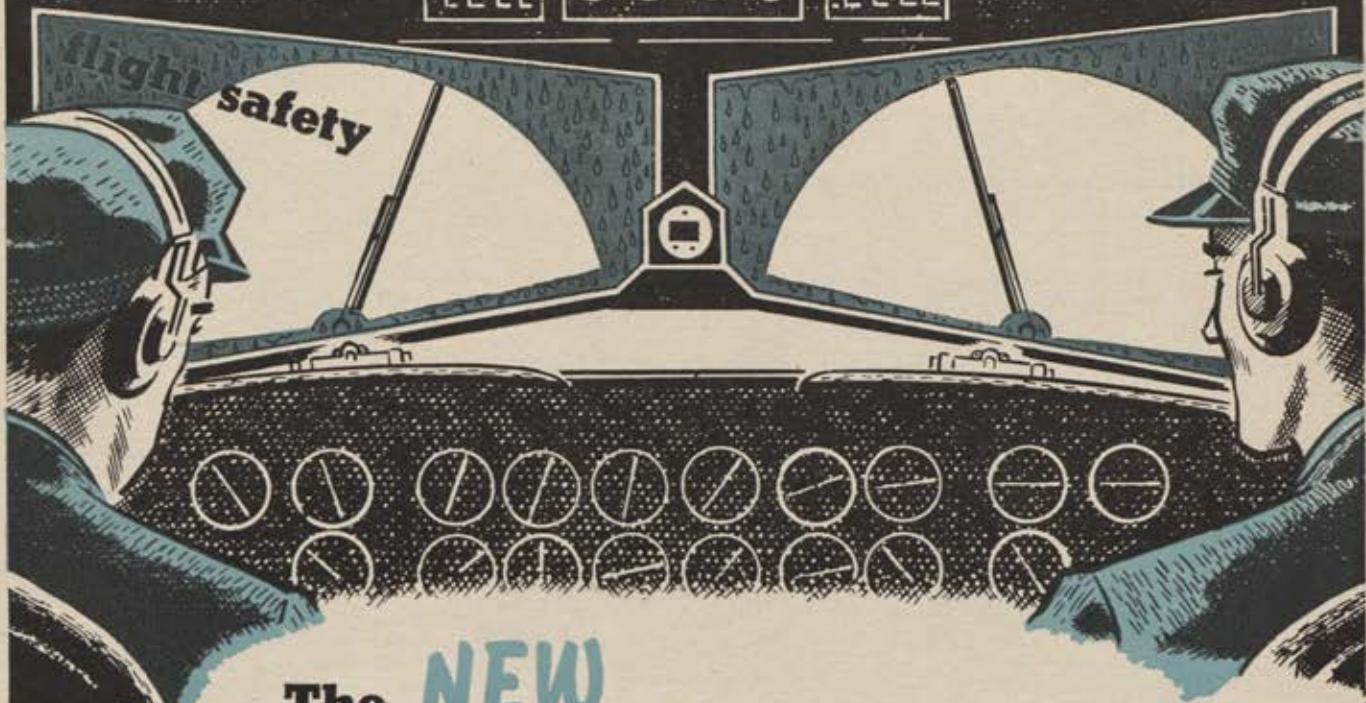
Here again we are using terms like "small" and "relatively large" without any effort at precision, but for the reasons already given we are obliged to do so and will continue to be obliged to do so until we have more knowledge than yet exists in any one person's brain. Nevertheless, these rough distinctions have value in organizing our thoughts. They indicate, at the very minimum, that to distinguish merely between the monopoly period and the post-monopoly period—as is usually done—is not enough. Thus, the position described as "the end of American monopoly," while probably not as favorable as that described by "monopoly with a relatively large number of bombs," is nevertheless not an adverse one, and it may last much longer. It may even be a more favorable position than that described as "monopoly with

(Continued on page 64)



At Los Alamos, where bombs are made, cars line up, left, as guard checks badge number, right, of every worker.

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CADETS, MECHS and JETS

The Air Force's Training Command has an impressive history, but its leaders are more interested in looking ahead than in reviewing the past



The basic Flying Manual compiled by the Air Force Training Command for the instruction of Aviation Cadets has a preface that begins like this: "The Information presented herein has been compiled, recorded, and tested over a period of many years. It represents the accumulated experience of thousands of instructors with hundreds of thousands of student pilots, and represents millions of hours of flying instruction."

Statistics are an unreliable means of getting at the picture of an organization such as the Training Command, but for what it's worth, it should be noted that there are 86,000 people in TC—one-sixth of all the personnel, both military and civilian, assigned to the entire Air Force. TC has 12 continental bases under its command and 1400 airplanes. Its boss is Lt. Gen. John K. Cannon. Assisting him is Maj. Gen. James P. Hodge, CG of the Flying Division, and Maj. Gen. C. C. Chauncey, CG, of the Technical Division.

At present "Uncle Joe," as the General is called, is concentrating on turning out 3000 pilots a year and on getting ready to turn out twice that many by the end of 1952. Considering the fact that pilot training dropped to zero for nearly a year shortly after V-J Day, it is not an easy job, especially in consideration of the many revolutionary instructional techniques that have evolved since then. PTs and BTs, for example, have been done away with. Today a cadet starts his flying training in the same plane he used to finish up with—the North American AT-6. And within a short while the AT-6s will be abandoned in favor of the new tricycle-geared T-28, which is a hundred miles an hour faster than the Texan and a hundred and fifty faster than the speediest of the PTs. More revolutionary than the advent of the T-28, however, is the incorporation of

Top left, profile of the new Lockheed TF-80 jet trainer. Center, radar instruction at the Training Command's Keesler Field school. Bottom, North American's new T-28 trainer with tricycle landing gear which will eventually replace both PT and BT planes.

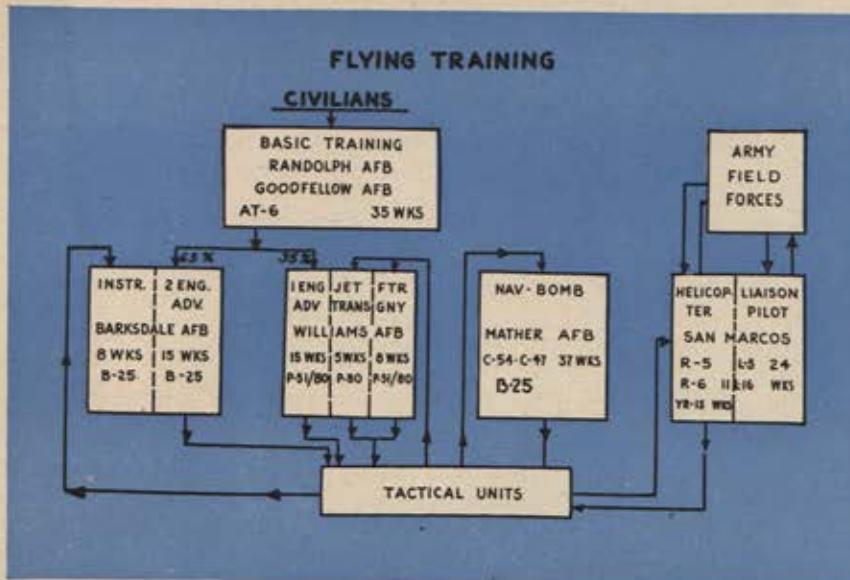
the new two-place TF-80 Lockheed jet into the advanced single engine training program. At present only about 50 percent of the advanced single engine trainees receive instruction in the jets—and they get only 37 hours out of 112, the balance being conducted in ATs and F-51s. But by 1953 the Command expects to have enough jets—F-80s, TF-80s and perhaps another type as yet undeveloped—to give all cadets some jet training. Eventually it is expected that all advanced single engine training will be done in this type plane, but at the moment this is largely a "hypothetical dream." Twin engine advanced training, like single engine, is also conducted now in a combat type plane—the war honored B-25. For a while B-17s were used in multi-engine training, but after some experiment, they were abandoned mostly because of the high comparative cost of operation. Flying Training schools include Randolph and Goodfellow in Texas where basic instruction is given; Williams, Ariz., where advanced single engine is taught; Barksdale, La., which specializes in multi-engine advance in addition to being Training Command Headquarters; and San Marcos, Texas, where liaison and helicopter pilots train. The flying division also operates a bombardment school at Mather Air Force Base in California. Under pres-



Studying weather conditions and the effect such conditions will have on the flying they will do as pilots is important in the training of these Randolph cadets. Capt. Thomas H. Mills goes over the fundamentals with students in the new cadet uniform.

Students in the Lockheed F-80 airplane and engine course at Chanute Field, Ill., prepare to remove the aft section of the jet propelled fighter, a necessary operation prior to making an engine change. Chanute is one of five technical bases.





Flying training schedule from civilian to commissioned office is indicated here.

CADETS, MECHS and JETS

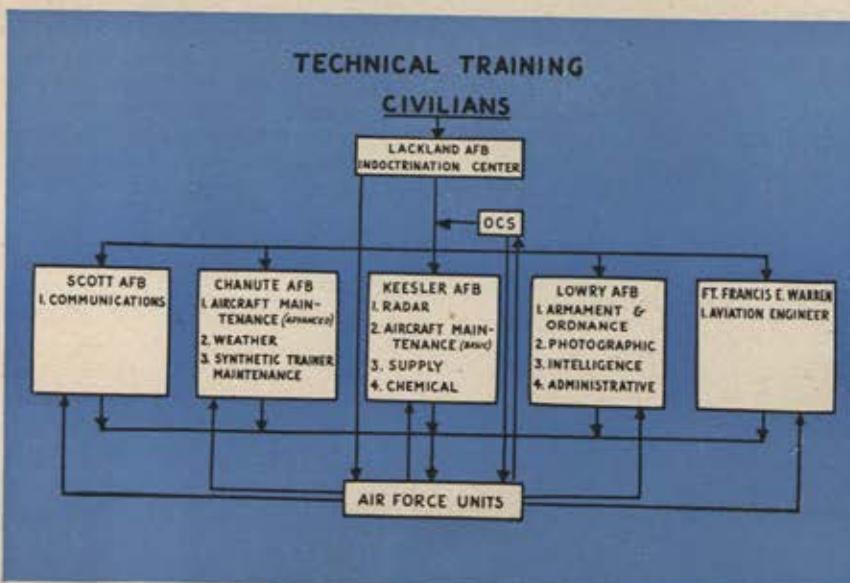
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ent training schedules Mather does not take in fresh cadets to train from scratch in either bombardment or navigation. Instead, men who are already rated as either bombardiers or navigators are sent to Mather to become what the Air Force calls "triple-threat" men, that is, officers qualified both as navigators and bombardiers and as observers.

Just as important to the success of the Air Force as the pilots and the triple-threat men, are the technical specialists such as radar operators, armament personnel and weather specialists. It is the job of the Technical Division of the Training Command to

train such men as these. "I Sustain the Wings" is the motto of the men of the Technical Division, and indeed they do. There are five technical schools—at Scott and Chanute Fields, Ill., Keesler Field, Miss., Lowry Field, Colo., and Cheyenne, Wyo. Under the direction of General Chauncey these five schools offer a total of more than a hundred different courses including such military occupations as cable splicing, water purification, and rock crushing. More directly concerned with the job of flying, of course, are the mechanic and communications type courses. But regardless of whether a student in the Training Command studies to be a cable splicer or a jet pilot this much is certain: he will be better trained than his counterpart in any other country. The Training Command would be satisfied with nothing less.

Technical training is conducted at Technical Division's five schools as shown here.



Air power is peace power

On Air Force Day, Sept. 18, Lockheed Aircraft Corporation salutes the men who fly to keep America strong.

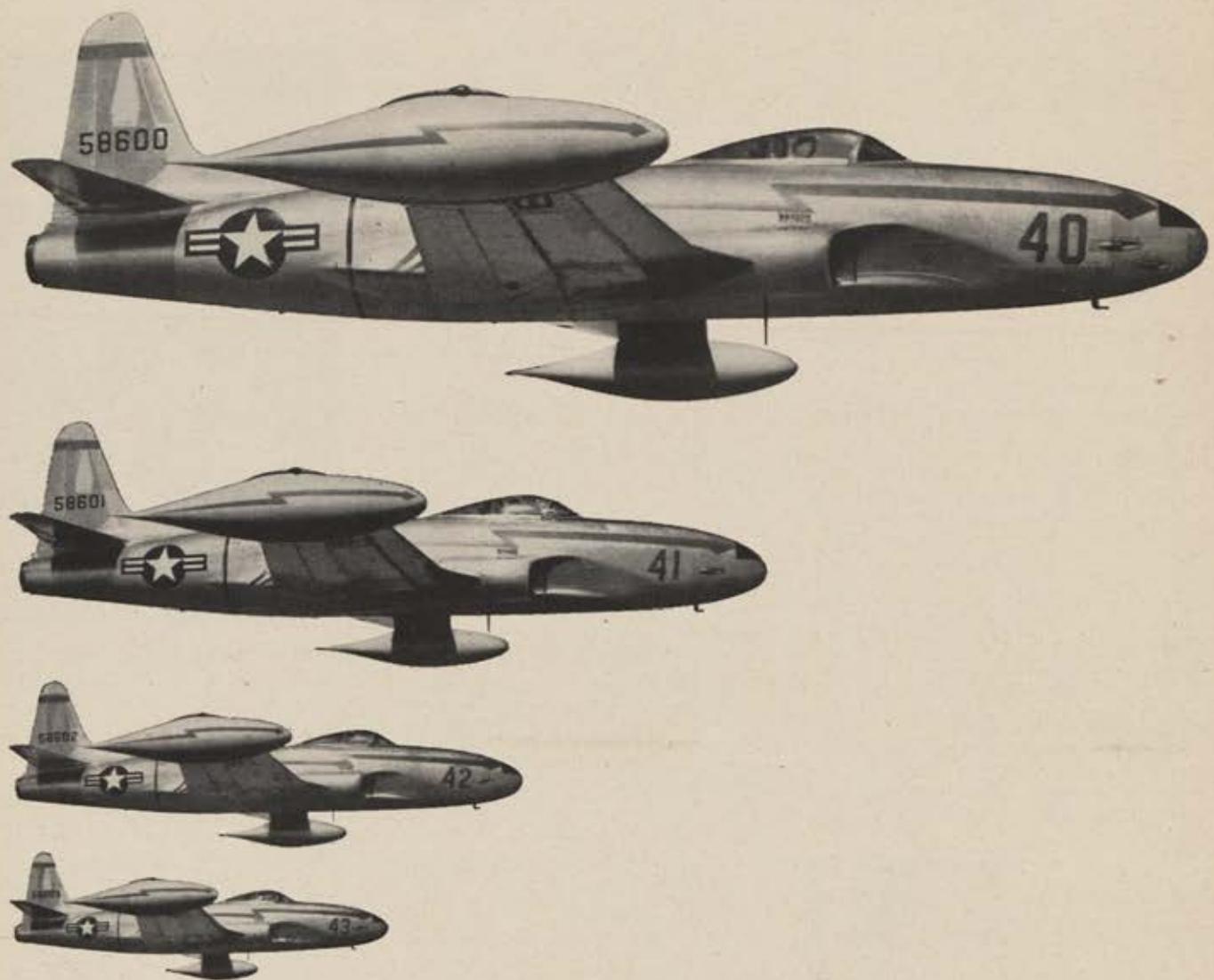
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The Air Force F-80 Lockheed Shooting Star.

TOPS ON THE

Ten of the postwar USAF's most important technical developments are reported on these pages.

We might have said the *top ten* were it not obvious that security policy keeps a number of red hot technical projects under wraps.

We recognize honest differences of opinion in any selection such as this, and yet these choices, made exclusively for AIR FORCE, come from the men most qualified to know—experts of the Air Materiel Command.

The evaluations began in each of AMC's three major divisions—Engineering, Procurement and Supply-Maintenance—with the understanding that a project would be considered "postwar" if it received its practical application within the USAF since VJ-Day. Excluded were aircraft types as such.

Each of the directors of these three AMC divisions independently prepared a list of what he considered the outstanding non-classified postwar technical projects. These three lists then went to the Command's front office. There each development listed was considered in relation to its over-all importance to the USAF and these ten selected.

Underwing Refueling

Aircraft refueling has been revolutionized by a single-point servicing system which is three times faster than conventional refueling methods.

Underwing refueling, as it is called, has been selected by AMC experts as a top technical development on the basis of its importance to ground servicing. This is understandable when you consider that with conventional refueling procedures it takes six men and three trucks several hours to refuel one B-36.

It is also known that this is the system which has made air-to-air refueling practical. Thus, underwing refueling is of vital strategic importance in the present-day Air Force.

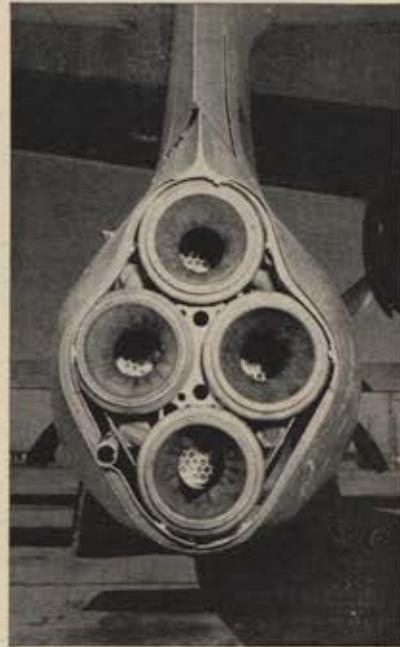
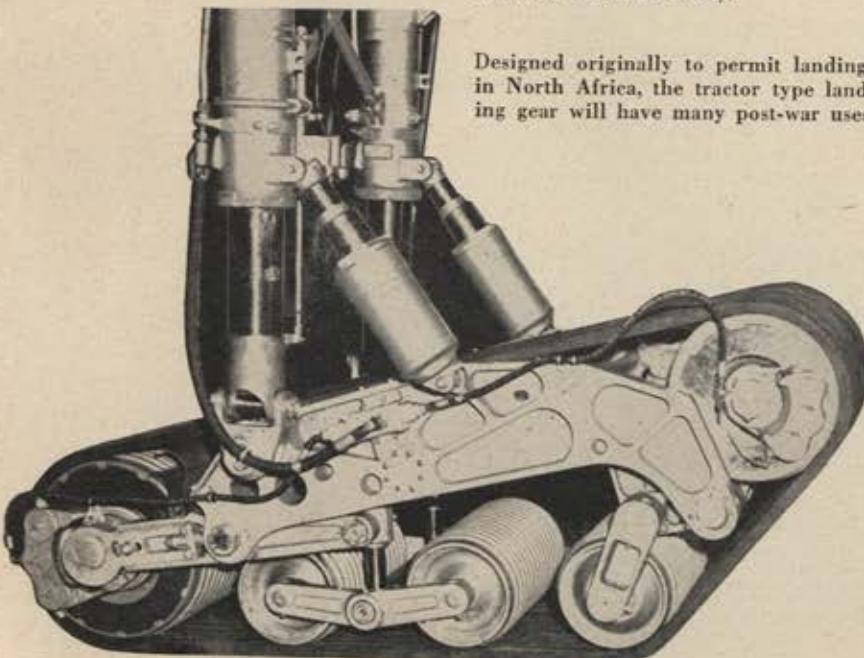
Underwing refueling systems currently are being engineered into B-36, B-45, B-50 and XB-52 type aircraft, and into the majority of medium bomber proposals now being considered.

Developed by Capt. David Samiran, a 20-year veteran of AMC, the new system permits complete refueling from a single point in the under portion of a plane, as contrasted with the method of refueling at several points on the plane.

Incorporation of a manifold line in the airplane's fuel system, linking all tanks, makes it possible for one man to connect a single refueling hose to one point on the plane and from this point completely fill all tanks.

Underwing refueling permits servicing on the ground at the rate of 600 gallons per minute, regardless of the number of tanks. Old methods delivered at the rate of 55 gallons per minute to a tank (with 2 or 3 tanks usually being serviced at the same time).

Designed originally to permit landings in North Africa, the tractor type landing gear will have many post-war uses.



Rear view of the Bell X-1, showing the four rocket chambers of the powerful XLR-RM-1, built by Reaction Motors Co.

In flight the system is completely automatic. Float-operated shut-off valves installed in each fuel tank control the automatic transfer of fuel from the auxiliary tanks to the main tanks in the sequence necessary to maintain the proper center of gravity of the plane. There is no need for the pilot to change tanks manually, no possibility that the engine will quit when one tank, unheeded by the pilot, has become empty.

Tractor Type Landing Gear

Tailor-made for most everything but concrete runways, tractor type landing gear are expected to increase the usability of hundreds of airfields throughout the western hemisphere and permit heavy aircraft to come down in areas which have been considered unsuitable because of inadequate landing facilities.

Designed in the early stages of the war to permit aircraft to land in the deep sand of North Africa and the swampy terrain of the South Pacific, track-gear installations were first made on the A-20. A special rubber belt, able to withstand the 100 to 120 mile per hour takeoff speed of the A-20 was installed on the main gear.

Postwar development has featured in-

TECHNICAL FRONT

AIR FORCE asked the men it considered best qualified to answer — technicians at Wright Field—to name ten of the most outstanding developments since the end of the war. Here, after considerable debate among themselves, are their carefully studied answers

stallations of this type on both the main and nose gear of the Fairchild C-82 cargo plane. A contract now has been let for 18 tractor gear equipped C-82s for delivery within the next three months, and research is progressing to adapt the gear to other large size planes, including combat types.

X-1 Type Rocket Propulsion

The greatest single unit of thrust-power ever taken aloft by man in this country is the powerplant in the supersonic Bell X-1. Composed of four cylindrical chambers—each capable of 1500 pounds thrust—this regeneratively-cooled, pressure-fed rocket engine was developed by Reaction Motors, Inc., of Dover, N. J.

AF XLR 11-RM-1, the rocket engine's official nomenclature for Air Force record purposes, can deliver its total blast of 6000 pounds thrust for only 3 minutes of continuous operation, a limitation imposed by its immediate fuel supply rather than inefficiency in operation or duration of the engine itself. Air Materiel Command officials explain that any one of the 4 chambers will provide a continuous 1500-pound thrust at thermal equilibrium (sufficiently low temperature) as long as its fuel supply lasts. Chambers have been fired for uninterrupted periods of up to five hours without defect or malfunction.

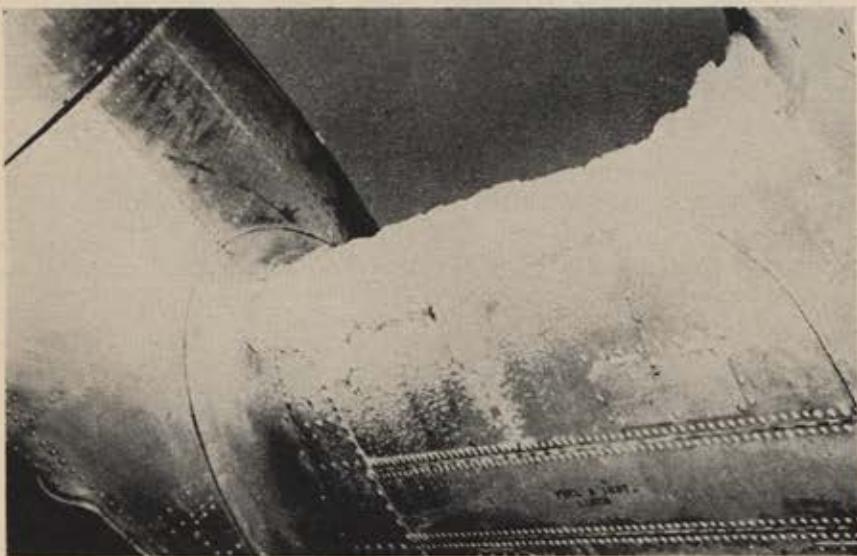
The 210-pound reaction engine burns an aqueous solution of alcohol and liquid oxygen, fed into its combustion chambers by means of a high pressure nitrogen feed system. Each rocket chamber is individually controlled, independent of the others in its operation. The ignition system within each cylinder consists of a small simulated rocket which is fired by a sparkplug and which discharges flame to vaporize fuels entering the main chamber. The combustion process is then continuous, a pressure switch being installed to cut off the igniting rocket immediately after the chamber has been fired. The same type fuel as that used in German V-2 rockets is fed in through two lines from the alcohol and oxygen tanks respectively. The engine is regeneratively-cooled by alcohol circulating through jackets which encircle each combustion chamber.

Pilot Ejection Seat

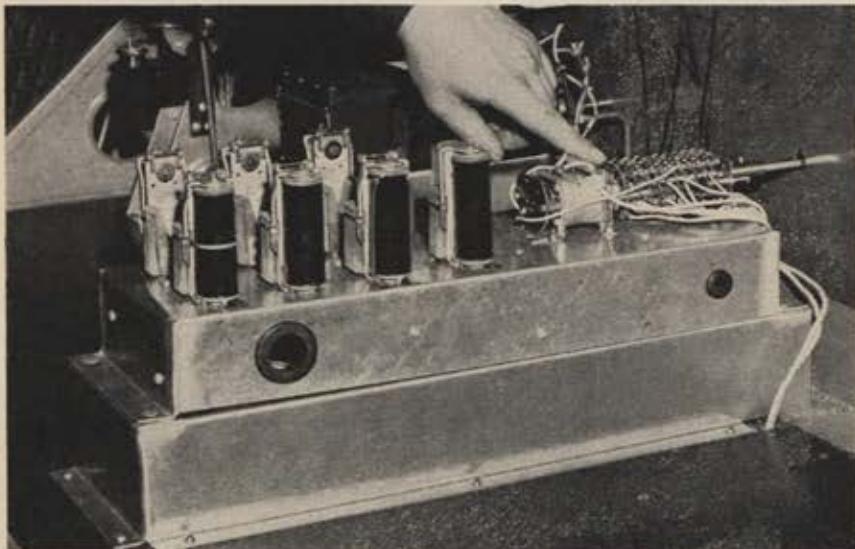
Automatic pilot ejection now is considered a "must" for the high speed aircraft being put into general use.



An early test, using dummy, in the development of automatic pilot ejection. Through ingenious device pilot can leave a disabled ship despite the extreme air pressure created by high speed flight. Automatic controls are a safeguard against blackout.



Top development in the de-icing field is the application of heat to airfoil edges.



Automatic flight mechanism made headlines last year in trans-Atlantic hop of C-54.



Development of JATO (Jet Assisted Takeoff) has reduced runway requirements a third.

TOPS on the TECHNICAL FRONT

(Continued)

This is accomplished through a device (first tested at 6000 feet in an F-61 flying at more than 300 miles an hour) which permits a pilot to leave a disabled aircraft despite the air pressure created by high speed flight. Controls are almost fully automatic, protecting the pilot even if he should lose consciousness during his escape.

When the pilot squeezes a trigger he is automatically thrown clear of the plane while in the ejector seat. Power for discharging the seat is received from a 37mm cartridge which throws the pilot and seat straight up at a speed of approximately 60 feet per second.

In midair another small cartridge is exploded by a time mechanism, thus causing the strap holding the pilot in his chair to be released automatically. Then a small parachute attached to seat opens, pulling it free of the pilot.

Thermal De-icing

With anti-icing systems on postwar planes of the Air Force designed to meet more than 80 percent of the icing conditions encountered in global operations, the top development in the de-icing field is the application of heat to airfoil surfaces.

Thermal de-icing was researched by N.A.C.A. in 1932, advanced in wartime by joint effort, and developed to a practical state since VJ-Day, notably by the Aeronautical Ice Research Laboratory of Minneapolis.

The thermal system is now used for de-icing such aircraft as the C-97, C-82 and C-119 cargo carriers, the F-87 and F-82E fighters, and the B-36, B-50 and B-45 bombers. Three major sources of heat are utilized: combustion heaters (B-50); bleeding air from jets (B-45), and engine exhaust gas heaters (B-36).

Automatic Flight Controller

Automatic flight, developed by the All-Weather Flying Division of AMC and front-paged a year ago in the push-button hop of a C-54 from the US to England, involves a system of automatic devices installed in the aircraft and utilizing radio beams.

Mechanical brain of the operation is the Automatic Flight Controller, a co-ordinated system of aircraft controls, used in conjunction with the A-12 automatic pilot, whose functions can be pre-selected to produce a desired point-to-point flight, including automatic take-off and landing.

The nerve center of the Controller is known as the master sequence selector. To it are fed variable factors such as direction, distance and altitude, much as numbers are fed to a calculating machine, and the selector delivers im-

(Continued on page 68)



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- The big luncheon-banquet honoring the Air Force. Good talks and brass all over the place.
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AFA's annual convention will bring together Hollywood and Broadway, the Pentagon, and Middletown USA.

At the New York affair personalities of the movie and stage capitals will join the gang at the Air Force Reunion in Madison Square Garden, Saturday night, September 25. Bob Hope, Dinah Shore, Al Jolson, Joe E. Brown, Frances Langford, Bill Robinson—all will be at the Garden that night. They will receive from the USAF, in behalf of their fellow performers, official scrolls of appreciation honoring stars of show business who entertained Air Force personnel overseas during the war, and will present the skits and numbers that have made them famous. The AFA committee in charge of the show, led by radio star Tex McCrary, is keeping most of the details "top secret," but we can promise a spectacular program from every angle. On the serious side, for example, a highlight of the evening will be the presentation of special AFA awards to civilians who have distinguished themselves in the field of airpower for national security.

The Pentagon will be represented by top men of the Air Force, led by Secretary Symington and General Vandenberg, who will be special guests of AFA

at a banquet honoring the USAF on Saturday noon. From bases throughout the country Air Force men in uniform will come to New York. On display will be the USAF's new airpower exhibit.

But as usual it will be the guys from Middletown and Podunk and points east and west who will steal the show. Their reunions of wartime outfits will become a convention in itself. Friday, September 24, day and night, has been set aside for these gatherings, from the numbered air forces and equivalent commands to the smaller units—the 586th Bomb Group, 6th Combat Cargo Squadron, 95th Bomb Group, 824th Fighter Group, to mention just a few who have announced reunions on that date. On Friday night the convention program itself gets underway in a reunion atmosphere with a Rendezvous cocktail party which will bring the whole crowd together. On Saturday and Sunday, of course, the guys from Middletown will take care of AFA's annual business—elect new officers, adopt resolutions, present a statement of policy, etc.—with a windup "brunch" Sunday.

It's a rare mixture of business and pleasure that awaits Hollywood and Broadway and the Pentagon, and most of all, Middletown USA.

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Yes, we've allowed a few hours for sack time, but rooms are going fast. To be assured of your reservation clip this coupon and mail it now to Air Force Association Convention Headquarters, 1616 K St. N.W., Washington 6, D. C. Upon receipt of request, you will be mailed a confirmation.

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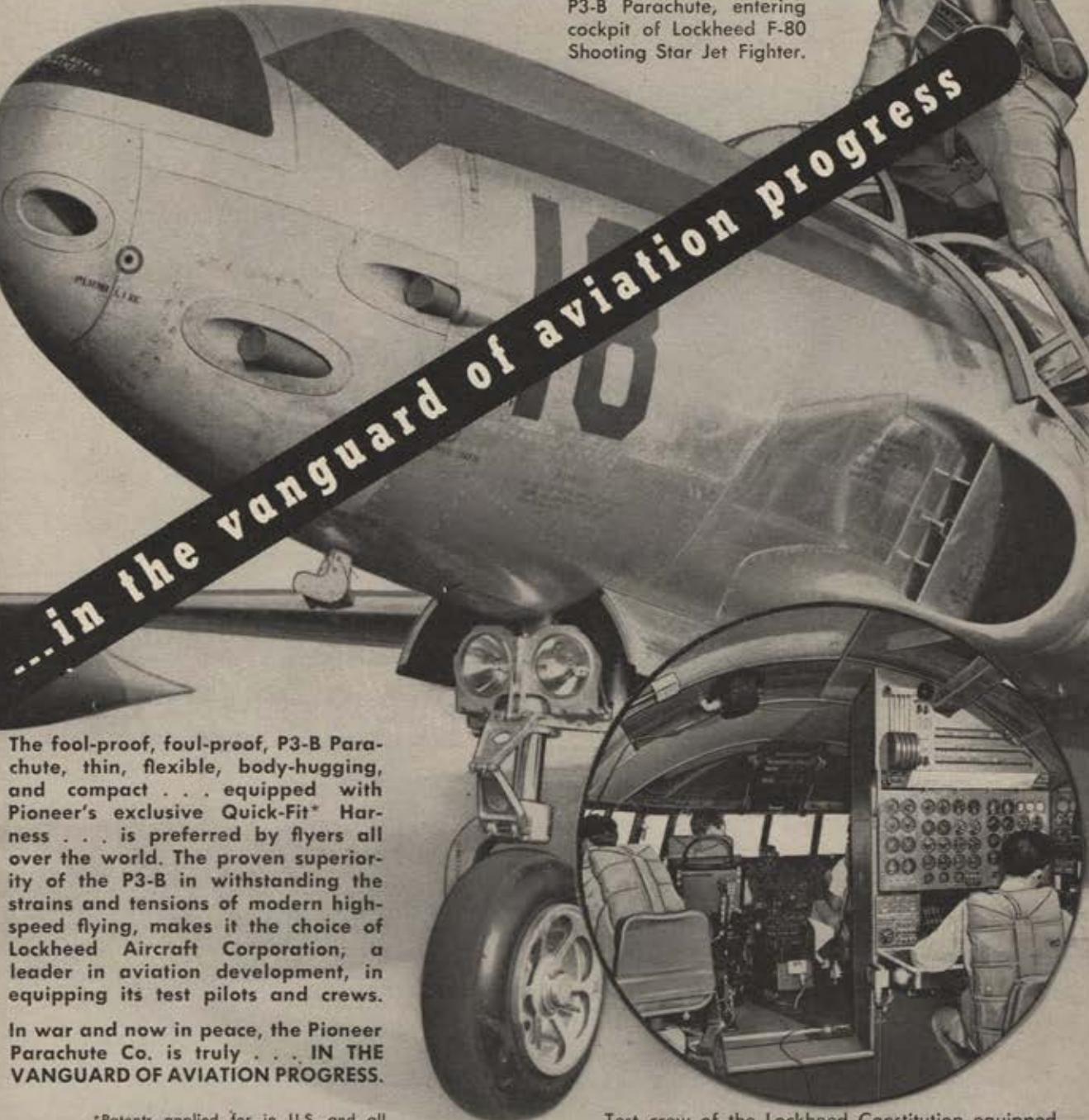
(Mid-town—East Side)

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Suites for 3	\$9.00, 9.50, 10.00, 11.50
\$2.00 additional charge for extra person occupying rooms	

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Test pilot, wearing Pioneer P3-B Parachute, entering cockpit of Lockheed F-80 Shooting Star Jet Fighter.



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NEW RULES FOR AIR RESERVISTS

Rough spots in Air Reserve program may be smoothed considerably by two new reports issued last month



The 319th Reserve Bomb Group proved that the reserve could be made to work with a highly successful two week summer meeting at Stewart Field, New York. Above a "regular" instructor, center, briefs a group of reservists before flight in B-25.

No problem has been more vexing to Air Force policy makers since the end of the war than that of making the civilian components of the nation's air arm operationally efficient—ready to move on M Day. Especially is this true of the Air Reserve. The fact that perhaps nine out of ten members of the Reserve have either lost track of or—even worse—have never known their own status in the program is proof that as yet the officers in charge have fallen far short of their objective. There are several reasons for the general confusion. One of the most important is that the reserve program itself has been subjected to many changes since V-J Day. Top level planning has been revised so drastically in some instances as to constitute almost a complete reversal. There was the philosophy that predominated for a time, for example, that it was better to train a large number of personnel to a relatively low degree of proficiency with the money that was available than to train a smaller number to a high

degree of skill. Now the thinking is just the opposite. Other policies have undergone revisions just as radical. The net effect of this seemingly sloppy planning has too often been reflected in ambiguous and fragmentary directives. At field level it has manifested itself in programs entirely lacking in uniformity. Needless to add, no one knows this better than the men running the show.

These men are the first to admit that mistakes have been made, but in their behalf it must be recorded that they are working in a field largely without precedent. Remember that before an efficient Reserve can be established someone has to determine what the requirements of that Reserve will be, and such a conclusion is dependent upon a great many variables—among them the size of the regular air establishment (which has only recently been determined), technological advances in aerial warfare, and so on. The fact that many mistakes have been made and many policies reversed is perhaps in itself one of the greatest assurances

that we are getting nearer the solution.

Last month, however, two papers were issued which should do much to "freeze" the program, at least temporarily, on the policy level. If this is done, workable ground rules for operational units in the field will undoubtedly follow in short order.

The first of the two documents—the Gray Board Report—was released August 10th. At the direction of Secretary of Defense James Forrestal, the board, composed of an assistant secretary and a general or flag officer from each of the three services, had studied the problem of the reserve components of the Army, Navy and Air Force for nine months. The report was 200 pages long and contained some 90 specific recommendations, most provocative of which was the proposal that the National Guard be placed under federal control rather than operate under jurisdiction of individual states as is now the case. In full appreciation of the debate such a recommendation would, and has, provoked, Secretary Forrestal made it unavoidably clear in releasing the report that as yet it does not reflect the official attitude of the National Defense Establishment—that it will have to be studied by the three secretaries and then referred to Congress for legislative action if approved by the military. Other recommendations contained in the report include the proposal that the Air National Guard be merged with the Air Reserve to form a "United States Air Reserve." Using its concept of national security as a yardstick, the committee held that neither the National Guard nor the Reserves as now organized are capable of effective combat action on M Day and that the Guard's "air units are wholly unsuitable for its peacetime mission." It added that other units should be organized under state control to meet "local needs."

But in consideration of the long stretch ahead before any of the Gray Board's recommendations can be translated into directives, it is perhaps of less importance to air reservists at this time than the second of the two papers released—the findings of the Air Force Staff Committee on Reserve Policy just obtained by *AIR FORCE Magazine*. The staff committee, composed

(Continued on page 60)

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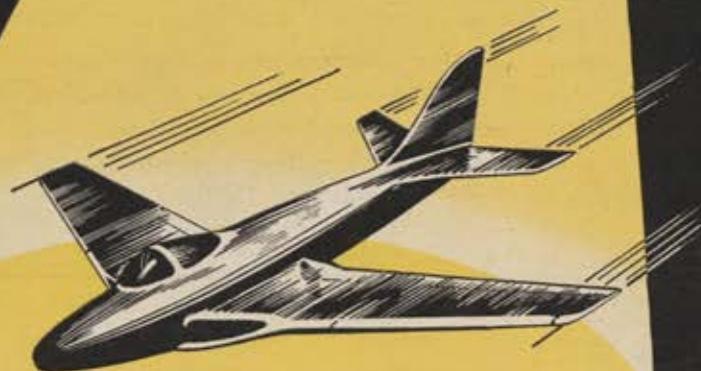
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ACTIVE DUTY FOR RESERVISTS

Opportunities for Reserve Officers to receive three-year tours of active duty with USAF—overseas and in the ZI—have increased considerably according to a recent USAF announcement. Vacancies now exist for officers of almost all grades and occupational specialties. By the end of this year vacancies will exist for 5,000 officers. Another 3,000 officers will be needed by July 1949.

Although a limited number of the vacancies call for rated officers—especially navigators with radar experience—the majority of the positions to be filled call for non-rated officers. A large number of professional, technical, and administrative assignments are available. Most greatly needed are 2nd lieutenants, especially those with university degrees.

A particular need also exists for officers with military or civilian experience in communications, supply, intelligence, budget and fiscal, weather, air installations (construction and maintenance engineers), design and development (MOS 7050), public information, and law.

Officers accepted for active duty assignments will be recalled in the highest grade held prior to processing for separation. They will also have the opportunity of changing their wartime MOS by on-the-job training in a new field or by virtue of their civilian experience since relief from active duty.

Applications for return to active duty should be made on Air Force Form 125 which can be obtained at any regular Air Force, Air Reserve or Air National Guard base, all recruiting stations, or by writing directly to the Chief of Staff, United States Air Force, Washington 25, D. C.

squadron and comparable level will be authorized a maximum of 48 *paid* drill periods annually. Individuals holding such assignment at levels between the group and wing inclusive will be authorized 24 *paid* drill periods annually, and individuals holding such assignment above wing level will be authorized not to exceed 12 *paid* drill periods annually. Members of M Day T/O Air Force Reserve units will be authorized 48 *paid* drill periods annually. Members of non-M Day T/O Air Force Reserve units will be authorized 24 *paid* drill periods annually. Individuals of the Volunteer Reserve not holding M Day assignment will not be authorized inactive duty pay.

► **PROMOTION:** Peacetime promotions of officers of the US Air Force Reserve and the Air National Guard of the US will be permanent promotions, but will not prohibit the temporary promotions of those officers while on extended duty.

Recommendations for promotion of officers will be made by promotion boards consisting of three officers, at least one of which shall be an officer of the US Air Force. Such boards will be appointed by the Chief of Staff, USAF, who may delegate this authority at his discretion. While it is essential that officers qualify for promotion by fulfillment of the requirements stated herein, the promotion board will be granted the widest possible latitude in order that it may select from lists of qualified available officers, those officers whose efficiency and demonstrated ability assure most successful accomplishment of duty in the higher grade. Officers will be considered by the boards in order of seniority. The Chief of Staff, USAF, will notify individuals of promotions.

No officer who has been considered and not recommended for promotion by a promotion board will be considered again by a promotion board composed of the same members or on which a member of the board which did not recommend him for promotion is sitting.

The minimum periods of service-in-grade for promotion are as follows:

2nd Lieutenant to 1st Lieutenant	2 years
1st Lieutenant to Captain	3 years
Captain to Major	5 years
Major to Lt. Colonel	3 years
Lt. Colonel to Colonel	4 years

Subject to the preceding provisions, officers may be promoted a grade higher than that held upon attaining the number of credits specified below, except that the requirements for attainment of credits may be waived in those cases where officers have clearly demonstrated qualifications by actual performance of duties by the higher grade for a minimum period of six months on active duty between December 7, 1941, and the date of this Regulation. Subsequently the requirement for the attainment of credits may be waived in those cases where officers

(Continued on page 66)

NEW RULES FOR AIR RESERVISTS

(Continued from page 58)

of seven reserve officers and six regulars, met at the direction of Secretary of the Air Force W. Stuart Symington for five days in Washington last June. They "recognized" 22 basic reserve problems and made specific recommendations on each. All but three of their proposals have already been studied and approved by the Air Force's Chief of Staff, General Hoyt S. Vandenberg, and are now in the process of being published as Air Force directives.

Herewith, in their first public release, are the more pertinent of the board's findings:

► **INACTIVITY DUTY TRAINING PAY:** Reserve personnel assigned to T/O units will be in training pay status only when attending scheduled training periods of the unit to which assigned. A unit training period will not be considered as such for pay pur-

poses unless at least 60 percent of the assigned officer and enlisted strength is present for duty. Training periods will be scheduled so as to provide 48 periods annually, of which not less than 2 nor more than 6 will be conducted in any calendar month. Not more than one training period per day per unit will be authorized for pay purposes.

In order to qualify for inactive duty pay, reserve personnel who have been given M Day assignments must be physically present at the station of their mobilization duty assignment or at such other place where equivalent training may be accomplished, must actively participate in training pertinent to such assignment, and must remain physically present and engaged in such training for the specified period. Forty-eight such training periods annually will be provided. Rated personnel with M Day assignments, other than aircrew assignments, will not be considered to have participated in a training period for pay purposes by virtue of individual flight training.

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Air University has no tradition and boasts of it

The USAF's Air University headquartered at Maxwell Field, Ala., has accepted two rather grim precepts: first, that in another war we will be struck by the enemy not at an outpost like Pearl Harbor, but with devastating fury at an industrial point—or points—within our own borders, and second, that if we are to survive such an attack we must be ready to retaliate almost instantly with far greater fury than that possessed by the aggressor. It is on these two assumptions that the Air University composed of three schools in the vicinity of Montgomery, one in Texas and one in Florida, is basing all of its thinking and planning

for the future. Students keep in mind at all times that wars are fought on the battlefield with a degree of success directly proportionate to the thoroughness with which they are planned beforehand.

Entering its third year, the university now has an enrollment of several thousand. Its goal: To graduate from at least one of its schools not only as many colonels and generals as possible, but also as many of the 15,000 World War II officers who have been absorbed by the Air Force and who, because of their wartime specialization, are in especial need of broader, more generalized education.

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A-BOMBS and AIR STRATEGY

(Continued)

a small number of bombs." And it is apparent that each situation requires a distinctive strategy.

Situation One, "American monopoly with a small number of bombs," is certainly that situation in which we found ourselves immediately following the end of the war. It may be the situation we are in at this writing, depending on, first, our current rate of production, and second, the old question of how many bombs is a "small" number. Although we must know the answers to these questions to determine just how long this situation will last, if it is still with us, we do know that it is bound to be very limited in time. For example, even if our present rate of production of atomic bombs should be as low as two a month (a wholly random figure) the continuation of that rate would result in 10 years' time in the accumulation of the materials for some 240 atomic bombs, which could hardly be called a "small" number.

Situation Two, "American monopoly with a relatively large number of bombs," would of course not occur at all if our monopoly should be broken by a rival state in the very near future. But if the more optimistic predictions (from our point of view) concerning Russian capabilities to produce the bomb are true, this situation might last from five to ten years, possibly longer. The military strategy dictated by this situation is distinctly and perhaps drastically different from Situation One.

Situation Three, "the end of monopoly but with significant American superiority," reminds us that what counts is not the atomic bomb alone but also the vehicles and devices connected with its use. It is too generally forgotten that our position vis-a-vis the Soviet Union in atomic warfare will be much better on the day the Russians produce their first bomb than it is at present, for the simple reason that we will then have many more bombs, perhaps several times as many, as we do now. It may be true that our monopoly is a "wasting asset," since it is bound sooner or later to run out and we are

always getting closer to the day it does so; but our *superiority* will increase considerably before it begins to wane, may continue to increase even after the Soviet Union is producing bombs, and may be a long time in waning thereafter. If the raw materials available in the world for the production of atomic bombs are as limited as some seem to think, this situation may be a permanent one; that is, it may not in our time give way to the fourth possibility.

Situation Four, "The end not only of monopoly but also of significant American superiority," envisages the two-way war with atomic bombs which is most discussed even though most remote in time. How remote must remain for the moment a huge question mark. Certainly we must include it in our thinking as a possibility to be reckoned with even within the next 10 years. But within such a time period it is hardly the most likely contingency, and at any rate is not the one for which our policy-makers will plan exclusively.

It is of course very difficult to define in simple terms what superiority or the lack of it must involve. For example, a 3-to-1 margin of superiority might be very significant if the total number of bombs in existence was reckoned in scores or even hundreds, but would be much less significant if the number was reckoned in thousands, since in the latter case the side with the smaller number might nevertheless have enough to win decisive results in a surprise attack. And we must never forget that the side which has the best means of delivering the bomb—including the use of "sabotage" devices—has an advantage which may either implement a superiority in numbers or offset an inferiority in numbers of bombs.

Next month, in the second of this series of articles the author will analyze the situation in which the US enjoys a monopoly in A-bombs, either with a small number or a relatively large number of bombs—two sets of conditions demanding distinct "and perhaps drastically different" types of military strategy.—THE EDITOR.

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NEW RULES FOR AIR RESERVISTS

(Continued from page 60)

have clearly demonstrated qualifications by actual performance of duties of the next higher grade for a certain specified period of time based on the following table of grades:

Colonel	24 months
Lt. Colonel	18 months
Major	15 months
Captain	12 months
1st Lieutenant	6 months

For promotion to 1st lieutenant, officer shall attain 500 credits while in the grade of 2nd lieutenant. For promotion to captain, officer shall attain 800 credits while in the grade of 1st lieutenant. For promotion to major, officer shall attain 1500 credits while in the grade of captain. For promotion to lieutenant colonel, officer shall attain 1500 credits while in the grade of major. For promotion to colonel, officer shall attain 500 credits while in the grade of lieutenant colonel.

For attendance at scheduled assemblies for instruction and training (maximum annual credit—250)—5 credits will be awarded for attendance at each such assembly.

For attendance at 15-day field training exercises or maneuvers (maximum annual credit—150)—150 credits will be awarded for attendance at and completion of each field training period.

For participation in tours of active duty or temporary duty, excluding field training, but including attendance at service schools (maximum annual credit—250)—25 credits will be awarded for each week of such duty or a pro rata share for completion of any part.

For successful completion of extension course subcourses (maximum annual credit—260 credits). For each extension course subcourse successfully completed, the number of credits specified for such subcourse will be awarded.

For active participation in training or duty with troops to include flying, administrative duties, instructional duties, duty as a member of a court or board, and similar miscellaneous participation in military training or duties (maximum annual credit—250)—1 credit for each hour of such duty or training; 1 credit for each hour of preparation by instructor, but not to exceed 3 times the number of hours required for actual instruction; 1 credit for each hour of flying time recorded (AF Form 1) pursuant to training directives. Maximum daily credits—5 credits.

► **TYPES OF AIRCRAFT:** Procurement of aircraft for air reserve training will include 207 A-26s, 299 C-46s, and 47 C-47s. A minimum of 50 percent of the A-26 type aircraft will be provided with dual controls. In addition to this allocation, 191 B-25s will be assigned.

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TOPS ON THE TECHNICAL FRONT

(Continued from page 54)

pulses motivating in proper sequence the mechanical functions of the airplane.

Preparation of a plane for automatic flight consists of placing the aircraft in position on the runway with brakes locked and engines idle. Then the only manual operation is performed—a push of the button which activates the Automatic Flight Controller. That unit then takes over completely all direction and operation of the plane. Takeoff is initiated by automatic move-up of the throttle, the brakes are unlocked after eight seconds, and the aircraft rolls down the runway for the takeoff. At 800 feet a pressure stat functioning on barometric pressure operates to retard the throttle, the wheels are retracted and flaps raised automatically, and the aircraft climbs to cruising altitude. At the pre-designated cruising altitude the pressure stat again adjusts the throttle to cruising speed, the magnetic heading control is cut in, an air log starts counting air miles, the plane heads in the correct direction, and the automatic altitude controls are cut in. Upon approach to destination, signalled when the air log runs down, the auto-pilot homes on the selected radio compass station. Upon passing over a cone of silence marker the throttle is automatically cut back, with the automatic pilot being controlled by a compass locator station at the outer marker, and a down signal is fed into the elevator control circuit. Upon reaching an altitude of 880 feet, the pressure stat initiates the automatic operations to lower landing gear and flaps, cutting back the throttles and cutting in automatic altitude control, with the aircraft still homing on the locator station. Upon touching the runway the throttle automatically cuts back and the brakes are applied automatically.

Jet Assisted Takeoff

Takeoff space requirements have been reduced considerably (in some instances to nearly one-third the distance normally required) through application of JATO (jet assisted take off) for added thrust.

Auxiliary engines add the extra boost in power. In the F-80 (on which initial tests were made by AMC), for example, JATO units are attached to the fuselage just aft the trailing edge of the wing. On the takeoff run the rockets are fired, delivering half again as much thrust as the engine is already producing. This unit, weighing 200 pounds, produces a 1000-pound thrust for approximately 12 seconds. Other units have been tested which, when perfected, will deliver up to 3000 pounds thrust.

First researched by the Air Force some nine years ago, JATO rocket mounts probably will show up as standard equipment on all new jet aircraft. Wide future use is also expected on conventional cargo and heavy bomber types.

GCA Landing System

Ground controlled approach, as an effec-

tive method of directing aircraft in landing procedures during inclement weather or overcast, was first used during the war and has been developed and perfected since VJ-Day.

GCA crews now use a radar set that is 15,000 pounds lighter than those used during the early days of ground controlled approach development. The set is used in conjunction with new ground surveillance radar and represents considerable improvement in airport traffic control facilities.

By combining the six indicators used in previous equipment, it is now possible to perform the functions of controlled approach with only two operators. As a result, traffic handling capacity has been increased by almost 200 percent, or by a total of 40 aircraft an hour.

Rigid Glider Tow Bar

Glider tow, traditionally limited to contact flying conditions, is now possible in instrument flying weather by the development of a rigid metal bar to replace the conventional tow rope.

Nazi documents captured by the Air Force produced the basic design (though the Germans had little success with rigid glider tow) and AMC technicians have modified and perfected the original design to produce the current 48-inch metal tow bar.

The bar has a universal joint at one end and a 12-inch ball retained in a housing of brake lining at the other end. The ball housing is rigidly attached to the tail of the tow plane, in the same position employed with the normal tow rope.

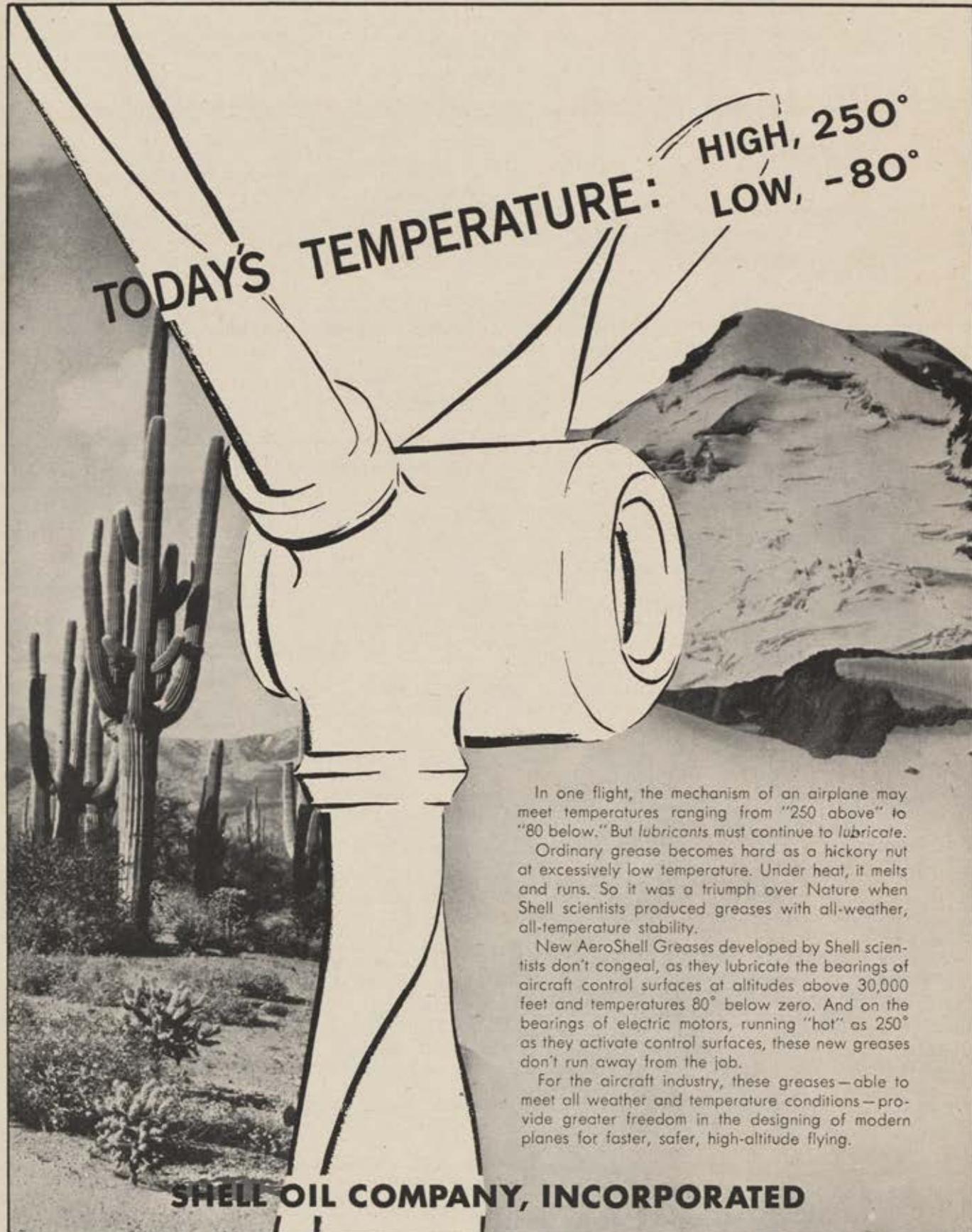
Highly successful tests with the CG-15A glider reveal that tow plane and glider operate as a single unit. Tests in towing the F-80 indicate the potential importance of towing jet fighters into combat areas, thus enabling them to conserve their own power for actual fighter activity.

Three Dimensional Photography

Three dimensional photography, which adds depth and height to a picture, dates back to the beginning of photography itself, and achieved military importance in World War II. Postwar advancements have given it new significance.

Most recent development is the Somme S-7 continuous strip camera. With it film moves continuously across the focal plane at a rate of speed which is synchronized to the speed of the plane, the altitude, the focal length of the lens, and the amount of light. When the film is studied through a specially designed viewer, a stereoscopic effect is achieved.

Other new developments: a small-size projector that probably will result in a portion of all future slide films for Air Force training purposes being made in three dimensions; "lenticular" photography, which produces prints that can be viewed in three dimensions without the need for special viewers.



In one flight, the mechanism of an airplane may meet temperatures ranging from "250 above" to "80 below." But lubricants must continue to lubricate.

Ordinary grease becomes hard as a hickory nut at excessively low temperature. Under heat, it melts and runs. So it was a triumph over Nature when Shell scientists produced greases with all-weather, all-temperature stability.

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AIR POWER IN THE COLD WAR (Continued from page 27)

Carrier Squadron from Elmendorf Field, Alaska, with a load of 10 tons of flour aboard. Unlike many other Vittles pilots, the Alaskan lads do not gripe about the weather in Germany. It's better than they're used to, they say. More than 90 percent of the flights thus far have been at least partially on instruments, but the Elmendorf Field gang claims this is "comparative sunshining."

Copilot 1st Lt. Philip S. Shoemaker got a kick out of seeing some of the targets his outfit bombed around Berlin during the war. It's his first trip back. But it was all new to the pilot, 1st Lt. James D. Jelley. He was in the Southwest Pacific during the war and was shot down over Rabaul. S/Sgts. William E. Mitchell and Thomas L. Stephens made up the rest of the crew.

Like other pilots on the "Berlin coal and flour run," they insist that the Russians are jamming the radio beam. It's true, but General Smith said it was not intentional. Radio beams in this corner of the world have a tendency to wander.

But whatever its cause, the interference does not bother the airlift pilots. They simply tune in on the Soviet broadcasting station in Berlin, which is always true.

One of the complications of Vittles is the fact that several types of planes are used. Our C-54s operate from Rhine-Main airfield at Frankfurt—formerly home base for the trans-Atlantic Zeppelins. Most of the C-47s take off from Wiesbaden, not far away, and the rest from Rhine-Main.

Because the four-engined Skymasters are faster than the 47s, the aircraft are sent off from each field in blocks. It takes about four hours to clear a block from either field and send it down to Templehof in Berlin, and eight hours for a complete turnaround. Thus, the goal is three flights a day for each plane on the round-the-clock schedule.

This puts a loaded airlift plane in Berlin every four minutes—or a take-off or landing every minute of the day or night. Officials hope to cut this to a delivery every three minutes.

Col. Glen Birchard, in charge of operations at Rhine-Main, keeps the lift moving promptly. When empty craft come back from Berlin, they taxi to their hardstands at almost the same instant that a truck-trailer carrying their next trip's load arrives there. The plane is gassed and loaded at the same time. Enough fuel is carried for the 600-mile triangular course, so that the craft sim-

ply unload at Berlin. Recently, however, many of the planes have been evacuating some DPs and furniture of military or civil personnel who have left in recent months for redeployment.

Maintenance is a great problem in a continuous operation like this. Mechanics arrive on every plane coming from the States, and they keep about 65 percent of the airplanes flying each day. General LeMay paid tribute to the ground crews in an interview with this reporter, declaring: "The mechanic with a wrench is the backbone of this operation."

Flight crews also have been taking it. Many of them are on duty 16 hours and then off 16, 7 days a week. Normally they fly two missions a day—"double whammies" they call them. Occasionally, a pilot does a "triple whammy."

Air traffic is a terrific problem. To keep track of the large number of craft, the tower calls them not just by their number but "Big Willy 4509," "Little Easy 6054," "Big Easy 1616" or "Little Easy 9709." Translated, "Big Willy" means a westbound C-54, and "Little Easy" an eastbound C-47, and so forth.

The craft fly a 20-mile corridor from Frankfurt-Weisbaden to Berlin, then out along a similar air corridor to Hanover, thence south to their starting point. British aircraft also use the Hanover-Berlin corridor from closer-in bases at Wunstorf and Fusseberg. They fly in and out at low altitudes, while the American planes go upstairs on their return trip.

Yorks, Dakotas and Sunderland flying boats are employed by the RAF. General LeMay said he didn't feel it would be worthwhile to bring in US Navy Mars or other flying boats to augment the lift. Lighters must be used to unload the Sunderlands on Berlin's lakes.

In order to meet the delivery goal of 5000 tons a day, the "LeMay Coal and Food Company" and its British partner must step up operations considerably. Another field in Berlin to augment Templehof and Gatow is planned.

The job can be done, if the blockade continues and the orders are to "pour it in." The Russians can try to stop it, and if they really intend to interfere with the airlift—by such means as air maneuvers in the corridors, anti-aircraft practices, paratroop operations or barrage balloons—they could play havoc with Vittles. That, however, probably would mean war, with a shift of USAF operations from cold war to a shooting war, and from the C-47s to B-29s.



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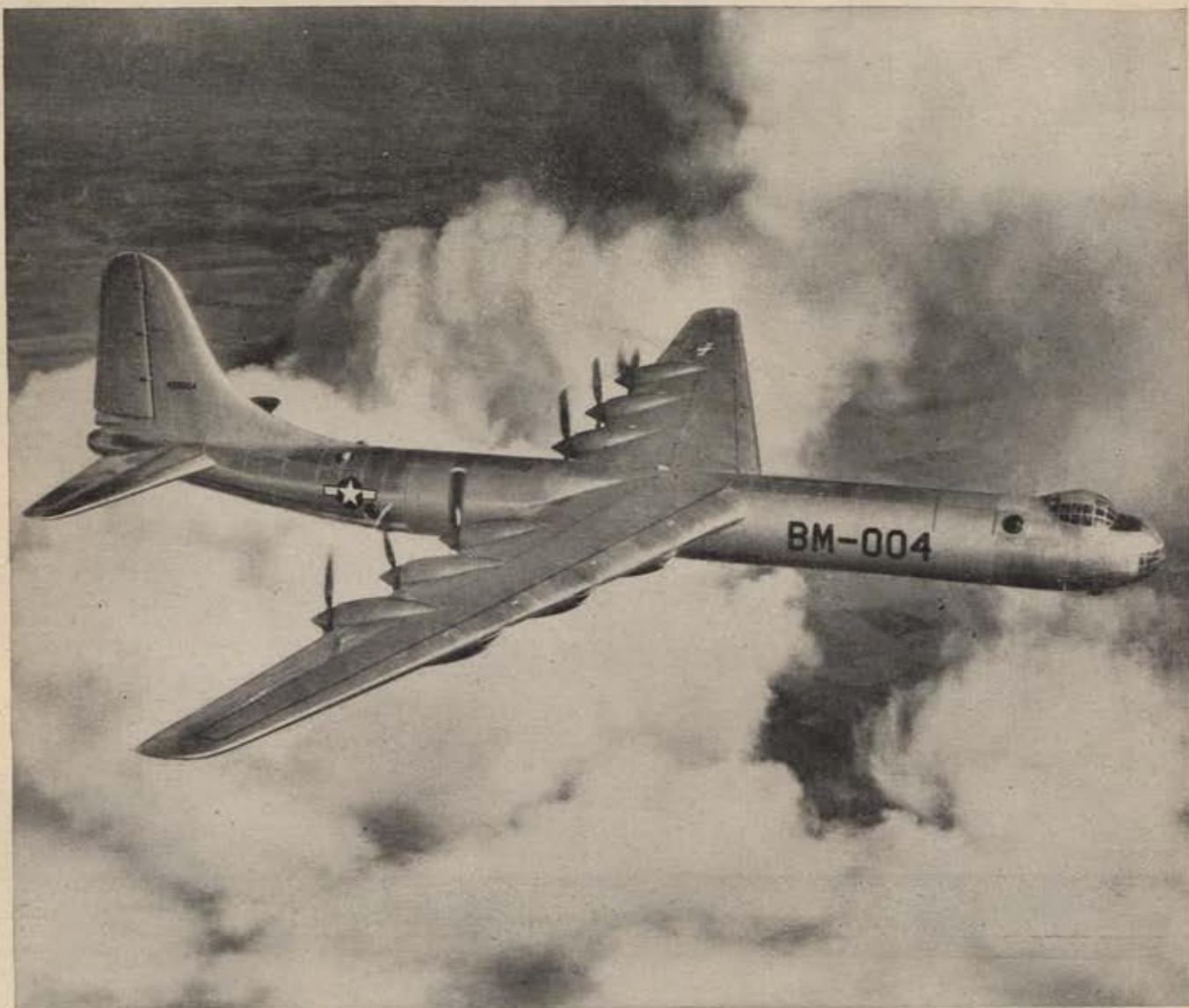


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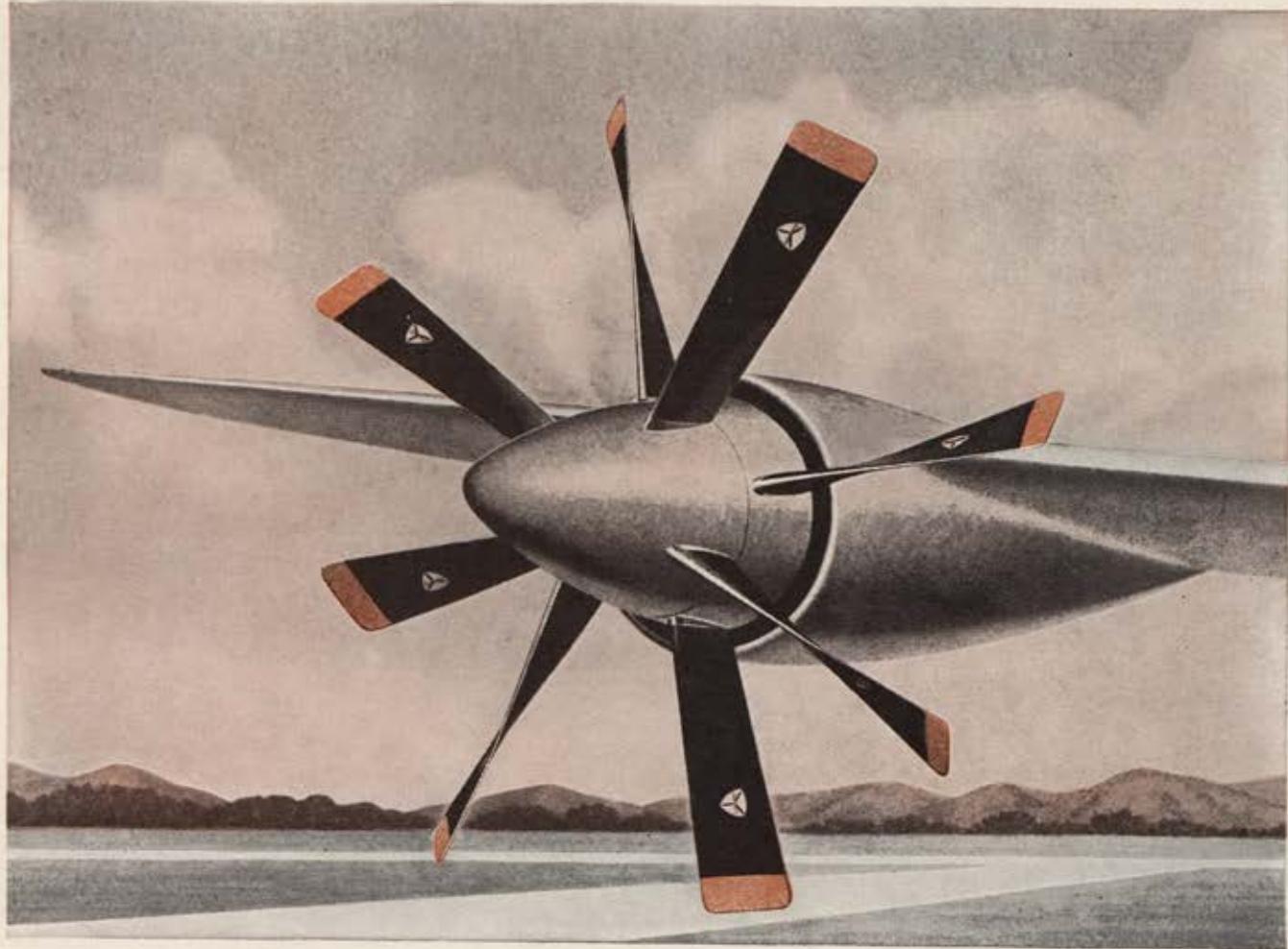
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