

# AIR FORCE

THE OFFICIAL JOURNAL OF THE AIR FORCE ASSOCIATION, MARCH, 1950



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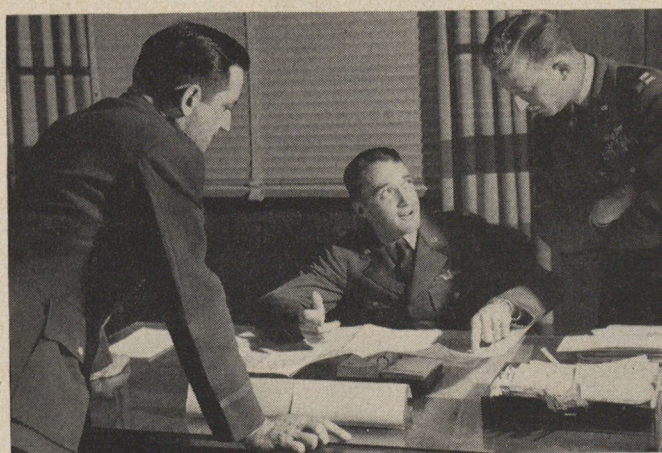


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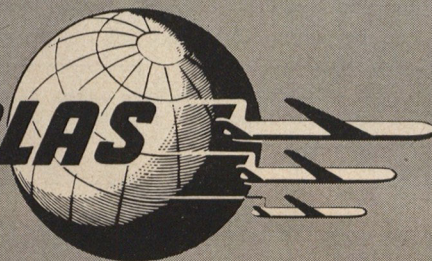
Whatever the job—wherever the mission—the new Douglas *Liftmaster* will carry on Douglas tradition for the finest in dependable air transportation.

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# AIR FORCE

THE OFFICIAL JOURNAL OF THE AIR FORCE ASSOCIATION

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## THIS IS AFA

- The Air Force Association is an independent, non-military, airpower organization with no personal, political or commercial axes to grind; established and incorporated as a non-profit corporation February 4, 1946.

- **Active Members** are men and women honorably discharged from military service who have been assigned or attached to the US Air Force or its predecessor services, or who are currently enrolled in the Air Force Reserve or Air National Guard. **Service Members** (non-voting, non-office holding) are men and women currently assigned or attached to the US Air Force. **Associates** (non-voting, non-office holding) are men and women not eligible for Active or Service Membership who have demonstrated an interest in furthering AFA's aims and purposes, or in proper development and maintenance of US airpower.

## ITS OBJECTIVES

- To preserve and foster the spirit of fellowship among former and present members of the Air Force, and to perpetuate the identity and group solidarity of wartime Air Force units large and small.
- To assist in obtaining and maintaining adequate airpower for national security and world peace.
- To keep AFA members and the public at large abreast of developments in the field of aviation, and to stimulate community interest in Air Force activities and installations.

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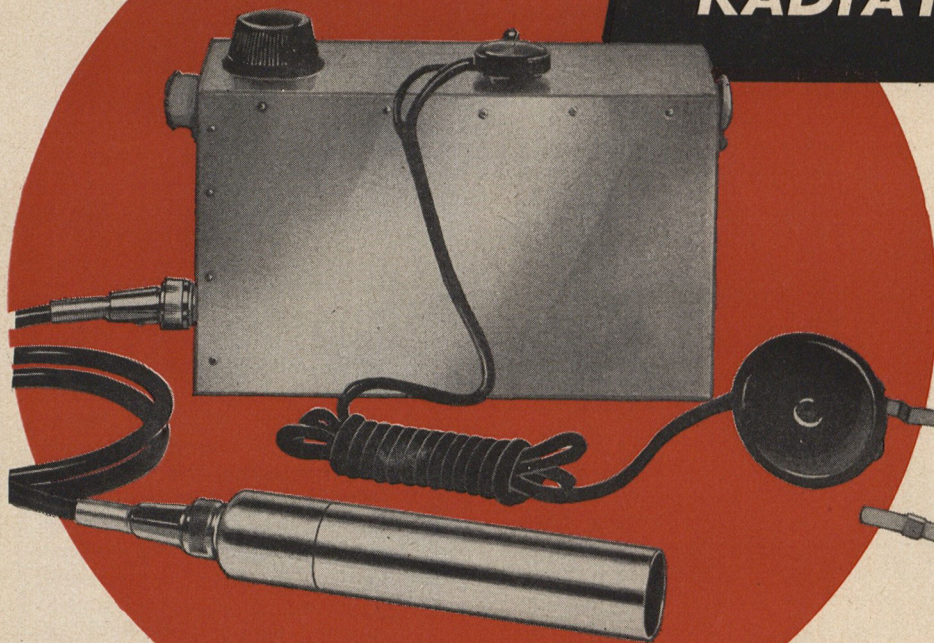
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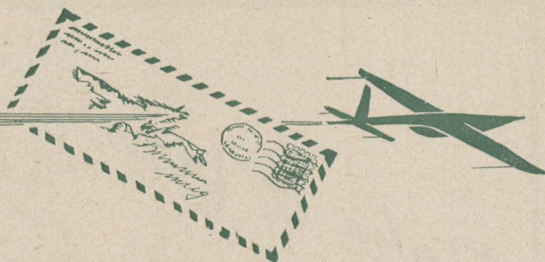
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# AIR MAIL



## Globe Trouble

*Gentlemen:* On page 22 of the January issue in the Editor's note preceding the article "Air Rescue in Jungle Country," you state: "on the other side of the world, the slow, island hopping advance was already underway in the jungles of the South Pacific where even the flight surgeons had to hack their way. . . ." The story is about Dutch Guiana which I believe most of us regard as being a small country in the northern part of South America.

Robert V. Guelich  
Akron, Ohio



*Gentlemen:* I was quite interested in the article, "Air Rescue in Jungle Country" which appeared in the January issue of Air Force Magazine. I was interested because I WAS THERE, as an administrative officer at Zandery Field from which the ill-fated plane took off. I am sure that your chronology is a few months off. You imply that all this occurred in December 1942, but it didn't. I had been transferred out by then. The crash was sometime in April or May 1942, when things weren't nearly as far along as the opening of the article indicates. In those days the loss of a plane, even a venerable B-18 was a real tragedy. As far as the facts in the article itself are concerned, they are certainly right. "Cap" Schneller ought to know what he did himself.

John W. Stock  
Pompton Plains, N. J.

• The editors of Air Force plead "nolo contendere."

## Reserved about Reserve

*Gentlemen:* I enjoy Air Force Magazine very much—I find it the only source that keeps me informed accurately on what goes on in the Air Force. I feel that the future of the Air Force Reserve very much depends upon the Air Force Association. It is important that AFA keep reserves informed—and very important it keeps the Air Force informed. I am a staunch defender of Air Power within my circle of friends—and believe that the primary defense and offense of the country rests in the Air Force's hands—but not without some inward misgivings. The Air Force has badly neglected its reserves. I was and am disappointed

that the AFA has not taken a firmer stand along this line. While I will admit the "new" Air Force Reserve program shows considerable effort—it still is far from being adequate. True, if reserve personnel are men on active base—they may take part in worthwhile projects—but this leaves out 99% of the rest. We have a Volunteer Unit here—but so far it has operated poorly with no help from the Air Force. I know many Reserve Officers who are disgusted with Air Force handling of reserve affairs. It seems rather inconsistent to see the Air Force advertise for new men, yet make little attempt to keep highly qualified and trained reserves interested. This certainly isn't good business practice—but perhaps it is asking too much to have the Air Force act a little business-like. Let it be understood that I am not just a disgruntled "has been" who likes to hear himself talk. I spent six years in the Air Force, and have been out five years. I am not interested in any personal angle—as far as I am concerned, it is not necessary to offer a couple days pay a month—or a pension to retain my interest, but I am interested in seeing the Air Force Reserve as a group, getting a really effective program for the good of the country. It may be that everybody is out of step but me—but I am sure many reservists feel the same as I do. Since I believe that AFA is the one effective force that can bring this about, I am voicing my opinions to you.

Fred Homan  
Fresno, Calif.

## Old Fashioned

*Gentlemen:* Page 47, November issue, half way down the page it says: "FOR A WEEK THE NAVY VASSALATED . . . ." My NAVY dictionary says, "vacillated."

Charles L. Funnell  
New York, N. Y.

• That's the trouble with the Navy—always going by the book and a darned old one at that.

## Swish, er Sweep

*Gentlemen:* After looking over those houses in the November issue, I came



to the conclusion that you have no taste. First of all they look like homes. Sec-

ond, they have no dramatic swish, er, sweep, nor do they remind me of an airport. In fact the darn things look as if they might be comfortable. As for complaints that the Technique Section is too technical, they remind me of the guys who used to come to Air Corps Supply and show me "this thing is on the plane in the whatchamacallit and I want to get another one". And if you had to look in more than one place, you were one of those "Not in stock" dopes. Can't please everyone, can you?

James J. Harvey  
New York, N. Y.

## Plane Wipers

*Gentlemen:* Recently several friends and myself had a discussion about windshield wipers on airplanes. Some contend they have them, but use them only on taking off and landing. Others thought the speed is so great that wipers would be impractical. To settle this argument I would appreciate your opinion on this matter.

Hannah K. Vuolo  
Middletown, N. Y.



• Commercial airliners and some bombers definitely use windshield wipers. Naturally, they would be a little impractical on fighters.

## Hear You Talking

*Gentlemen:* Normally do not write letters to the editor, but in this case will make an exception. It is worth money to have a magazine willing to express honest opinions. I enjoy each issue.

John Siberell  
Chicago, Illinois

*Gentlemen:* I would like to say how timely and well-chosen the subject matter of Air Force Magazine has been during the past three years, most of which time I have been in the Navy. It has always been a source on which to base discussions with persons well versed on the Navy side of the picture. Such articles as the one published several months ago giving statistics on damage done to Japanese shipping in the Pacific by Air Force land based bombers and fighters hit home.

Navy friend  
U.S.S. Midway



Take it from  
the King-  
or Miss Olivieri



A hundred and seventy years ago, or thereabouts, the fabled King Kamehameha brought peace and order out of rampant chaos in the Hawaiian Islands with an army of loyal and devoted warriors whom he had carefully equipped with the finest weapons and the most modern vessels of the day. The conquest over the forces of evil was bloody, but when the battle was won, so the story goes, crime in the islands vanished, the threat of foreign invasion (which was real even then) was ended, and it became possible for "women and children to sleep again on the highways."

Now of course in the 1780s the good king had no airplanes in his army. But the history of his accomplishment is careful in the point that he *did* have the most advanced instruments of war the designers of his day could fashion, for he was firm in the conviction that peace and lasting security were dependent on just these things.

The young lady in the picture above has the same conviction. She is Miss Louise Olivieri, a native of King Kamehameha's Hawaii. Miss

Olivieri is a hostess for Hawaiian Airlines—a commercial line that flies among the eight islands of the Hawaiian group. Listed as standard equipment in her plane, and indeed all planes of H.A. is AIR FORCE Magazine—the one magazine in the United States that has air preparedness as its first and foremost concern.

Miss Olivieri reports that AIR FORCE is one of the most popular magazines in her flying library, and well it might be. For was it not the Hawaiian people who in December, 1941, suffered first when our defenses were pathetically unready?

The people of Hawaii learned the hard way what airpower can do in modern war. But there are some among us who *still* haven't caught on. There is still much to be done in acquainting the American public with the mission of the airplane in this air-atomic age. Miss Olivieri is doing her part by seeing that every passenger in the planes she flies has an opportunity to read AIR FORCE. The question is, what are **YOU** doing?

**SEE THAT THIS COUPON GETS IN THE HANDS OF AN ELIGIBLE MEMBER**

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Identification

Air Force.....

Command.....

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# Airpower in the News

U. S. MILITARY ESTABLISHMENT SHOULD BEGIN AT ONCE THE DEVELOPMENT OF HIGH SPEED TURBINE-POWERED TRANSPORT AND CARGO PLANE PROTOTYPES, in the opinion of Rep. Harry R. Sheppard (D., Calif.), ranking majority member of the House Subcommittee on Military Appropriations. "We are certain to need thousands of transports in any future war. These cannot be obtained by requisitioning planes from the airlines, which now operate a total fleet of just 1,100 planes," he wrote in February issue of AIA's "Planes."

WILLIAM E. VALK WAS RE-ELECTED PRESIDENT OF MANUFACTURERS AIRCRAFT ASSOCIATION at annual meeting in New York City recently. . . Col. A. D. Tuttle, M. D., medical director of United Air Lines, is the recipient of 1949 John Jeffries award sponsored by Institute of Aeronautical Sciences "for outstanding contributions to advancement of aeronautics through medical research."

A DEVICE FOR CONTROLLING AS MANY AS 17 CAMERAS IN ONE AIRPLANE AND FIVE IN ANOTHER has been developed by two research scientists at Northwestern University's Technological Institute. The synchronized operation system is designed primarily to aid the testing of experimental airplanes.

NORTH AMERICAN AVIATION'S T-28 advanced trained for AF has successfully completed its Phase One flight and ground tests and is now undergoing Phase Two tests at Edwards AF Base, Calif. . . Goodyear Tire and Rubber Company has notified National Air Race management that the company will not continue its sponsorship if the 190 cubic inch class at National Air Races In Cleveland this year.

STRIDES TOWARD COMBAT READINESS were made by USAF during fiscal 1949 despite numerous changes in its strength goals, the recently-released Second Annual Report of Defense Department revealed. Principal advancement was made by the "high priority" Strategic Air Command. . . Further emphasis was placed on AF's long-range research and development activities by the establishment last month of a new staff section at USAF Headquarters, which will supervise USAF field activities supporting research and development, and the formation of an additional USAF major command, Research and Development Command.

AF PILOT EJECTION SEAT is now being tested at speeds up to 1,100 miles per hour with dummy-loaded seats at Edwards AF Base. . . A new supersonic ram-jet engine test chamber which can simulate flight speeds up to 2,600 miles per hour--about four times the speed of sound--and altitude conditions up to 80,000 feet, has been developed for AF by Wright Aeronautical Corp.

USAF'S NEWEST JET PENETRATION FIGHTER, North American YF-93A, successfully completed its initial test flight last month at Edwards AF Base, remaining aloft for 43 minutes. . . Basic designations of USAF's fighter groups have been changed to indicate more clearly the primary mission of each group. Orders have been issued reclassifying USAF fighter groups as fighter-interceptor, fighter-bomber, fighter-all weather and fighter-escort units.

AF WILL SOON EXPLORE POSSIBILITY OF TRAINING PILOTS AND TECHNICIANS UNDER CIVILIAN RATHER THAN MILITARY INSTRUCTION while they are receiving their basic training. . . Air National Guard officers now may apply for pilot training in USAF flying schools.

AF FIGHTER UNITS WILL COMPETE IN GUNNERY MEET at Las Vegas AF Base, Nev., March 29. The 16 teams from AF groups will include representatives from units now

(Continued on page 8)



# **Airpower in the News** CONTINUED

stationed in U. S., Alaska, Europe and the Far East. . . Directorate of Flying Safety, presently located at Langley AF Base, Va., will move in near future to San Bernardino Air Depot. . . Air Force strength totaled 415,000 on December 31.

A TRAINING RECON HOP OF 30 HOURS' DURATION IN WHICH THE AIRPLANE COVERED 14 STATES AND 7000 MILES has been negotiated on a non-stop, unrefueled basis by a Convair RB-36 manned by the First Strategic Reconnaissance Sqdn. of Fairfield-Suisun AF Base.

AF MEDICAL AND DENTAL RESERVE OFFICERS ARE NOW ALLOWED TO VOLUNTEER FOR SHORT PERIODS of active duty of from one to 29 days a month, but not more than 90 days of active duty during fiscal year. . . A second Lockheed C-121 Constellation has been converted to an executive-type transport for VIPs on official missions. . . Bob Hope received the AF Exceptional Service Award from Sec'y Symington on Feb. 3 in a ceremony in Mr. Symington's office. . . AFA's President Bob Johnson has been advanced to the rank of Lieut. Col. in AF Reserve.

A FIVE-HOUR CROSS-EXAMINATION OF NAVY SEC'Y MATTHEWS JAN. 30 ESTABLISHED THAT ADM. DENFELD WAS DISMISSED BECAUSE OF "AN HONEST DIFFERENCE OF OPINION" on Navy policies, and that no inefficiency was involved, according to Sen. Millard E. Tydings (D. Md.), chairman of Armed Services Committee. This, Tydings asserted, "closed" the investigation of the Admiral's ouster, so far as his committee was concerned. . . With the "Mighty Mo" out of the mud, the Washington Daily News quotes Adm. Blandy as believing "battleships will stage a comeback but we should mothball the Missouri to make room for more carriers."

FIRST SUCCESSFUL AIR-TO-AIR ROCKET--small enough to be carried in quantity by its mother aircraft, yet fast and powerful enough to destroy any known plane with direct hit--has been developed by Navy Bureau of Ordnance. . . A calculating machine designed to "flight tests" a new airplane before it is constructed has been built for Navy by engineers at MIT. . . Naval Air Station, Dallas, Texas, has been designated as scene of nineteenth annual National Model Airplane Meet, scheduled for period July 25-30, 1950.

ARRANGEMENTS TO ENROLL AND TRAIN APPROXIMATELY 150,000 CIVILIAN VOLUNTEERS AS AN AIRCRAFT OBSERVERS CORPS, to cover 25 Northwestern and Atlantic Coast States, were made at a Civil Defense Conference called by Sec'y Johnson recently at Pentagon. The volunteers will be trained under the direction of AF's Air Defense Command. . . Gen. Vandenberg pinned Legion of Merit on Gen. Joseph Smith for his work in organizing Berlin airlift.

AF REGULATION 45-19 WHICH PERMITS EX-FIRST THREE GRADERS, WARRANT OFFICERS AND FLIGHT OFFICERS TO APPLY FOR COMMISSION IN AF RESERVE has been modified to grant age waivers in some cases. (AFA members may secure copy of this regulation by requesting it from Air Force magazine.)

APPOINTMENT OF BRIG. GEN. WALLACE H. GRAHAM, personal physician to the President, as Special Assistant on Medical Reserve Affairs to Maj. Gen. Harry G. Armstrong, Air Surgeon General, was announced by AF last week. . . USAF has denied that blue shades for summer uniforms are being considered.

QUESTIONNAIRES are now being distributed by War Claims Commission to gather information on World War II property losses, personal injury, etc., to substantiate forthcoming WCC report to Congress. Questionnaires are not claims, but will serve as basis for recommendations for amendments to present law.



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# Beechcraft

## BONANZA

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# SHOOTING

## The Great Policy

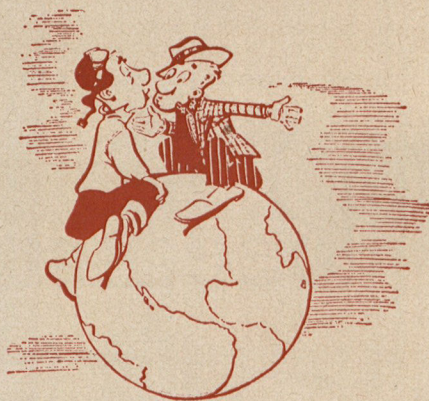
To the airpower veteran who has long and loudly proclaimed through the medium of Air Force Association that a strong America is essential for world peace, events were jolted into sharp focus last month.

In the first flush of horror over the Hydrogen Bomb, the grim prospect of trying to live with it was overshadowed only by the suicidal prospect of trying to live without it.

Less dramatic than the H-bomb decision but equally sobering was the official pronouncement by the Secretary of State and confirmation by the President that our government had given up hope of arriving at peace through negotiation alone. After four years of trying to come to terms with the Soviet Union, the State Department had concluded that agreements between the two nations were "useful" only when accompanied by a convincing portion of US strength and, therefore, that American foreign policy must be based on strength as the key to peace.

This brings to mind Air Force Association's first Statement of Policy, adopted in mid-1947. AFA said then: "We are gravely concerned over our country's critically-weak military policy in relation to the strong foreign policy it is obligated to support."

The Russians are universally acknowledged to be realistic. We have answered that realism with idealistic efforts for peace by agreement and an unrealistic armament program. But before hasty conclusions are drawn, let it be stated that according to the American way of life it could hardly have been otherwise. It was ingrained in our national philosophy that we should try every possible diplomatic means to come to terms with Russia. And it was equally apparent, in our general dislike for military service, that we should demobilize our armed strength to virtual impotence and then oppose its encroachment upon our peacetime economy. With factors such as these tempering and confusing our national security policy, we have been at an obvious disadvantage in relation to Russia's controlled rearmament program.



Now we are confronted with the ugly prospect suggested by Dr. Harold C. Urey, one of our top atomic scientists, that "We may have already lost the armaments race." He was referring particularly to the fact that Russia developed the A-bomb well in advance of our best predictions, and could conceivably be ahead of us in development of the far more deadly H-bomb. Comparing our conventional weapons, Secretary of Air Symington recently explained (see page 26) that Russia has surpassed us in the strength of its air force, its army and its underseas fleet. Projecting our scaled-down military program against Russia's scaled-up armament development, we must assume that Russia is daily increasing her margin of strength over the US.

## The Great Dilemma

The appalling fact is that against the A-bomb there is no defense worthy of the name. Some rather expert opinion is available to support this contention. It was voiced this past month by Secretary of Air Symington and by Dr. Vannevar Bush, one of our leading scientists. It was expressed in the following terms by the Chief of Staff, US Air Force, in his recently published annual report: "Because of the great and increasing range and speed of modern airplanes it is not possible to impose absolute limitations upon the effectiveness of attacking forces nor is it possible to protect, with certainty, any significant target or group of targets. Because of the tremendous power of new weapons, the damage that can be inflicted by a successful attacking force may be so great as to justify possible loss of a major portion of that force."

The military experts are generally agreed that the only "defense" against an atomic aggressor is retaliation in kind. Our defense mission, it would seem, is to roll with the punch as best we can, pick ourselves off the canvas, and strike back. Our present policy calls

# THE BREEZE

for a build-up period not unlike that experienced during 1942, and dependence upon Western Europe to hold the fort while the building is somehow accomplished. Secretary of Defense Johnson explains this program in his annual report, as follows: "In the event that the US is involved in hostilities, the armed forces of Western Europe, operating under integrated plans for its defense, must be able to hold the lines of collective defense of the North Atlantic area during the time that would be required for the US to mobilize, equip, train and transport our own troops across the Atlantic Ocean."

Further, our defense policy assumes that to attempt to gear ourselves for all-out defense would inevitably bring economic disaster of the type Russia is waiting for. With about seventy-five cents out of every tax dollar in the projected 1951 national budget chargeable to past wars and the possibility of wars to come, it isn't hard to visualize the problem. It prompts the Air Force, when asked, to explain that from a military point of view it needs 70 groups, but because "economic disaster could be equivalent to military disaster" it is resigned to the obviously inadequate 48 group program.

The dilemma, of course, is that with all our vast expenditures for defense, we are not getting it. We *are* getting, with our intercontinental atomic bombers, retaliating power which serves as a deterrent to attack and in so doing gives us defensive strength. This vital purpose will be served, however, only so long as our strategic airpower is maintained at least on a par with that of Russia. In the B-36 and the forthcoming B-52 we have strategic strength for the present and immediate future. But airpower is always fluid, and unless we take some fast steps now in certain directions we risk the chance that this strategic power of ours may become second best in a world that pays off only for first place.

## The Great Need

The explosives available to the Air Force have progressed far beyond the means by which they can, if necessary, be delivered to targets. This became evident last month, not only in the

# GET A MEMBER FOR



Hydrogen bomb announcement but in the revelation by the Atomic Energy Commission that we can now turn out A-bombs on a virtual production line basis. Thus the critical problem of atomic supply—long considered a question mark in military planning—has apparently been solved. Meanwhile, we seem to be entering a new technological phase within the sphere of airpower, exclusive of A-bombs and H-bombs and whatever comes next, and we must meet the challenge head on with appropriate action. Our scientists and engineers, it is believed, are far enough along with guided missiles to “freeze” some designs and, with proper financial support, push us across the threshold into the missile era. A ranking scientist in this field last month reported that the US has the know-how to develop a true intercontinental guided missile. Having the know-how these days is another way of saying: “Give us the priority and the money and we’ll deliver the goods.”

The Air Force must be given the means to pursue its normal transition from piloted to pilot-less weapons carriers, and to achieve its progressive conversion from an aircraft to a guided missile Air Force.

Russia captured as war booty the foremost German guided missile experts, men who at the close of the war were years ahead of the rest of the world in missile development. We must assume in realistic defense planning that Russia has made great progress in this field and is as close as we are to intercontinental guided missiles. Exclusive attainment by Russia of accurate continent-to-continent missiles with A-bomb or H-bomb warheads would definitely mean world domination by the Soviet Union and world subservience to Communism. It is a risk we cannot afford to take.

As long ago as mid-1947, in its first Statement of Policy, the Air Force Association laid the cards on the table in this strong language: “The need, especially with regard to the development of guided missiles, is for a program comparable in scope to the wartime Manhattan Project, a program that is recognized as an emergency measure justifying huge appropriations dwarfing anything now in force, a program coordinating federal, industrial and educational efforts.”

If as the State Department says, we as a nation are committed to a foreign policy of strength as the only real hope for peace, we have no alternative but to develop that strength. The situation demands an all-out start toward a guided missile Air Force. We cannot get at it too soon.—J. H. S.



## “SIXTH SENSE” for the Automatic Pilot

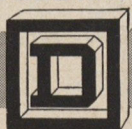
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## Airman's Calendar

**MARCH, 1950**

- Mar. 1—National Fire Association. (Aircraft Fire Protection Projects), Indianapolis, Indiana.
- Mar. 1-2—Louisiana Aviation Conference, Washington-Youree Hotel, Shreveport, La. Harold J. Bryant, Shreveport Chamber of Commerce, chairman.
- Mar. 4—National Conclave of Arnold Society of Air Cadets, University of Cincinnati, Cincinnati, Ohio.
- Mar. 6-8—Sixth annual Fourth Region non-scheduled operators meeting and second annual Agricultural Aviation Conference, Hotel Texas, Fort Worth.
- Mar. 6-9—Annual convention, Institute of Radio Engineers, Hotel Commodore, New York City.
- Mar. 7—Eighth Ahepa National Banquet, Hotel Statler, Washington, D. C. Sec'y Symington will speak.
- Mar. 9—American Society for Metals (New Developments in Military Aircraft) Pittsburgh, Pa.
- Mar. 15—Junior Chamber of Commerce "Wings Night", Hotel Statler, Buffalo, N. Y. General Kenney will speak.
- Mar. 18—National Model Plane Exhibit Contest—Highbee Co., Cleveland, Ohio.
- Week of Mar. 19—Meeting of National Executive Board of CAP and Six Region Wing Commanders, Portland, Oregon.
- Mar. 23—Wisconsin Aeronautics Conference, Pfister Hotel, Milwaukee, Wis.
- Mar. 24—Institute of the Aeronautical Sciences, Fifth Annual Flight Propulsion Meeting, Carter Hotel, Cleveland, Ohio.
- Mar. 30-31—Sixth annual helicopter forum, sponsored by the American Helicopter Society and the Institute of the Aeronautical Sciences, Ben Franklin Hotel, Philadelphia.
- April 4-6—ATA annual engineering and maintenance conference, Hotel Continental, Kansas City, Missouri.
- April 16-20—American Association of Airport Executives annual meeting, Neil House Hotel, Columbus, Ohio.
- April 17-19—SAE aeronautic meeting and aircraft engineering display, Hotel Statler, New York City.
- April 24-26—Airport Operators Council third annual meeting, Hotel Carter, Cleveland, Ohio.
- April 25-27—American Association of Airport Executives, annual convention, Hotel Biltmore, Oklahoma City, Okla.
- April 27—SAE, Wichita, Kansas. (New Developments for Aerial Reconnaissance).
- June 4-9—SAE summer meeting, French Lick Springs Hotel, French Lick, Indiana.
- June 10-13—National Aeronautic Association 28th annual convention, Hotel Statler, St. Louis, Missouri.



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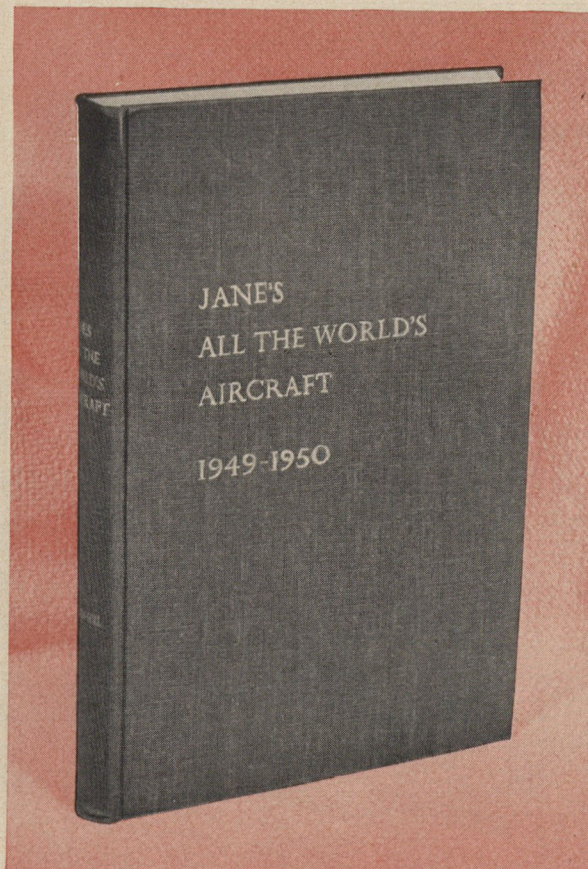
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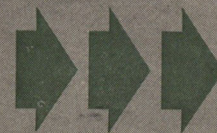
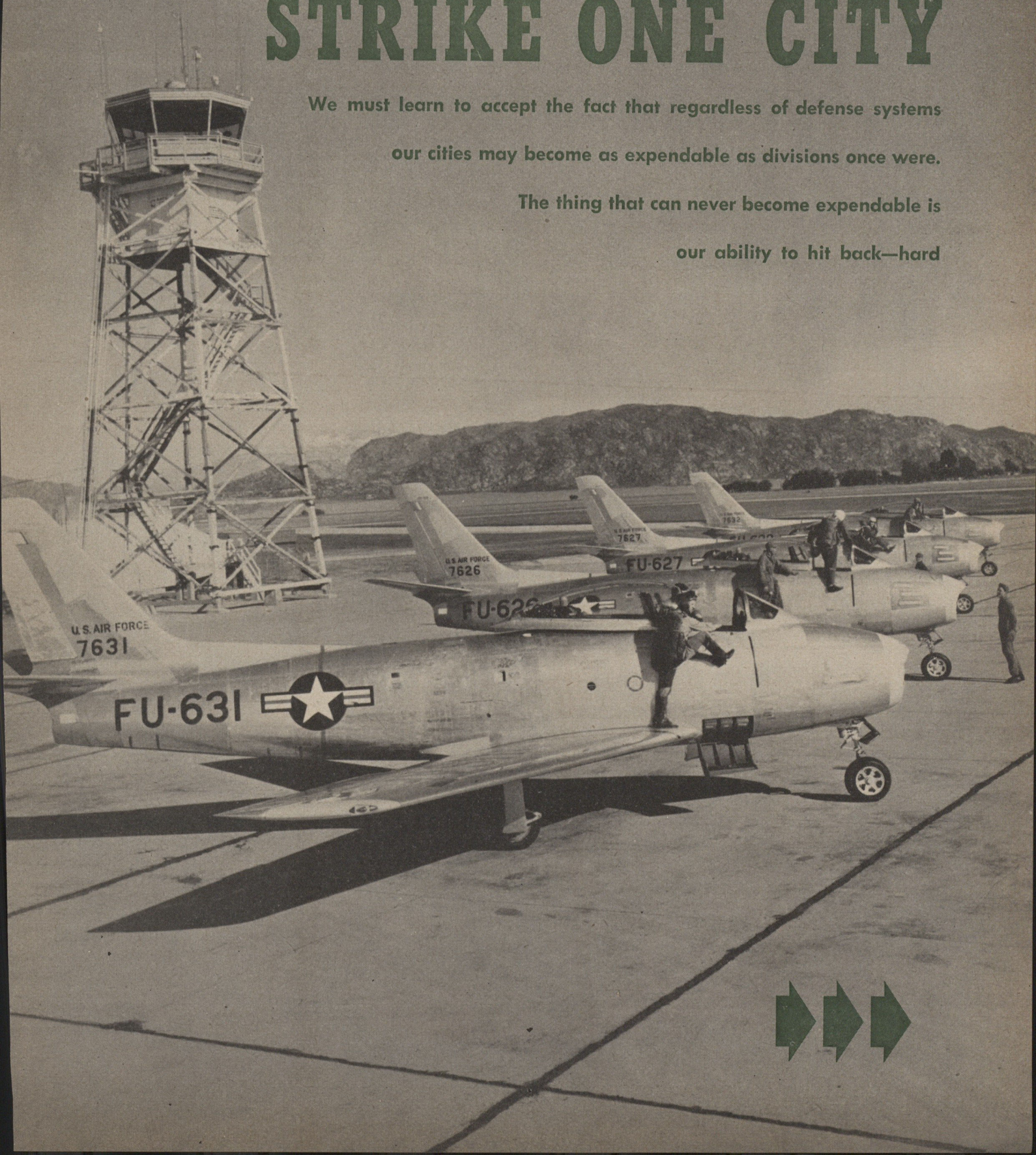
**AIR FORCE**

MARCH, 1950

# STRIKE ONE CITY

We must learn to accept the fact that regardless of defense systems  
our cities may become as expendable as divisions once were.

The thing that can never become expendable is  
our ability to hit back—hard





# Strike One City

By Ned Root

**J**ANUARY, 1943—the Casablanca Conference is as good a date as any to pin-point the birth of the United States Air Force as we know it today. There were planes and pilots before, but to some extent they were like unassembled cogs and wheels before the historic North African meeting.

It was at Casablanca that the airplane was first measured in its full might and plotted against the enemy. It was here that a handful of airmen, convinced that no one, including Goering, had yet exploited the plane to anything approaching the limit of its capacity won an official okay to write their convictions into a plan of operations. It was here that an instrument, used until then as a handy tool to keep us from losing the war, became a prime instrument in our program for winning it. It was

here that the *strategic concept* was born.

It hardly needs to be recalled that in the days that followed Casablanca neither the men, the planes nor the plans were found wanting. The US Air Force, built around four-engine Forts and Liberators, was, as the Strategic Bombing Survey later reported, “decisive” in bringing the victory that came some 31 months later.

Today’s Air Force is not substantially different in its philosophic approach from the one of 1945. Its equipment has changed, and its numbers are fewer, but its core is still the heavy bomber and the strategic concept. The carpers who have appeared *since* (not during) the war to rend the air with charges that strategic bombing is ineffectual, expensive and inhumane have con-

vinced Congress and the Joint Chiefs of Staff of nothing save the sturdiness of their vocal chords. The Casablanca concept still stands.

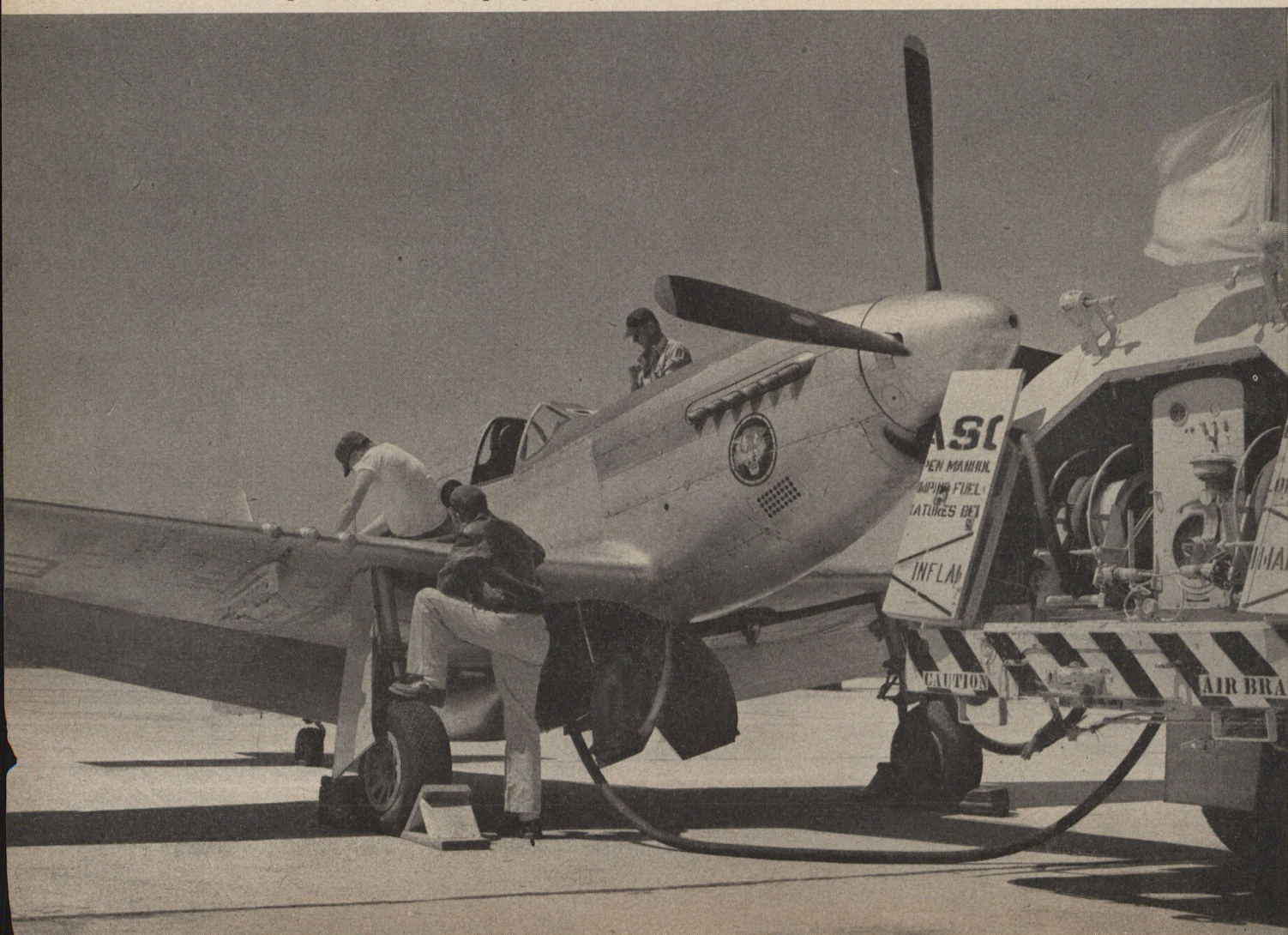
But in the six months just past, there have been two White House announcements that might have had far more profound influence on the Air Force policy makers than all the carping of the past three years—more than anything since the invention of bomb bays. Here are pertinent extracts from those statements:

On September 23, 1949, President Truman announced, “We have evidence that within recent weeks an atomic explosion occurred in the USSR.”

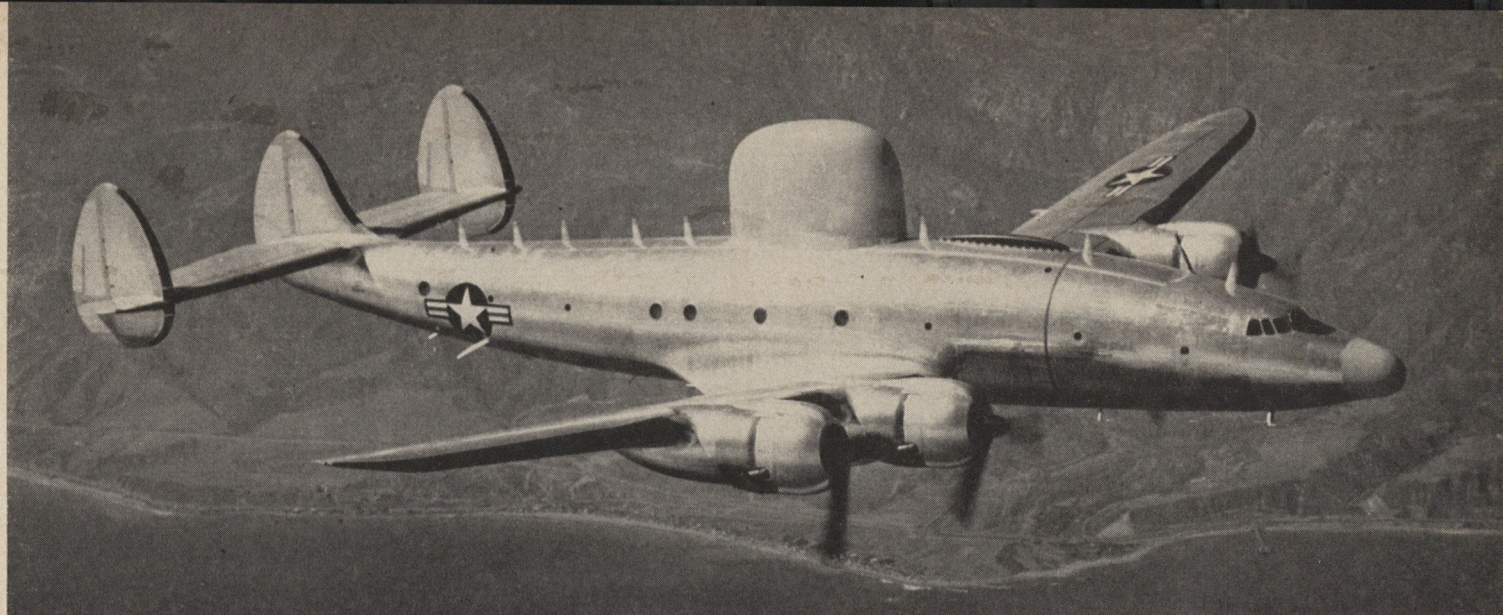
And on January 31, 1950: “I have directed the Atomic Energy Commission to continue work on all forms of atomic weapons, including the so-called hydrogen or super-bomb.”

Obviously the military issues these two announcements have raised are most grave. Obviously the defense of our own borders against attack, either by missile-firing submarines or by intercontinental bombers (the two most likely carriers at this time), is of infinitely greater concern now than it was before the announcements were made. The problem of submarine defense, if war comes, is

Tremendous responsibility in intercepting enemy attack rests on Air Guard planes like F-51 of 86th Fighter Wing, below.







Camel-back Constellation above has radar to detect approaching aircraft far beyond horizon limit of ground based units.

perhaps more acute than defense against bombers for at least two reasons. 1. "The only possible enemy" is better equipped and better schooled in submarine warfare than she is in long range strategic bombing. 2. The United States has, up to now, given more careful consideration to aerial defense than to anti-submarine warfare. For some elusive reason we have never considered the Russian submarine fleet as a serious threat, in spite of the fact that unchecked, and equipped with guided missiles it could undoubtedly destroy all our coastal cities for several hundred miles inland.

But the problem of submarine defense is a story of its own—one which we will explore at another time.

The question at the moment is this: Does the knowledge that Russia has an atomic weapon and can be assumed to be moving in high gear to get the H-bomb—does that knowledge call for a re-evaluation of the Casablanca doctrine? Is it time right now to abandon the strategic concept and concentrate instead on a super defense system that would give us something more than the bare modicum of protection we now have? Is it time to retreat from the old military axiom that the best defense is a good offense? Should we now give a little more thought to keeping our own scalps instead of planning so carefully how to get the other fellow's?

There is no getting away from a choice. The money we can spend is limited. If we use half the dollars Congress allocates for an "offensive defense" so to speak, and half for a "defensive defense" we will have neither one nor the other. We will be both impotent and vulnerable.

It's a rough decision. During the period which ended with Mr. Tru-

man's statement of last September (and which now seems centuries past) the choice was not so bitter. For before Russia had the A-bomb there was no reason to suppose that the United States, broad and expansive as it is, couldn't absorb whatever punishment Russia could administer and hand it back several fold. To a lesser degree the same was true even after we knew she had added the bomb to her arsenal. We were still on unquestionable ground in spending the great proportion of our defense dollars on a minimum strategic striking force, and then allocating the remaining pennies (for that they were) to measures of intercepting the enemy.

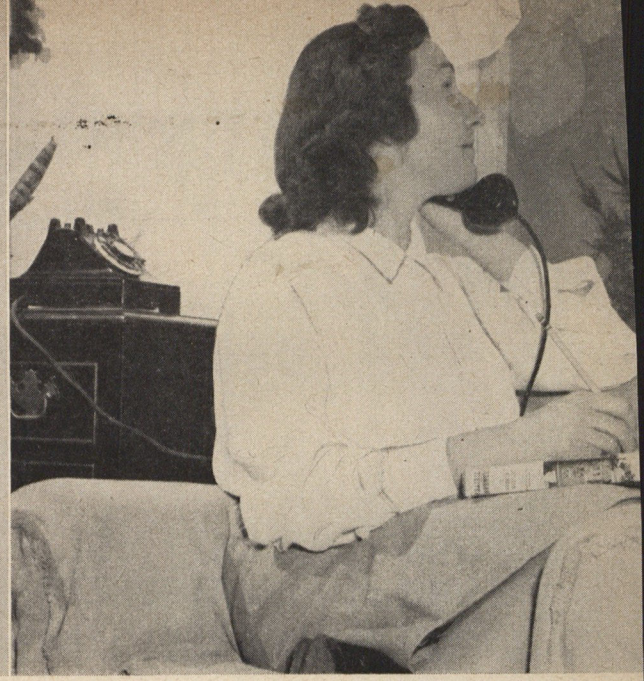
But now with the H-bomb looming in the background and the bleak prospect of total annihilation facing any city or segment of the country that can't send up enough fighter planes to intercept an attack, how can we continue to spend a disproportionate amount of our defense dollars on bombers that may knock hell out of the enemy, but won't stop a single enemy plane from knocking hell out of us? Russia, a totalitarian state, now has the offensive in this not-so-cold war. If not politically, at least militarily. That offensive cannot be wrested from her until sometime *after* she herself chooses to strike the first blow. If that strike comes at 4 AM, we may well be "on the job at 5 AM. But what of the targets she chooses for that first wallop? What happens to them while we're warming up our strategic concept to regain the initiative? It is still unpopular to talk about "quickie" wars in spite of the H-bomb. None-the-less, the United States must be ready on that first night either to defend a goodly number of vitally important targets from attack, or to mark them off as expendable.

How many targets there would be would obviously depend on Russia's stockpile of super weapons and the number of planes she chose to commit. In this latter regard, a recent remark of the Air Force's Brig. Gen. Otis Benson, Jr., is interesting: "Basic tactics of air warfare," says the general, "are reverting to World War I ideas. In the first world war air techniques were based on the elements of surprise and deception, with World War II bringing into play strategy founded on *mass of sheer weight of numbers*. Current trends since the advent of atomic weapons and more costly aircraft are toward *single atomic bombers using the World War I basic elements of surprise and deception*." If Russian reasoning follows General Benson's line then we might expect the first blows to be in the form of small sorties of perhaps no more than three planes striking several dozen targets about the same hour. The theory is more creditable since at the moment the best Russian carrier is the Red version of our B-29, which doesn't have sufficient range to fly here and back and would therefore have to be abandoned after dropping its bombs. In such a situation it is doubtful that a large number of planes would be committed to a mission aimed at a single target. The cost in planes would be too high. It also follows that since Russia's present bombers are good for only one mission, the air generals would dispatch them at the outset to as many different targets as possible while the element of surprise still gave them maximum probability of success.

The possibility of being hit several dozen places at once with A-bombs, or worse, with H-bombs is not pleasant. There is minimum comfort in

(Continued on page 19)





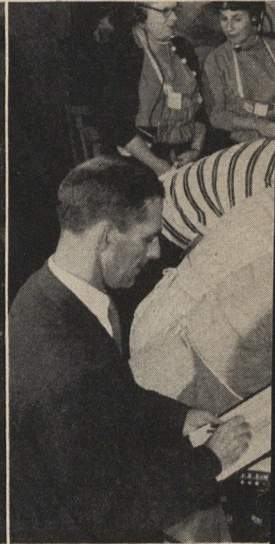
Two observers in East Winsor, Conn. spot a formation of "enemy" fighter planes furnished by Continental Air Command.

Apparently the Air Force has come to realize that nothing could spread word of attack faster than a woman and a phone.

## OPERATION LOOKOUT

Recognizing that military personnel alone would be entirely insufficient in numbers to give adequate warning of an enemy aerial attack, the USAF has borrowed a page from the British war book in establishing a volunteer civilian spotter corps. Last Fall the best organized segment of the new corps—that which covers 14 eastern coastal states—went through the motions of a real attack in Operation Lookout.

From their stations atop bank buildings, in wheat fields, or simply from living room windows, spotters relayed news of "attacks" to telephone filter centers which in turn sent the messages to fighter fields. Exercise was considered "most" successful.

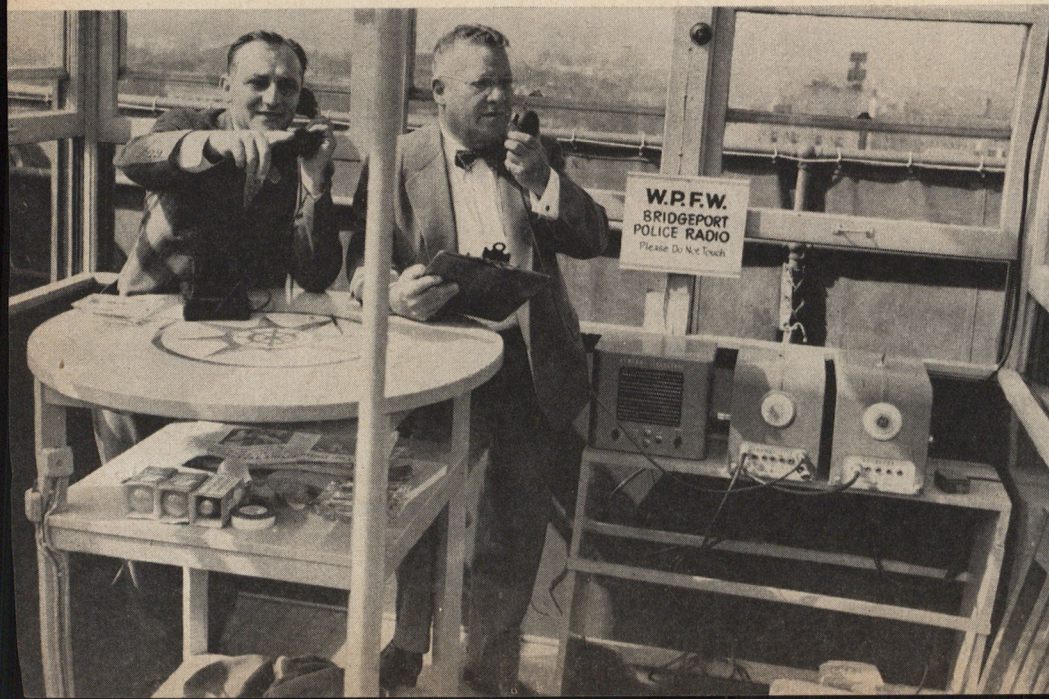


Hartford telephone company gave "Look-out" calls priority during simulated attack.

At right, the filter center where calls were taken, evaluated and plotted on map.

One of 1300 observation posts was this one built atop a bank in Bridgeport. Spotters are Ernest Bono and Russell Noyes.

Col. L. H. Stanford, center, comes in from Washington Hqs. to check operation. Giving report are W. J. Bass, Sgt. Jesse Foley.





## STRIKE ONE CITY CONTINUED

the knowledge that our bombers will be on the way to hit back an hour later *if* a considerable number of our cities lay in shambles.

In the hysteria that has followed the awful revelation of the H-bomb, therefore, it is not unnatural for us to react like a prizefighter who covers his face and solar plexus when the blows get to be more than he can take. Like a man in the ring, it is instinctive for us to think first of protecting ourselves rather than striking back.

But the analogy has to go a step further. The man in the ring who has reached the point of covering up rarely, if ever, gains the decision. The same is true of nations at war.

Does this mean then that to "win" any future war we must leave our cities open to the most brutal sort of attack in the history of man. Does it mean that we must pawn our cities to preserve our way of life?

In a way it does. For as has been said many times before, even if we spend a hundred percent of our defense budget on means of intercepting enemy attacks we still would be vulnerable. Until science develops some sort of magic ray that will dissolve any missile, manned or otherwise, at any altitude the instant it approaches our borders—until then there is no way of guaranteeing interception. The sickening consequence of a successful H-mission must be calculated and stood under. Our military leaders know well that nothing would be so inviting to attack as for the US to cover up like a boxer. They doubt that the Russians would retire to a neutral corner.

If we have the courage then, to concede the imperfections of any defense system, we must next have the courage to regard our cities as something close to expendable.

But there is another way of looking at it. And this is the crux of the thing:

It is quite possible that Russia is not nearly so interested in our cities as we might think. In the *past* there have been no more desirable targets than large centers of industrial population. But in the present situation this is not quite true—at least insofar as Russia is concerned. The strategic target of first priority in the United States today is *not* New York, Cleveland, Detroit nor indeed any cluster of our major cities. The fact that we prize them highly doesn't materially increase their value to the enemy. To him we have a far greater prize—a *substantial superiority in super weapons and the means of delivering them*. In spite of

all the pictures you've seen of what an H-bomb would do to Chicago or Washington D.C. it is most unlikely that either of those cities will be struck *until* Russia has bombed out of existence this superiority. Stalin's forces would be guilty of the greatest conceivable blunder if they pulverized a dozen of our cities and left our strategic bombing forces unscratched, ready to return the pulverization ten times over.

Paradoxically the defense of our fighting forces—traditionally regarded as "expendable"—becomes of greater urgency than the "defense" of our cities, which have never been thought of in an expendable light. Keeping Okinawa becomes more important, if you will, than keeping New York, and it is well that all concerned—including Stalin—understand the point.

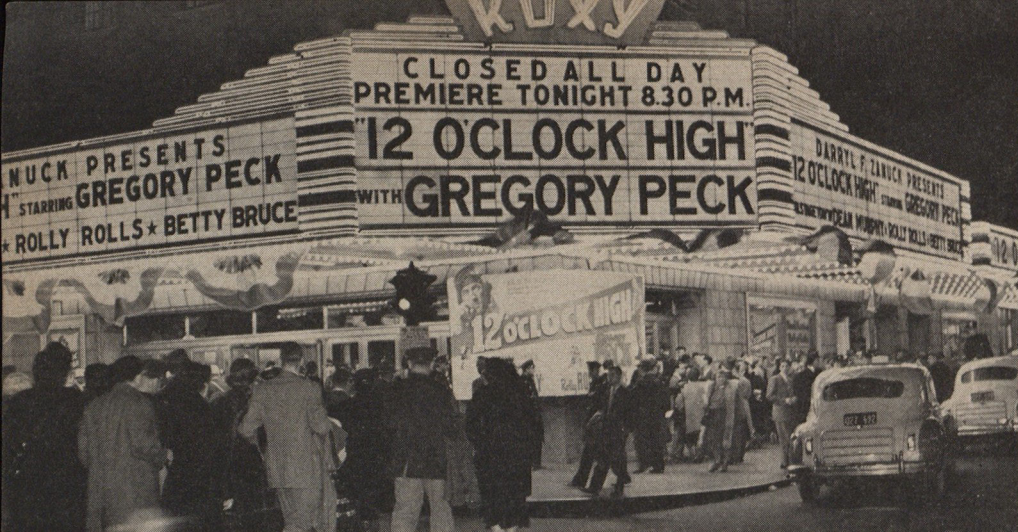
No, the axiom that a good offense is the best defense is not out-worn. It was never more true, if for no other reason than in itself it has become the number one "target" on any aggressors list, and has thereby shoved our cities down the list. And happily the offensive capacity of the US Air Force is a much more elusive thing to get in the cross-hairs of a bombsight than the Empire State building would be.

All this is not to say that continental defense measures should be abandoned. We are at this moment undertaking the most elaborate network of defense activities in our history.

Actual defense planning began back in 1946 when it was first decided by the Air Force that a radar network around vital target areas was requisite. Since then the energies of many agencies have been devoted to making it as tough as possible for any foreign aerial attack to get where it heads for. Among them are the Air Guard, the Fighter Groups of the Air Defense Command, and—the latest—a corps of 150,000 volunteer civilian observers. And if it is true that offensive tactics have undergone considerable change since the end of the war, it is equally true of defensive measures. At the head of the Continental Air Command, which is charged with the thankless job of aerial defense of the country, is Lt. General Ennis Whitehead. The General has some unique ideas on how to bring maximum firepower to bear on an attacking force.

But Whitehead himself is one of the first to admit that defensive measures never have and never will win a war. To concentrate on them now would be to invite disaster.





New York's Roxy Theater, above, was the scene of AFA's gala premier. Sixteen thousand 8th Air Force veterans, guests of the Association, joined celebrities at the colorful event. Chief speakers at luncheon commemorating the eighth anniversary of the 8th Air Force were Franklin D'Olier, chairman of the US Strategic Bombing Survey, and Carl Spaatz, its former commander, at right.

# "12 O'CLO



It's happy birthday for members of the 8th Air Force. Above, left to right, Linda Darnell, Carl Spaatz, Spyros P. Skouras, Jinx Falkenburg and AFA President, Robert Johnson supervise the cake-cutting ceremonies. At right, Members of the present 8th Air Force, manning a B-36 instead of a B-17, gather with Jinx Falkenburg at luncheon.



**Air Force Association sponsors Luncheon at Waldorf in honor of eighth anniversary of 8th Air Force, and gala premiere of movie at Roxy.**

**T**he eighth anniversary of the Eighth Air Force was celebrated in style on January 26 in New York city with a big birthday luncheon at the Waldorf-Astoria and a gala invitational premiere of "12 O'Clock High" at the Roxy theater, both sponsored by the Air Force Association.

More than 400 business, professional and military leaders paid tribute to the Eighth at the luncheon. Among them were General Carl A. Spaatz, first overseas commander of the Eighth, who was the principal speaker; Franklin D'Olier, Chairman of the US Strategic Bombing Survey, who introduced Spaatz; Charles E. Wilson, wartime chief of the War Production Board, and a long list of notables.

AFA's special guests of honor included all six living Medal of Honor men of the Eighth (nine others were killed in action) who came from all parts of the country to represent the men and women of the wartime Eighth. A hand-picked B-36 crew which flew up from Eighth Headquarters in Fort Worth represented members of today's peacetime outfit, and Mrs. Jimmy Doolittle represented wives and mothers of Eighth men.

AFA President Bob Johnson, in wartime a top fighter ace with the Eighth, gave the welcoming address, and Tex McCrary, another Eighth veteran, served as toastmaster.

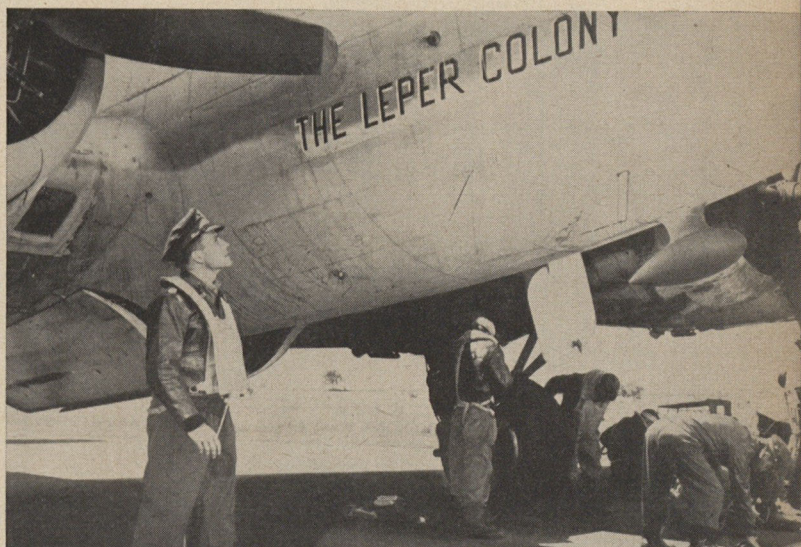
Guests of AFA at the "12 O'Clock High" premiere that evening were 1500 Eighth Air Force veterans and several hundred patients from veterans hospitals in the area. AFA presented a citation to Twentieth-Century Fox, producers of the picture, for its epic portrayal of the story behind the strategic air mission in World War II.



# CK HIGH"



Above, the boys meet General Savage (Gregory Peck) and they don't want any part of him. A true martinet, Savage whips his men into shape, tightens their formations, cuts losses and builds esprit de corps. The boys finally buy him, but by that time Savage has given so much of himself that he cracks. At left, fellow officers hold him back as he tries to fly one mission too many.



In 1942, only a few Americans were fighting in Europe. The 8th Air Force and that was it. It wasn't the mighty 8th then. Their weren't the huge armadas which in later years pulverized German industry and knocked the Luftwaffe from the air. This was only the beginning—a handful of men and planes who stood alone to prove that daylight precision bombing was possible. And they proved it without replacements, 50 mission limits and all the refinements which came later. Their only "limit" was the one imposed by what their bodies and spirits could take.

From their story comes "Twelve O'Clock High", a first-rate motion picture starring Gregory Peck and released by Twentieth Century Fox.

This is no glory-glory into the wild blue yonder. The problems of morale were desperate. Losses were high. Pilots and crews could see no *purpose* for the extreme effort they were called upon to make. Into this situation, General Savage, portrayed by Gregory Peck, was projected. Most of the movie is concerned with his efforts to bring about an esprit de corps. His methods make Captain Bligh look like a scout-master. Hated at first, his position is finally vindicated when losses drop and morale rises. At the end he cracks, for he is essentially a sensitive man.

The script was written by Beirne Lay, Jr. and Sy Bartlett and is free from "Hollywood" dialog—veterans of the 8th could find no unrealistic note. The acting is uniformly good, with Dean Jagger turning in an exceptional performance as the group adjutant. The picture's only combat sequence is certainly authentic enough—it was clipped from the Air Force files of combat photos taken by members of the USAF and the Luftwaffe.

Above, left, Dean Jagger as group adjutant, turns the little masked jug toward the center of the room indicating that there's a mission tomorrow. Above, right, is the Leper Colony—the Fortress to which every misfit in the outfit is banished. They all turn out to be better than Savage thought they were. Pilot later becomes group commander.

This is the saga of the 918th Bomb Gp., pioneers of daylight strategic bombing. One of the better war pictures, it is a fitting tribute to the 8th.



# FOOD FOR OUR HUNGRY JETS

The petroleum industry has cracked the availability nut with AN-F-58,

But for really long range bombers, we must look to nuclear energy

By Robert Fleisher

**T**heoretically, you could burn red flannel underwear in jet aircraft. Unlike the internal combustion machine, a jet engine can handle any combustible material, solid or liquid, which can be metered through a fuel nozzle. Of course red flannel underwear is not an ideal fuel: 1. There isn't enough of it to keep very many squadrons in the air. 2. You might have trouble feeding it through a fuel nozzle, even if you powder it. 3. It doesn't burn very hot. 4. It wastes a lot of space. 5. It would probably leave an awful gummy deposit in the combustion chamber. Anyone can add to that list, and no one ever really considered red flannel underwear as possible fuel, but when the war ended, and the U. S. Air Force entered the jet era, the search for a suitable fuel that would be available in sufficient quantities at reasonable cost led researchers down many different paths.

Just what are the main requirements of a good turbo-jet fuel?

1. Availability: A jet engine burns

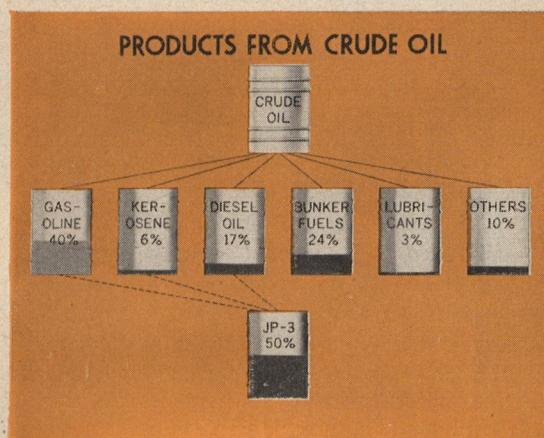
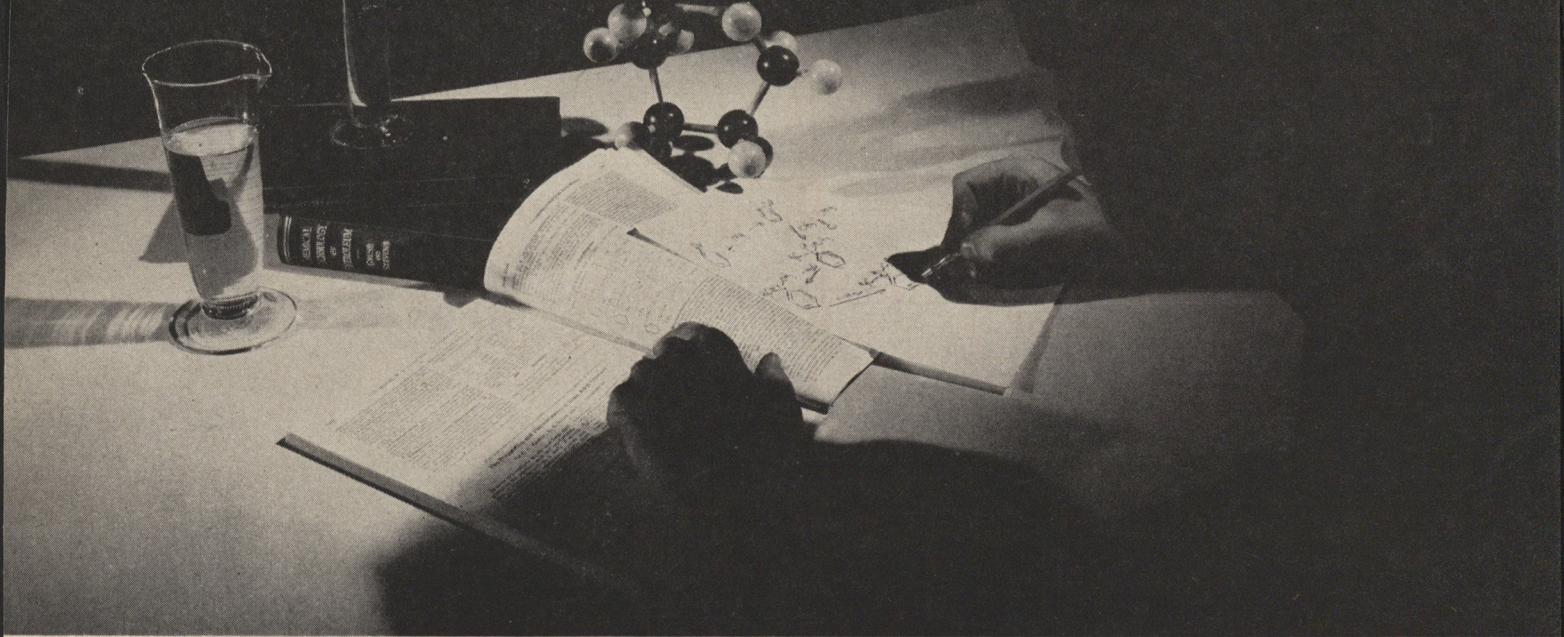


Figure 1, above. These are the products obtained by the fractional distillation of crude oil. Modern jet fuel AN-F-58, or JP-3, is a blend of gasoline, kerosene and diesel oil. Left, is an apparatus used in preparation of additives to give the jet fuel the most favorable characteristics possible.





Like the defense dollar, there are just so many ways to split a barrel of crude oil. Figure it out for yourself.

about one pound of fuel per pound of thrust per hour. That means that jet aircraft consumes gas at just twice the rate of the conventionally powered plane. We must have plenty of it.

2. Good heat energy: A good fuel burns "hot." It has heat-volume-weight balance. The problem here is to find a fuel which gives the most heat, consistent with the weight and space which can be allotted to it by the requirements of military aircraft design.

3. Stability: A fuel that freezes, solidifies at low temperatures or tends to evaporate excessively or "boil" at high temperatures, is obviously unsuitable.

4. Usability: Mechanically speaking, a fuel that cannot be drawn from its storage compartment, through an intricate path to the engine and metered properly through a fuel nozzle, cannot be considered, no matter how satisfactory its other properties may be. A "solid" fuel would have to be converted to a powder, wire or liquid.

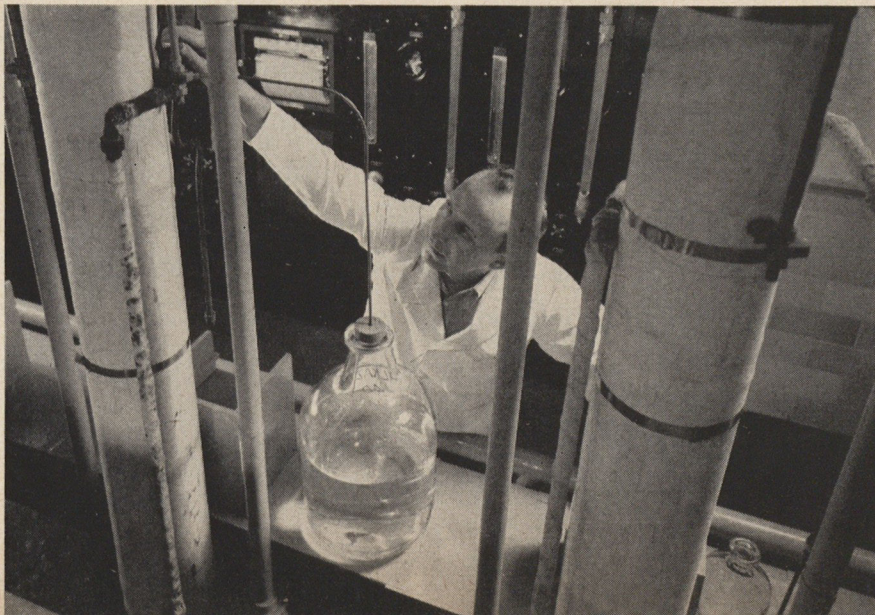
5. Burning characteristics: A fuel must ignite easily and burn "clean." Excessive deposits of carbon or gum quickly reduce engine efficiency.

At the end of the war the few jet planes we had were burning kerosene. It was a relatively cheap fuel with a good weight-volume-heat ratio, easy to handle and not in great demand for other purposes. But those charged with long range planning had only to look at Figure 1, to realize that kerosene would never do, simply because there wasn't enough of it and could never be enough of it to keep an air force operating on an emergency footing. Availability became the primary requirement

(Continued on page 46)



Above, starting test of a J-33 jet engine with tail cone removed to study flame propagation of ignition. Below, the tops of forty-foot distillation columns in which precious aviation experimental fuel compounds are purified.





# WHAT'S DOING

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We've just been reviewing some figures to see what happened at Pratt & Whitney Aircraft during 1949.

One thing that happened was that we continued to build and deliver substantial quantities of aircraft engines. During the year, we were in production on six basic sizes of piston engines for both military and commercial use. As you know, we also swung into production on our first jet engine, the Turbo-Wasp. All told, we shipped more than 2,400 engines in 1949.

There was a lot of work, a lot of planning, and a lot of headaches involved in this manufacturing accomplishment. On the piston engines, for example, quantity orders by our customers for various models of engines fluctuated abnormally during the year, requiring repeated revision of our production schedules. Then too, we made thousands of design improvements in these production models, requiring new tooling and changes in manufacturing methods. On the jet engines, of course, we were plagued by all the inevitable troubles involved in putting any completely new product into production. Despite the problems, we delivered almost 7,000,000 horsepower in engines, and the equivalent of 40% additional horsepower in spare parts.

But the physical production of engines wasn't the only thing that happened at Pratt & Whitney during 1949. In fact, there wouldn't have been *any* production if those engines hadn't possessed the superior performance characteristics and the dependability that brought orders from our customers. So, an intensive engineering program of research, design, development and test has always been the mainstay of our progress at Pratt & Whitney. Out of it has already come the improved performance of our current types of engines. And out of it will soon come still better Pratt & Whitney engines to meet the rapidly advancing requirements of both military and commercial operators.



# at Pratt & Whitney Aircraft?

## HOW MUCH ENGINEERING WORK DID WE DO LAST YEAR?

- ☐ 1 Million Man-Hours?
- ☐ 2 Million Man-Hours?
- ☐ 3 Million Man-Hours?
- ☐ ? Million Man-Hours?



Last year, Pratt & Whitney engineers put in a total of nearly 3,000,000 man-hours of work. That's equivalent to the full time of one man working 50 weeks a year for 1,500 years! Actually, of course, no one man could ever do the work if he lived a million years. The engineering problems are so complex and varied that our engineering staff consists of designers, draftsmen, mathematicians, metallurgists, physicists and countless other specialists, each contributing his technical knowledge and skill to the solution of some part of the problems. To all this time and effort must then be added more millions of man-hours by expert craftsmen, working directly for the engineering department to fabricate, assemble and test the experimental parts and engines required for new designs.

## HOW MUCH EXPERIMENTAL TESTING DID WE DO IN 1949?

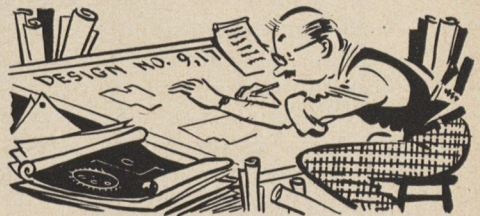
- ☐ 10,000 Hours?
- ☐ 18,000 Hours?
- ☐ 52,000 Hours?
- ☐ 70,000 Hours?



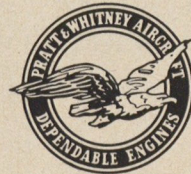
Every time a new part is designed, we have to make sure it will function properly. Every time we change an existing part we have to find out if the change produces the desired improvement. And every time operating troubles develop in service, we have to find out the source of the trouble. This involves a continuous program of experimental testing both of individual parts and of completed engines. In addition to almost a thousand hours of flight testing, we carried out, last year, more than 70,000 hours of such experimental testing. This included more than 18,000 hours of testing of full-scale experimental engines and more than 50,000 hours of test-stand running of major components such as cylinders, burners, turbines and compressors.

## HOW MANY DESIGN CHANGES WERE MADE DURING THE YEAR?

- ☐ 3,831?
- ☐ 11,417?
- ☐ 19,000?
- ☐ 52,000?



The design of an aircraft engine is never finished until that engine becomes obsolete and goes out of production. It must be constantly refined and improved — either to provide better performance, or to reduce manufacturing time and cost, or to correct troubles encountered in actual service. Just as an example, we made 3,831 engineering changes on production models of Pratt & Whitney engines during 1949 — an average of 15 changes every working day. This involved changing more than 19,000 drawings. And these are only the changes that applied to production models of engines. Beyond this, the engineering department changed an additional 11,417 drawings applying to experimental engines. Add to these figures the 21,999 brand-new drawings and design layouts turned out for experimental engines, and you get a grand total of more than 52,000 drawings that were either made or changed during the year — an average of more than 1,000 every week.



**PRATT & WHITNEY  
AIRCRAFT**

**EAST HARTFORD, CONNECTICUT**

ONE OF THE FOUR DIVISIONS OF UNITED AIRCRAFT CORPORATION



# THE BAYLOR SPEECH

From the vantage of a Texas prairie Mr. Symington puts our defense problems in exceptionally clear focus

(Following are the full remarks of Air Force Secretary Stuart Symington before the graduating class of Baylor University, Waco, Texas, February 1, 1950)

For some years now I have been a member of your national defense structure, America's team of land, sea and air; and certain observations might be of interest to you today in connection with problems incident to the future security of the United States.

In his recent message to Congress on the State of the Union, our great President outlined the position and responsibilities of our country at this turn of the mid-century. In that challenging address he said in part:

"The human race has reached a turning point. Man has opened the secrets of nature and mastered new powers. If he uses them wisely, he can reach new heights of civilization. If he uses them foolishly, they may destroy him.

"In the world today we are confronted with the danger that the rising demand of people everywhere for freedom and a better life may be corrupted and betrayed by the false promises of Communism.

"While the world remains unsettled . . . and as long as our own security and the security of the free world require, we will maintain a strong and well-balanced defense organization."

It is common knowledge that the source of the unsettled conditions to which our Commander-in-Chief referred is the threat of Communistic aggression. Four years ago World War II ended. In 1922, four years after the close of World War I, the major powers were able to sit around the conference table in Washington, in a conciliatory atmosphere, and arrive at an agreement for the reduction of armaments. This they accomplished because no major power threatened the peace.

## Complacency & the Cold War

Ever since the end of the last war, however, America has become increasingly aware there can be no true peace while there is this threat of Communist aggression.

Indeed we may have already lived so long in this post-war cold-war atmosphere that unrest and instability are now being taken for granted, and therefore disregarded.

If so, that is a very serious matter, because such lack of interest might result in loss of our freedom.

Such disregard may be natural for normal, healthy, peace-loving people. In this air-atomic age, however, it is dangerous, because the cause for this unrest—Communist aggression—is a threat

not only to the preservation of the peace, but also to our existence as a nation.

Never in the history of the United States has it been more important to recognize the truth about the world we live in; to recognize that truth, and then to follow the proper course necessary for America's preservation, no matter what the sacrifices required.

As our President said, "We know now that this is not an easy task or a short one." Professor Arnold Toynbee, famed historian, recently predicted that these sacrifices might be required for the next 50 years. Toynbee assumed, of course, there would be no successful world conquest by the Communists.

Some twelve and a half years ago, in the summer of 1937, I went to the seat of a great world Empire, a gay and busy city. It was the end of the London season. There were the usual number of parties. Some of the wealthy were watching their horses race; others were taking off for the continent. With the exception of very few men, always and primarily Winston Churchill, foreign affairs were viewed with but normal apprehension. Many were sympathetic with Hitler. There was fear of Communist Russia, and fear of the growth of Communism in the French Army, which was considered the greatest army in the world. As against these two fears, many favored Hitler's Germany as providing a balance of power and a bulwark State.

Douglas Reed of the London Times sounded consistent warnings from his post in Berlin. Churchill pleaded with the good people of his country, in epochal speeches which later composed a famous book, "While England Slept."

Appeasement, however, was the order of the day. World trade, and the stock dividends from it, were important. Some were trying to "buy" security through appeasement—as if any nation can ever "buy" security through compromise with evil.

Fourteen months later came Munich. Some countries, particularly Czechoslovakia, felt they had been sold down the river. By then, however, there was no alternative, because the wolf had taken off his sheep's clothing. Hitler and his gangsters had revealed their true intent, and neither England, nor any other democracy, had adequate armament with which to trade against the war now sure to come.

In all free countries men stirred uneasily. They realized that soon they might be called upon to fight and die. They asked one another: "How did



Here, we believe, is one of the most fundamental statements to be made by any responsible authority since VJ-Day on the increasingly grave issue of defending our American borders—indeed of saving our individual and collective hides. It is a brutal reminder of Russia's oft-repeated ambition of establishing one world—a Marxist world. It is a cold accounting of her ever-growing capacity to achieve that ambition with a military machine stronger than any other on earth in nearly every regard. It is a simple plea for US defenses strong enough to withstand "the long arm and smashing fist" of a war that could come at any time. Here are facts—the kind upon which American defenses must be built and built quickly if we believe the American system of government is worth keeping.

we ever get into this position so soon after having won before?"

How did they? That is the point of such critical importance to us today.

Less than four years later I again visited London, in early 1941. We sneaked up the coast of Portugal by air, praying for bad weather, hoping to avoid Hitler's dominant Focke-Wulf long-range bombers, as they returned over the Atlantic from their attacks on Allied shipping.

Times had changed in London. Nobody took off for the continent of Europe except in battle planes, because the Nazis controlled that continent, just 20 miles away. Horses were being eaten instead of raced, and most of the entertainment was deep in the shelter of basements, comparatively safe from the bombs raining down overhead.

One of Britain's greatest battle-ships, the Hood, had been sunk. Worse to them, a large island, Crete, had just been conquered from the air.

The British people stood up with indomitable courage. Their leaders knew, nevertheless, that all which stood between them and slavery was the potential production wealth, and manpower, of the United States.

At this point let me ask you—in case our country in turn is caught with its defense guard down, what nation has the strength to stand behind us as we stood behind England?

### One World—Stalin's

At present the people on this earth are, in effect, split in two main political groups. One group is headed by an aggressive dictatorship that has reiterated many times that it is conducting the modern equivalent of a holy war against all non-believers.

In every issue of Communist dogma, under the title "Problems of Leninism," published over the signature of Stalin, appears this basic tenet:

"We are living not merely in a State, but in a system of States; and it is inconceivable that the Soviet Republic should continue for a long period side by side with imperialistic states. Ultimately

one or the other must conquer. Meanwhile, a number of terrible clashes between the Soviet Republic and the bourgeois states will be inevitable..."

The above statement of Communist policy has been reiterated many times, and as recently as after the close of World War II in 1945.

Furthermore, Communist leaders denounce all spiritual faiths, dictating as a substitute the cynical and materialistic doctrine of Communism. As we all know, but sometimes are prone to forget, the Communist does not believe in God. That is part of the foundation of his philosophy. He has always fought to destroy religion.

The leaders of Russia have not only constantly reiterated their goal of world domination; they have also predicted the doom of all other political systems, especially capitalism. They have inflamed all Communists against all non-Communists, wherever the latter may be. They have sealed off their own people behind an Iron Curtain, while taking advantage of free access in other countries to create constant distress and confusion from within.

Theirs has been a ceaseless campaign of aggression; ideological, political and economic; and wherever expedient, that cam-

campaign has been supported by guns and men.

In the middle thirties it was important to know what the people of France and England and Holland and Denmark and Belgium and Norway were doing. It was far more important, however, to know what the Nazis were doing. Were they really re-arming? Did they really believe their marching slogan, "Today we rule Germany, tomorrow the world"?

I believe that in these United States, at this mid-century mark, the most important question for all of us today is, "What are the Russians doing?" Not what we are doing in the way of re-arming, at some slight expense to our standard of living, but what are those other people doing—those people who say they cannot live in the same world with our way of life? What is their weapons program?

(Continued on page 28)



**SECRETARY SYMINGTON**

"... weakness invites aggression."



Surely we Americans do not want to be caught at any future time the way the democracies were caught by Hitler in the thirties.

**This we know. Those who reiterate America must be destroyed, now have:**

► **A ground army greater in numbers than the combined armies of the United States and its allies;**

► **An Air Force whose strength in nearly all categories is now the largest in the world and growing relatively larger month by month;**

► **The world's largest submarine fleet; and an intensive submarine development and construction program.**

It is our belief that if any Democracy attempted to maintain in peacetime a comparable regular armed force, the free economy of that democracy would be wrecked. In Communist countries, however, the will of the rulers, and not the economy of the nation, is the controlling factor. People under a dictatorship do not know when great streams of national wealth which could be used to raise their standard of living, are diverted instead to further the aggressive ambitions of their rulers.

The Communist government dictators have no problems of money, because all money is owned by the State. The coin of the realm is the order of the dictator.

Nor have these bosses any problems of labor, because they have millions of slaves, captive prisoners from other countries as well as their own political slaves. From our standpoint, every citizen of their state is but a slave to the handful of rulers at the top.

All men in such positions of dictatorial power, uncontrolled by the checks and balances of representative government, disdainful of the dignity and rights of the individual, and dedicated to the belief that the end justifies the means, are, and always will be, a threat to the freedom-loving peoples of the world.

**Here are three facts which every American should know, because this is the world in which we live.**

► **Behind the iron curtain there has been an atomic explosion.**

► **Behind that curtain is the air equipment capable of delivering a surprise atomic attack against any part of the United States.**

► **We have no sure defense against such an attack.**

The bleak picture is that today we have a group of dictators dedicated to destroy our way of life. They are capable now of unleashing, without warning, the world's largest ground army, air force and undersea fleet. The gravity of this situation is multiplied many times by our knowledge of achievements being made by Russian scientists in the field of atomic energy.

I ask you, if these leaders want peace, why are they building their armed strength to such staggering proportions?

Today America holds the position of world economic, moral, intellectual, and in some respects, material leadership, in a struggle as bitter and fundamental as that in the Middle Ages between Islam and Christianity. In that ancient conflict the battleground was religious belief. It is with difficulty that we now understand the intensity of feelings which led to those holy wars. Many feel those dedicated to communism are, in effect, now waging a new religious war, with the dialectic materialism of Communism the basis of a godless faith.

### **Waco & The Smashing Fist**

In the past the United States has been relatively safe, because our allies have given us the time necessary to build our defense against attack. Then we were at relatively safe distances from our enemies. That is no longer true. Distance is no longer any protection from the long arm and smashing fist of modern military air power. In this air-atomic age the oceans and polar wastes are not barriers against attack. Remember Russian soil is but 5 minutes flying time from the American soil of Alaska; and but a few hours away from our great cities. Waco is but an 18 hour flight from Moscow for the bombers we know Russia is now producing in quantity.

Based on these facts, are there any who would question the importance of this country maintaining as much military strength as will provide what George Washington called a "respectable posture of defense?" Would any of us like to forfeit either (1) the capacity to defend ourselves as best possible against sudden atomic air attack, or (2) the strategic air capacity necessary for instant effective retaliation against those who would make a surprise move against this country?

America is reconciled to the necessity for a peacetime defense program greater than ever required in the past. We must remain steadfast and alert until that day—God hasten it—when we can have complete assurance that any power, or combination of powers, which threaten peace will abandon their aggressive schemes and participate effectively in the community of nations to advance, and not destroy, civilization.

History teaches that mere races for armed might do not prevent wars. History also teaches, however, that weakness invites aggression.

Our patience in seeking peaceful solutions must not be interpreted as weakness. Rather it constitutes evidence of our own lack of aggressive designs, a manifestation of our sincere hope that as one member of a world organization, we may help to realize the aspirations of mankind for a permanent and responsible peace.

### **Balanced Budget vs. Security**

It is a basic dilemma of our time that those who menace our way of life may force arms ex-



penditures of a magnitude that could cripple our economy and thus imperil our free institutions. I submit, however, that those who are critical of this administration for not bringing the national budget into balance may be guilty of ignoring the grim realities of the world in which we live.

I share the businessman's traditional dislike for deficits and am not unaware of the desires of the American taxpayer to have his burden made lighter. But under the circumstances of today, I am convinced that no loyal and informed American would knowingly consent to dangerous concessions in our security program in order to achieve some otherwise desirable fiscal objective. The risks involved are too great—the stakes too high, for any such false economies.

The arithmetic of the distribution of your tax dollars and mine establishes that during the current and coming fiscal year one third of that dollar, or 33c, is being allocated to the Army, Navy and Air Force. The figure does not include foreign aid, part of our payment for security, which averages 14c.

Those who say they would destroy the United States are thus forcing us to spend heavily from our resources, not only for our national defense but also for the rehabilitation and strengthening of our allies. They hope to force us into economic collapse.

This danger is always present—consequently efficiency and quality assume transcendent importance in all our preparations; and selectivity in the building of our defense structure grows increasingly vital to our solvency.

If it is more important to balance the budget than to guarantee our security, it would be a relatively simple matter for our President to do so by recommending still further reductions in appropriations for national defense.

Based on the facts presented to you above, however, I ask again, is there any American who wants to see our defense budget reduced further?

### Can We Afford the Same Mistake Again?

We have made the mistake more than once. Let us consider what a single mistake of this kind cost us in money alone—not to mention hundreds of thousands of American lives.

In 1913, at the start of the first World War, the national debt was a little over 1 billion dollars. That war heavily taxed our resources; and a few

years later we went through the greatest depression of them all.

A new President came in. He helped those people who wanted work but couldn't find a job. He did so because he believed that human dignity was better for the nation than poverty and want.

At the time we started, somewhat leisurely, rearming for the second World War, the national debt was around 40 billion dollars.

Today this debt is about 257 billion dollars.

Could there ever be clearer proof of the cost of unpreparedness?

If reports received from behind the iron curtain are correct, in a short time Russia will be at its strongest position in armaments; and under their present program that position will increase steadily year by year. So, I say today that further reduction in our payment for national security is unthinkable.

Our able and conscientious Secretary of Defense, Louis Johnson, is doing everything possible to promote true unification of the Services which will guarantee the taxpayer maximum security at minimum cost. He is doing a fine job. But, it was Mr. Johnson himself who said recently that our "watchword should be military security first, economy second."

Both he and our President were front line fighters in one war waged to preserve our way of life. They know that peace can be lost—but they know also, and you know, that the current price to America of losing any modern war is slavery.

I remind you that there is little, if any, peace in the world today. We don't have peace just because the guns are silent. We do have "fronts" where the shooting could begin at any time.

The history of Texas is the history of a battle for independence. May you in this great State, and in all our other States, remember the cost of such battles. When those who want to represent us in the halls of our Government consistently close their request for votes with the stressing of two words—peace and prosperity—let us remember the long rows of those who have passed on to us another heritage, and who believed that we in turn would pass that heritage on to our children, and our children's children. Let us ask our statesmen to add a third word to the appeal of "peace" and "prosperity". From Sam Houston to Sam Rayburn one word is engraved on the heart of every Texan, every true American. Freedom.

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## NOTHING BUT SHAME

*"It is difficult to forget that the world was once before confronted with a giant power, frankly aggressive in intention and rearming with all possible speed. On that occasion, Stanley Baldwin was the man whom the dilemma bleakly confronted. Baldwin chose to do only what it was convenient to do. Before long, the aggressor had achieved decisive strength. Fear begot weakness, and weakness begot the appeasement of Neville Chamberlain. But appeasement achieved nothing but shame, and the ultimate horror ensued."*

Joseph & Stewart Alsop



# CONQUERORS OF THE HUMP

The men of ATC's India-China Wing counted the time they spent getting over The Hump as combat flying time—and nobody disputed them. It was they who kept the

Fourteenth Air Force in business in the dark days of '43

*March 1944: The war in Europe was roaring along on all cylinders. Thirty B-17s of the 8th Air Force attacked Berlin for the first time. To the south, MAAF strategic and tactical units pasted the tiny Italian village of Cassino with over 1,200 tons of bombs. And in the Far East, the boys who flew the hump were performing one of the war's major miracles.*

When the Air Transport Command's India-China Wing won the Presidential citation for its achievements, the facts were these: At the close of 1943 the wing was flying more tons per month of military supplies to China than ever were delivered over the Burma Road. More tons of cargo were being transported than all the American air lines had hauled prior to December 1941, and the India-China Wing was operating more airplanes than America's largest civilian air lines.

During the year of intensified operations, airdrome facilities were more than doubled in Assam, the number of

cargo-carrying planes was tripled, maintenance and repair efficiency was increased 50 per cent, inauguration of night flying doubled the number of possible cargo flights. As a result of these measures, the amount of cargo carried on the military-supply life line over the "Hump" to China was increased tenfold in 12 months, dwarfing the achievements of any commercial air line in history.

Behind these facts are the stories of flights over the world's highest mountain ranges, in part over Japanese-held territory, of battling hundred-mile-an-hour winds, of flights as high as 30,000 feet, of flying through monsoon weather, of carrying on ground maintenance and supply at bases deluged by the heaviest rainfall in the world, and of meeting Japanese fighter interception in unarmed planes. It is no wonder that crews count their time officially as combat flying in their continuous battle to reinforce the fighting forces in China.

Originally with C-47s, now with C-46s, C-87s, and B-24s retired from combat, the ATC is transporting jeeps,

six-by-six trucks, ambulances, sedans, P-40 wing panels, primary trainers, aircraft engines, gasoline, bombs, ammunition, Chinese and American troops, PX supplies, mail, tents, clothing, and rations not available in China.

The importance of these supplies to our Fourteenth Air Force and to the Chinese air and ground forces is immeasurable. The best yardstick of the military importance of this high-pressure pipe line is the increasing tempo of operations against the Japanese by Maj. Gen. Claire Chennault's fighters and bombers.

Despite the potential dangers, the typical Hump run is an uneventful flight of only a few hours. Day and night, before engines have had a chance to cool, cargo is loaded into planes at different airdromes; each plane with its crew of pilot, copilot, engineer, and radio operator taxis out with its heavy load of war cargo and takes off from its base in the valley of the Brahmaputra. Once airborne, the plane must spiral up to altitudes varying from two to five miles before setting its course toward

A C-47 of the 2nd Troop Carrier Squadron at Dinjan, drops supplies over Nathkau Sakan. This was in pre-Ledo Road days.







Companion to the C-47 in India-China theatre was the Curtiss C-46 Commando, shown here above snow-capped Himalayas.

China. Mountain peaks rise to 16,500 feet along the run and to greater heights away from the usual course. Weather almost as high as Mt. Everest frequently must be topped to avoid fierce windstorms and severe icing conditions on the route over the Himalaya ranges in northern Burma.

Once on course, the heavily loaded plane cruises over the rugged and rocky white-capped mountains, sometimes within range of Jap fighter planes, until it is precisely the right time to let down on a Chinese airdrome more than 6,000 feet above sea level and squeezed between mountains 8,000 to 10,000 feet high. Losing altitude fast after getting over these ranges, the pilot touches his wheels on the runway of crushed rock bound with mud, and chalks off another successful mission on the plane's Form 1. It's as easy as that if you don't have engine trouble, if you don't get caught in windstorms, if you don't encounter icing, if you don't get blown off course while flying instrument, and if you don't meet any Jap planes.

Crews have lost their planes and have been forced to parachute into jungle country or into the midst of the rugged mountains. Many have struggled for weeks, despite injuries and burns and disease, to make their way to safety. The terrain is so rugged that survivors spend entire days traveling one or two miles.

In the early days of the Hump run, practically nothing was known about most of the territory over which the cargo planes were flying. However, in the spring of 1943, as the wing was being expanded, ATC intelligence officers concentrated on the accumulation of scattered details about the terrain, the paths, the native tribes, the food, Jap patrol positions, and other information that could aid crews lost in the mountainous jungles.

During the summer, several airmen who had been forced down succeeded in communicating with American aircraft flying overhead and with Allied ground patrols. Their rescue resulted in the compilation of much valuable information concerning the hitherto uncharted country. Maps soon were revised and given to each crew; information about inhabitants, friendly and unfriendly, about American and British

and Chinese outposts, and about river and overland routes was made available to all flying personnel of the wing. This actually marked the beginning of the "discovery" and mapping of the hitherto uncharted country. A briefing system for crews and an intelligence query of rescued personnel made possible the compilation of facts about the country that later proved vital in the rescue of other crews.

The rescue and search work of all branches of the wing were consolidated in October as the Air Search and Rescue Unit. With several planes at their disposal, air crews of the unit take off as soon as word is received that a plane is missing; the search missions they fly are long ones, scanning from high altitudes and scouring at treetop level between mountain ranges. When a missing plane or crew is located, signal panels and medical supplies, if needed, are dropped with food and instructions. In emergencies, medical personnel have parachuted into the mountains to assist wounded crew members during the long walk back. As many as thirty survivors at a time have been supplied from the air during their treks back to civilization.

Anything can happen on the Hump run. One C-47 accomplished the impossible and flew a two-ton load over the Hump at 24,400 feet; Lieutenant Fred K. Breitskopf did a half loop with a C-46 when his plane suddenly flipped on its back in the midst of a severe storm. He came out of the loop far below the mountain peaks but climbed back to altitude and safely returned to his airdrome. C-46s have flown at 22,000 feet to avoid icing, while some planes have staggered over the Hump at 95 miles an hour, landing with warped and bent wings—but the supplies have reached China in ever-increasing quantities.

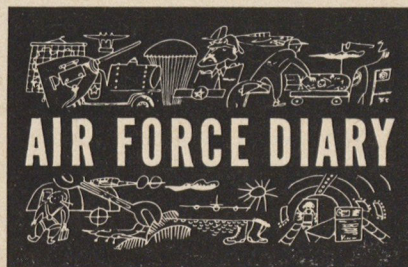
The return trip to India presents its problems, too. Loaded with raw materials, engines for overhaul, personnel, mail, and hog bristles, the planes must take off with heavy gas loads at 6,000 feet altitude—no easy task for any heavily loaded plane. Between flights, crews hardly have time to order tea and eggs and purchase peanut candy at the familiar Chinese cafeteria before taking off for India, because ATC has a rule that planes shall not remain on the

ground in China for more than one hour. After this brief rest, the crews start their return trip to Assam, where more supplies and new crews are waiting to fly the Hump. Occasionally, some planes fly three round trips a day.

Such continuous flying would not be possible without competent mechanics. Their rapid and efficient maintenance and repair have increased the percentage of flyable planes from 50 to 75 per cent. In the month of December, they made more than a hundred engine changes; it wasn't a record, simply normal operations. A plane that is grounded may be robbed of parts to put another plane in the air, but when its turn comes to fly, a newly grounded plane contributes the missing parts.

To obtain supplies of replacement parts, Capt. L. E. Hubbard, engineering officer, has flown as many as 110 hours a month, scouring India's airdromes and depots for scarce but vitally needed accessories, rather than delay operations by sending planes back to depots for engine changes and heavy maintenance. The ground crews improvised equipment and proved they could successfully change landing-gear struts and replace gasoline tanks—even though it meant taking the wings off the planes—and at the same time build their own engine hoists, slings, and crew-chief stands.

This amazing air-cargo center absorbs its supplies from river boats, trains, and air priority shipments like a sponge. After receiving supplies from the Services of Supply, ATC then bundles them into its planes and squirts them across the Hump into the hands of the men whose success in stopping the Japs from encroaching further on Chinese soil has depended completely on this one and only supply route.





**L**ater this month Airability Work Kits will go out from AFA Headquarters in Washington to every active squadron of the Association, and AFA's far-reaching survey of the status and needs of aviation development in hundreds of American communities will get underway.

This will be the start of AFA's unique and challenging Airability Program—a start deliberately timed to coincide with the election and installation this month of new squadron officers.

Thus, AFA's local leaders for 1950 will begin their terms of office strengthened by a coordinated airpower mission which embraces virtually all forms of AFA activity at the community level.

The Airability package has been in preparation for almost a year at Headquarters. It has been put together and wrapped for action only after laborious months of evaluating aviation needs and squadron needs.

The program by which AFA will undertake to survey and measure the status of aviation development at the community level (see explanatory articles in January and February issues of AIR FIRCE) features extensive committee work. In fact, it calls for continued participation of squadron members on a scale never before projected within AFA, and in this

# ORGANIZING FOR AIRABILITY

Work kits going out this month will signal the start of AFA's new and challenging Airability Program.

respect, is an answer to the repeated requests from squadrons for a program to give "more of our members more to do."

The Airability program, as outlined in the accompanying chart, centers around seven Survey Teams, each covering an important segment of community life, and each with a vital Airability mission. These teams, or committees, may vary in strength from one member to fifty members, and probably will be organized into sub-committees concentrating on specific points of the team's mission. The job, of course, is to search out the facts regarding community aviation development, or lack of it, within the assigned fields of investigation. These fact-finding missions will bring team members in contact with many civic and private agencies and leaders, and the missions will be guided by detailed questionnaires provided in the Airability Work Kit. The accompanying chart shows some of the contacts recommended and lists a few of the thousands of Airability questions provided in the Kit.

This team activity will be coordinated and directed by a squadron Airability Chairman (who may or may not be the squadron commander, as he chooses) and a squadron Airability Executive Committee composed of the chairmen of each of the seven survey teams.

Meanwhile, though the program obviously lends itself to group activity and therefore to squadron participation, non-squadron AFA members can play an important part in the Airability work by sending Headquarters reports on aviation development in their communities. Work sheets for this purpose will be available upon request.

## Squadron Survey Teams . . .



**PUBLIC  
ACTIVITIES**



**PRIVATE  
ACTIVITIES**



**AIR  
TRANSPORTATION**



**PERSONAL  
AVIATION**



**AIRPORT  
FACILITIES**



**AIR AGE  
EDUCATION**



**CIVIL  
DEFENSE**



## They Will Contact . . .

Mayor's office, county supervisors, city and county commissioners, state aviation leaders, regional CAA officials.

Chamber of Commerce, service and fraternal clubs, women's organizations, forum groups, newspapers, radio stations.

Present and potential airline passengers, airline offices, business and professional leaders, rail and bus executives.

Flying schools and dealers, plane owners and operators, inactive pilots, business and industrial leaders, farmers.

Airport operators, civic officials, airlines executives, personal plane users, CAA officials, air passengers.

Superintendent of schools, teachers, students, school board, parent-teacher association leaders, libraries, scouts.

Civic officials, business and professional leaders, Reservists, Guardsmen, Civil Air Patrol, policemen, firemen.

## A Few of the Questions They Will Ask . . .

**THE MAYOR:** Does your city have a salaried Director of Aviation.....? A city-employed Airport Manager.....? An Airport Engineer.....?

**THE CITY COUNCIL:** Do you have an organized, active aviation committee.....or a member recognized as an expert on the community's aviation interests.....?

**THE CITY'S AVIATION EXPERT:** Has a postwar survey been made, by an outside consulting firm....., or by local people....., of the city's aviation needs?

**THE NEAREST CAA OFFICE:** Has the community sought all available advice, and technical and financial assistance from CAA and other Federal agencies.....?

**THE CHAMBER OF COMMERCE:** Do you have an active aviation committee.....? Or an official to keep in touch with the community's aviation interests.....?

**LOCAL BUSINESS AND FRATERNAL ORGANIZATIONS:** What is the extent of your sponsorship or participation in activities which stimulate local aviation interest.....?

**NEWSPAPER PUBLISHERS:** Do you employ a full-time aviation writer.....? Or a staff writer assigned to cover aviation along with other matters.....?

**RADIO STATION MANAGERS:** What percentage of your public service time is devoted to discussion of matters related to aviation.....?

**FLYING SCHOOL OPERATORS:** What percentage of your business comes from G.I. flight training activity.....?

**AIRPLANE DEALERS:** Do you maintain an up-to-date list of business and professional men in the community who make \$10,000 a year or more.....?

**FORMER LIGHTPLANE OWNERS:** What factors of cost, time and utility prompted you to sell your planes and give up flying.....?

**WIVES OF TEN PROSPEROUS LOCAL MEN:** Would you object for safety reasons..... or for financial reasons.....if your husband took up flying for business or pleasure.....?

**TYPICAL BUSINESS LEADERS:** Does the community have sufficient airline service to offer definite advantages over other forms of travel for business purposes.....?

**25 HOUSEWIVES:** If your husband's work involved considerable travel, would you agree to his using air travel whenever it was most practical.....?

**LOCAL AIRLINE SALES MANAGERS:** Do you feel that this community is so situated that air travel offers definite advantages over other forms of transportation.....?

**AIRPORT MANAGERS:** Do your airline revenues exceed all other income.....? Do you need a better field to attract more airline service.....?

**CITY OFFICIALS:** Does the community have a master plan for airport development based on scientific analysis of potential growth and traffic.....?

**AIRPORT MANAGERS:** What percentage of your total revenue comes from landing fees.....? From hangar and office rentals.....? From non-aviation activities.....?

**AIRLINE EXECUTIVES:** Will the present airport be adequate five years from now as to passenger terminal facilities.....? As to runways, lighting, etc.....?

**50 PEOPLE ON THE STREET:** Would you favor a bond issue to give the city an airport comparable to the best in any similar city in the country.....?

**SUPERINTENDENT OF SCHOOLS:** Is there a standard aviation curriculum for all city primary schools.....? Junior high schools.....? High schools.....?

**25 STUDENTS IN HIGH SCHOOLS:** Do you feel that the school aviation instructor has sufficient practical experience to guide you toward an aviation career.....?

**CITY LIBRARIAN:** What do you stock in aviation trade magazines and reference books? Do you feel that they are adequate for youth and adult guidance.....?

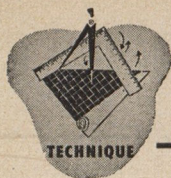
**CHURCH AND YMCA LEADERS:** What is the extent of your work in aviation education.....?

**RESERVISTS AND GUARDSMEN:** How do your local training units enhance your active interest in aviation.....?

**POLICE AND FIRE COMMISSIONERS:** Do you have a well planned local air disaster policy against possible attacks by a foreign power.....?

**AIR RESERVE AND ANG COMMANDERS:** Are you adequately equipped and staffed to be considered a defense force as well as a training force.....?





## TECHNIQUE

### Interceptors Get Air-to-Air Rocket Armament

**"Mighty Mouse", Navy-developed Rocket Missile adds to Firepower, Augments Machine Guns, Permits Longer Range Attack**

Latest striking punch for two Air Force fighter planes—the F-86D and the F-94—is a power-slammung air-to-air rocket missile called "Mighty Mouse."

Developed by the Navy, but now being adapted to Air Force interceptors because of its increased firepower potential, the rocket projectile has been hailed as "the greatest aircraft armament development since World War II."

Use of the rocket on the Air Force fighters will augment present high-rate of fire machine guns. "It is, however,"

one Air Force official said, "only an interim weapon to be used until other air-to-air missiles are developed."

The projectile itself is strictly a navy development. It is the first "operational" air-to-air missile in this country. And the rocket was designed primarily for "destroying large bomber formations." It is said to be capable of attacking ranges far exceeding the present armament on the fighters.

The projectile is carried on the planes in special racks and launching devices

either under the fuselage or the wings. They can be fired either singly or in salvo. But, one drawback to the present missile is that the airplane must be aimed at a target in order to permit firing the rocket.

(In this sense, the new air-to-air weapon is not a controlled missile of the type desired in the future.)

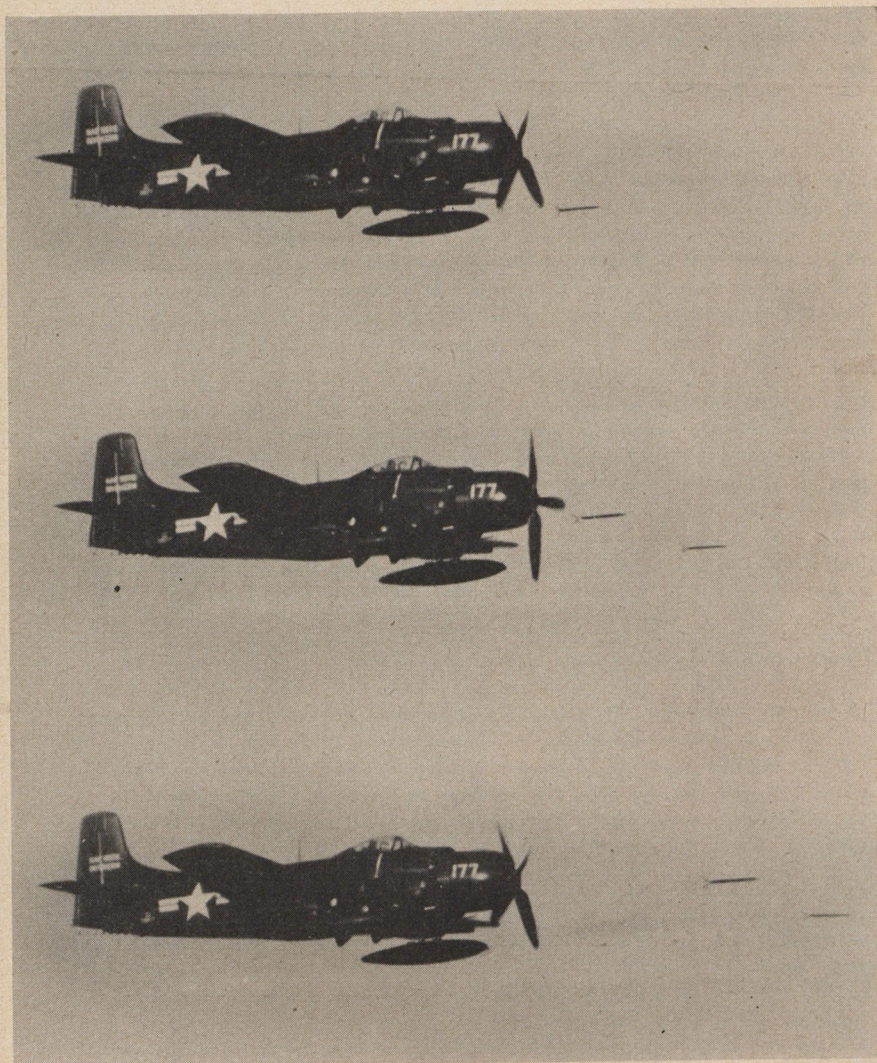
How many rockets the planes can carry has not been disclosed. But an official announcement claims that design of the new projectile permits carrying many more than previous type air-to-ground rocket installations.

"Mighty Mouse" has folding fins which eliminate drag factors. When the missile is fired its fins snap up and give it directional stability.

The Navy started work on the rocket about two years ago at the Naval Ordnance Station, Inyokern, California. First successful firing tests were made from a Navy skyraider plane.

### NACA Names 40 AF Men To Tech Subcommittees

A group of forty Air Force officers and civilian engineers recently were appointed to serve as technical subcommittee members for the National Advisory Committee for Aeronautics. In their new professional capacity, the men will play—without compensation—a major role in research programs now in progress. The new duties are in addition to their regular assignments. The men are: Colonel Benjamin G. Holzman, upper air specialist; Dr. Albert E. Lombard, Aerodynamicist; Lieut. Col. N. C. Appold, power-plant expert; Brig. Gen. Donald N. Yates, meteorological expert; H. L. Anderson, aerodynamicist; Bernard Chasman, icing specialist; Opie Chenoweth, propulsion engineer; Col. Marvin C. Demler, powerplants; Brig. Gen. F. R. Dent, Jr., operational problems; James E. DeRemer, icing; Anthony F. Dernbach, propellers; Daniel A. Dickey, propellers; Joseph Flatt, aerodynamicist; Col. J. A. Gibbs, aerodynamics; Joseph H. Harrington, aircraft loads; J. M. Herald, seaplanes; J. B. Johnson, materials expert; Joseph Kelly, Jr., aircraft structures; Howard A. Klein, Bernard Lindenbaum, Lieut. Col. Ernest N. Ljunggren, Howard H. Noyes, Duane M. Patterson, E. C. Phillips, Col. O. J. Ritland, E. H. Schwartz, Melvin Shorr, P. A. Simmons, Ernest C. Simpson, Benjamin Smilg, Col. J. Francis Taylor, Jr., Garrett L. Wander, Dr. Frank L. Wattendorf, Edgar A. Wolfe, Joseph A. Ellis, Dr. Marcus D. O'Day, Maj. Fred-eric C. E. Oder, Capt. P. D. Thompson, Maj. Gen. W. H. Tunner and Maj. C. H. McConnell.



Here is Douglas "Skyraider" during firing tests of new Navy air-to-air rocket, "Mighty Mouse." Slung underneath the wings the rocket let's go (top) as pilot aims plane. In subsequent photos second and third rockets are fired.



## Personal Plane Market Views Five Cub Models

Lightplane enthusiasts and practical flying men who use their planes for business got a preview of the latest Piper "Cub" designs recently at the All American Air Maneuvers in Miami. Five new and improved models for 1950 were announced.

The new designs include a Super Cub 95 and Super Cub 105—plus three new versions of the famous wartime trainer and general utility plane "The Clipper." The latter now have new designations as Piper Pacers.

Stressed in the new Cubs are design and structural changes making them adaptable for a greater range of usage.

According to Piper engineers the new versions have been engineered especially for such activities as—crop dusting, spraying, seeding, fertilizing and de-weeding in the agriculture; as small transport planes capable of carrying livestock and lumber and other materials to and from short and inaccessible places. The planes also have built-in features for high altitude operation. And they are also built for rugged and usually rough treatment from student instruction and airport rentals.

The two super models (the "95" and the "105") outwardly look like their well-known predecessors. Powered with Continental 90-hp and Lycoming 108-hp engines respectively they reportedly have set new records in both high and low flying speed ranges for their class.

The Super Cub 105, for example, has a cruising speed of 105-mph but with flaps and balanced elevators now added as standard equipment it can be flown in controlled flight as slowly as 28 mph!

Both Super Cubs have a gross weight of 1500 pounds, wing span of 35.3 feet, length of 22.4 feet. Both can operate at a service ceiling above 13,000 feet.

Interior improvements include: larger and more comfortable seats adjustable in height for maximum visibility; a folding rear seat to permit handling bulky loads up to 400 pounds; and larger baggage compartments.

Biggest improvements, however, are in the three Piper Pacer models. The "115," for example, has new wheel type controls and a redesigned instrument panel. This four-place airplane also has two wing tanks replacing the old fuselage tank to facilitate a more comfortable interior. Fuel capacity increase has also upped the range. Increased tail surface area permits lighter control loads. And engine cowl designs that snap on with trunk-like fasteners help speed up maintenance problems.

The "115" has a useful load of 750 pounds, a climb of 600 feet per minute and can operate at a service ceiling of 11,000 feet. A sister ship, but larger and more powerful—the "125"—offers flap control and complete soundproofing as standard equipment. It can operate at 14,250 feet and can carry a useful load of 820 pounds. A third model "135" offers an Aeromatic controllable pitch propeller.

## TECH TALK By Douglas J. Ingells

Latest news on the flying wing bombers is that one of the YB-49's is being converted at Edwards Air Base (formerly Muroc) into a photo reconnaissance aircraft. Experts claim its unique design offers many new possibilities for new camera installations.

*The Flight Test Division at Wright Field is now engaged in a new type of aircraft testing. They call it "Phase Five" and it is a must to be written into every new military contract. The new phase is a rigid all-weather, in-flight program. Now, after routine airworthiness tests, flight acceptance tests, performance tests and modification tests, the flight test boys have to take up the new planes and wring them out under adverse weather conditions. Much of the work is being done by former pilots of the All-Weather Flying Division now stationed at Patterson Field after transfer from the Wilmington, Ohio, air base.*

The model makers at Wright Field are at it again. They're rebuilding the 17-foot radio-controlled YB-49 model to study "unstable" flight characteristics and see if they can find out—with a model—what caused the big experimental flying wing jet job to crash some 20 months ago. Is it tumbling? That's the question the model boys hope to find the answer to with their "exploratory" model.

A new worry for the parachute people is that at the high speeds pilots will soon have to open their chutes during egress periods, there will be danger of friction heat melting the nylon material. The problem is getting a lot of attention lately. Incidentally, a lot of new parachute gadgets are in the offing. One of the latest which now can be talked about is an automatic opening aneroid timing device built by George LeBoeuf Company of Dayton, Ohio. The timer permits automatic opening of the chute at any altitude.

*For a long time the Air Force at Wright Field and in industry has been experimenting with magnesium for major aircraft assemblies such as wings and fuselages. Latest on the project is that one company now has completed a F-80 airplane entirely of the magic metal—wings, fuselage and tail assembly. Reportedly it cuts almost a ton off the weight of the standard plane.*

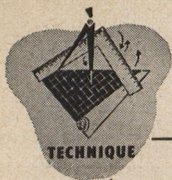
Now in operation on a purely "experimental test run" basis at Wright Field are two new wind tunnels. One is a two-foot by two-foot throat supersonic tunnel with a velocity approaching 2,000 miles per hour. The other is a smaller throat high-speed tunnel. Some of the wind tunnel work carried on at Wright Field, according to certain sources, may fall under direct control of the recently established Research & Development Command.

The new "winged tow targets"—three-dimensional tows—which were introduced in AIR FORCE some months ago, have recently undergone extensive tests by the Navy. Reportedly the tows have reached speeds of 450 mph which is faster than any previous three-dimensional target.

*A new process of manufacturing developed by the Martin Company permits forming sheet metal parts at savings up to 50 per cent in time and cost. Glenn L. Martin engineers call it "Marform". They claim it may be adopted for manufacturing uses outside the aircraft industry.*

A novel nozzle development by Boeing engineers has solved a serious "frost-bite" problem in the B-50 photo reconnaissance aircraft. Previously there was trouble with the optical glass on the seven ports for the nine cameras; the windows simply picked up too much moisture condensation, fog and ice at high altitudes . . . A specially-designed jet (or nozzle) which shoots a stream of laminar flow heated air across the inside face of the camera window has whipped the problem.





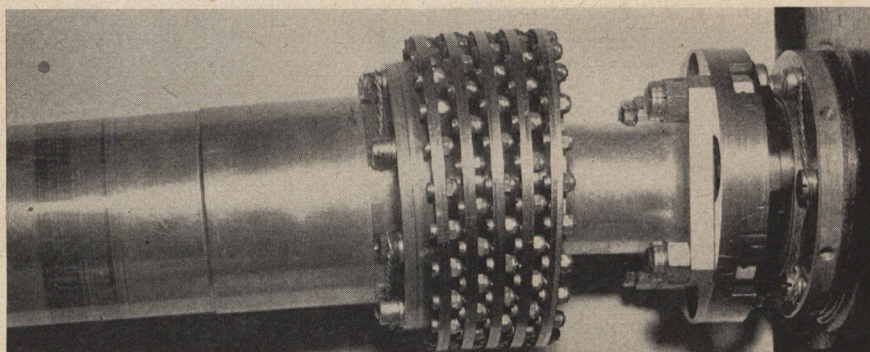
## TECHNIQUE



### Bellanca Displays New Cruisemaster

Above is 4-place Bellanca Cruisemaster introduced recently at New York Sportsman Show. Plane, powered by 190 hp Lycoming engine, has remarkable cruise

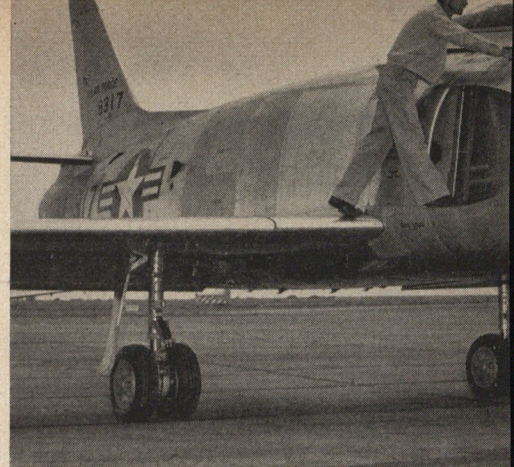
ing speed of 180 mph. Rate of climb is 1400 ft. per min. Service ceiling, 22,500 ft. Gross weight, 2600 lbs. Cost of plane, FOB New Castle, Del. is \$9,500.



### Flexible Coupling Small but Strong

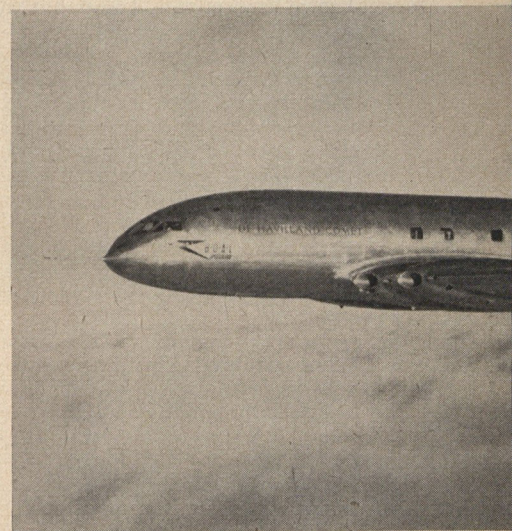
Photo above shows diaphragm section of new fist-sized flexible coupling developed by Bendix Aviation which can handle torque loads up to 300 hp at

9000 rpm. It makes possible use of remotely-mounted engine-driven gear box which provides power takeoffs for accessories while using one drive pad.



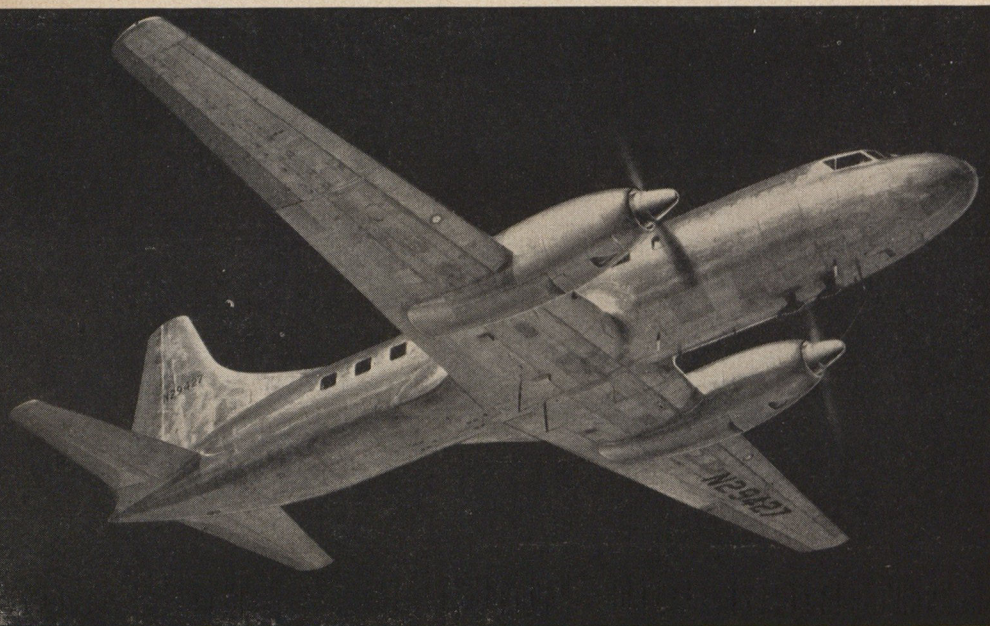
### Latest North American

Less than a month after announcing the new F-86D, North American Aviation revealed last month that its new high-speed penetration fighter, the YF-93 had successfully completed its first test flight at Edwards Air Base, Muroc Dry Lake. Powered by a Pratt & Whitney J-48 turbojet engine with 6,250 pounds of static dry thrust (which is further increased with an after-burner) the YF-93 is designed to fly at speeds "close to the speed of sound", according to official announcement. Air intake ducts are

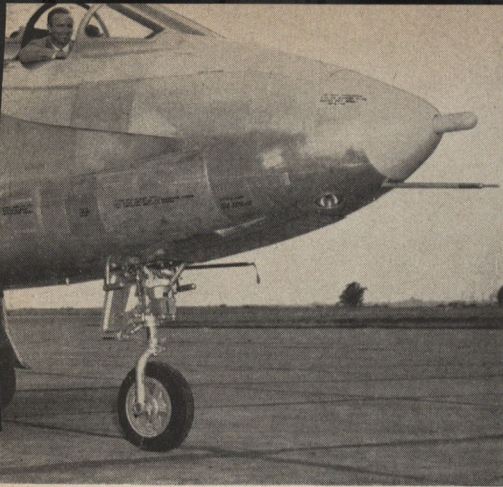


### Turboprop Liner

America's first turboprop transport, an improved Convair Liner, is being built at Consolidated Aircraft's plant in San Diego, according to an announcement released jointly by Convair and Allison Engine Company last month. The plane, left, is powered by Allison's 2750 hp T38 engine. The project was initiated by Allison to accumulate operating data on the reliability and dependability of turbine-powered transport aircraft. First tests will be made at Convair, after which the plane will be flown to Allison in Indianapolis for continued study. Eventually it will be used as a demonstrator for manufacturers and airlines.

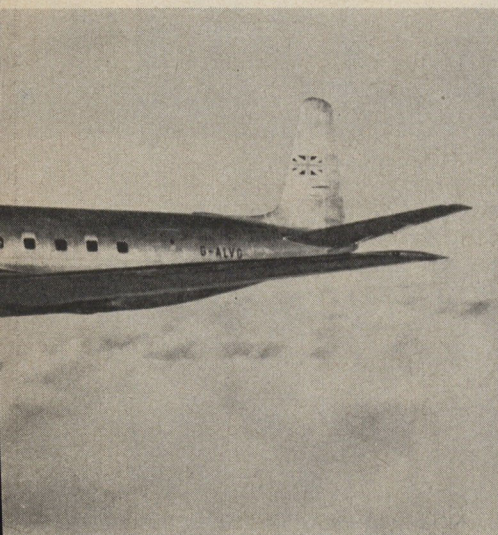






## Fighter Makes Test Hop

streamlined flush with each side of the fighter's fuselage near the nose. Like the 86, the 93 has a sweptback wing, but the later plane takes further advantage of this configuration with a stream-contoured, or "coke bottle" fuselage. This design reduces drag and improves longitudinal stability at high Mach numbers. The new plane is heavier than most current fighters and requires two wheels on each strut of the main landing gear. Other features of the plane include automatic slats and slotted type wing flaps.



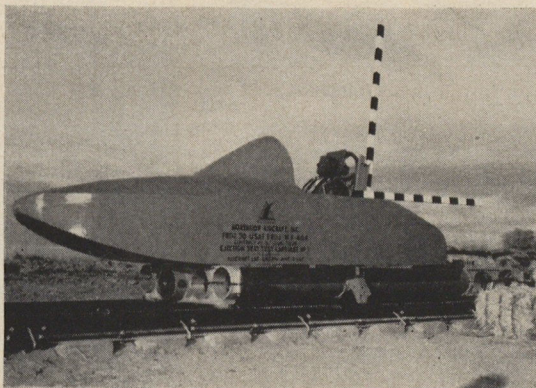
## Order For Comets

While America fumed over the British lead in the design of pur jet transports, the de Havilland Company announced proudly last month that two companies—British Overseas and Canadian Pacific—had placed orders for their "Comet", the world's first all-jet liner. The Comet made its first flight in July of last year. Since then it has completed 126 test flights and 154 flying hours. It has a cruising speed of 500 mph at 40,000 feet, and accommodation for 36 passengers. The de Havilland company did not announce the number of planes ordered nor when deliveries would begin. BOAC is a "chosen instrument" line.

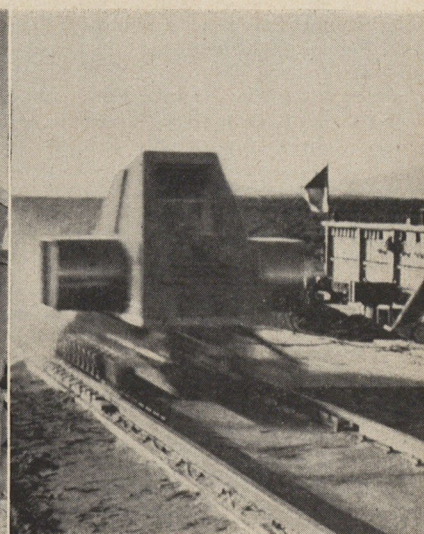
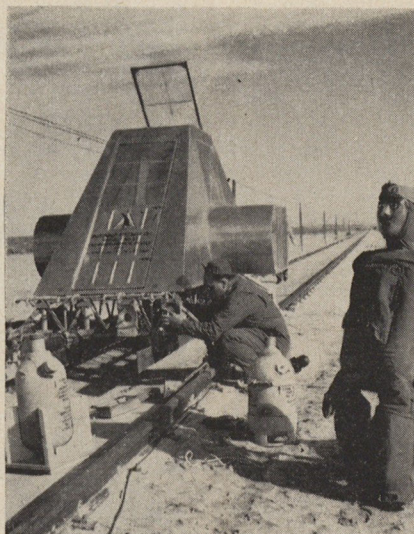
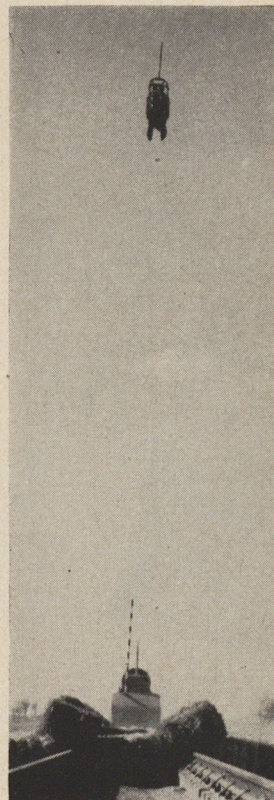
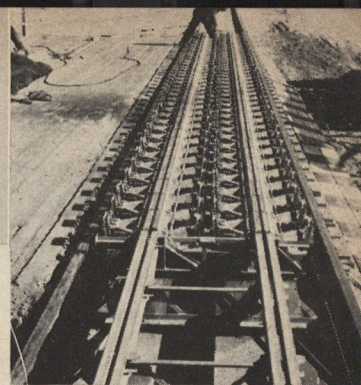
## TRACKS in the DESERT

When the world of aviation first turned its attention to jet aircraft one of the immediate problems was how to test the new airframes in wind tunnels built for much slower reciprocating craft.

Northrop Aircraft approached the problem by laying a set of standard gauge rail tracks in California's Mojave desert, affixing a rocket sled thereto and mounting the airframe—or parts of it—on top. As the sled scooted down the tracks at sonic speeds, cameras took pictures which were later studied to get the necessary information. Since then the "short line" has proved its worth in at least two other fields. Both projects would make any Coney Island concessionaire green with envy. Both are pictured here.

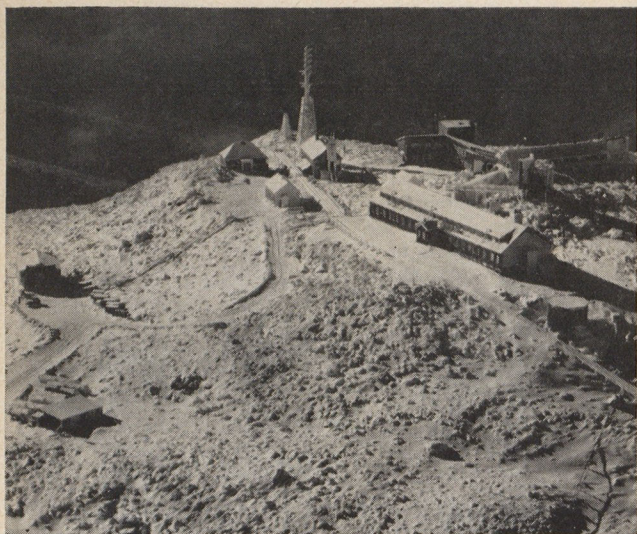


In pilot ejection tests, above and right, only dummies have been used thus far. Fifteen 10,000 pound rockets can propel sled up to 1100 mph. Half way down the track the ejection seat, watched carefully by cameras, is catapulted clear while sled is halted by reverse rockets. New trick to be tried is ejecting through floor to reduce risk.

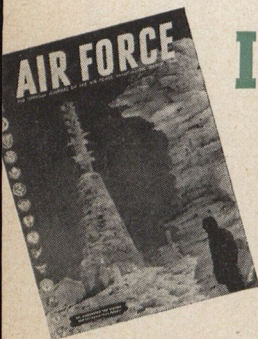


The second Northrop device is air crew decelerator, above. In it, real live men are used, although at first tests were restricted to people like "Capt. G", the sack of straw in left foreground. Main purpose of decelerator is to develop new safety devices for crash victims. Like ejection seat, decelerator is rocket propelled but attains speed of only 150 mph. At that velocity it passes over series of super brakes that brings carriage down to 75 mph in 1/5th second—equivalent to stopping a car going 75 mph in 9 feet. Tests have shown human body can stand strains up to 35 Gs.





This is all there is to one of our more vital bases.



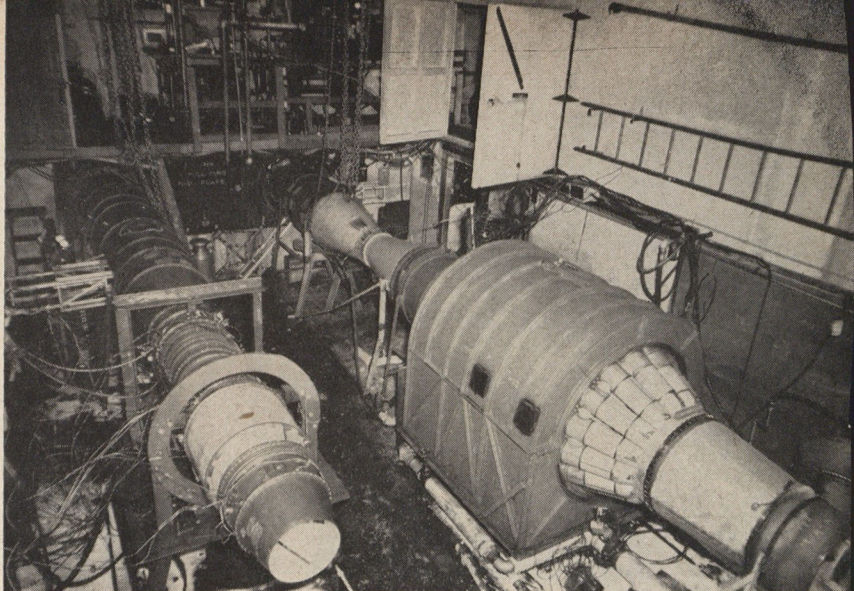
## IT'S PART OF A CONCEPT

Three years ago one of the most popular phrases in the armchair strategist's lexicon was "polar concept." Basic tenet of the concept was that future wars might well be "won" in the air over regions of the North Pole—not over oceans and great land

masses as had been in the past.

Today not so much is heard about this new field of battle, but behind the scenes the military establishment is going forward with uncounted numbers of projects designed to increase the operating efficiency of our war machine regardless of the temperature reading. One of these projects, which has been functioning in its own quiet way since 1945, is the jet testing lab 6000 feet atop Mt. Washington, New Hampshire. Here in winds as high as 231 mph and temperatures as low as 46.5 below, the Air Force and Navy conduct continuing tests of jet engines—both new and old. The station is manned by a crew of only 13 men—five Navy and eight Air Force. Under contract provisions, jet manufacturers may also send men to the mountain twice each year to take advantage of the testing facilities. Pictured here are some of activities of the lonely but important station.

The men below are arriving at Mt. Washington living quarters after eight mile trip from the foot. First five miles are made by weasel; the last long three by foot.

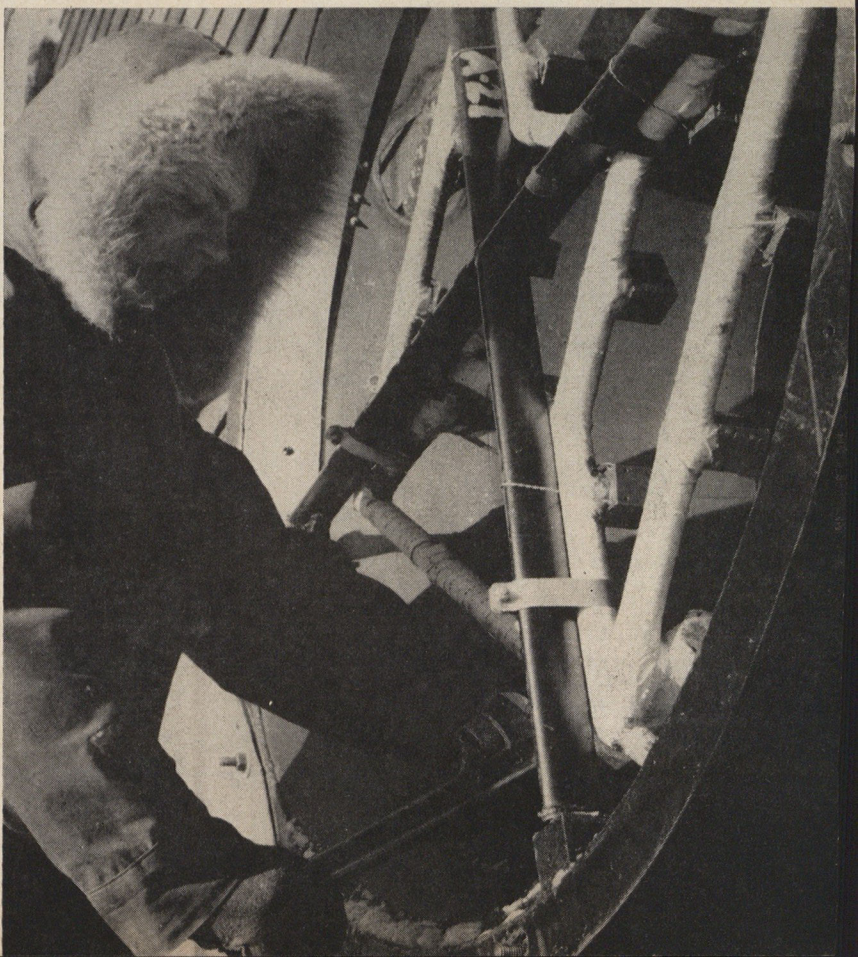


Mt. Washington nerve center is its hangar, interior of which is shown above. Block at left tests complete engines; one at right is for parts studies. Control rooms are at side.



Above, two engineers start an engine from control booth.

Below, is the rig that sprays water into jet engines at below freezing temperatures — just to see how much they can take.





## IN RESERVE



### Flight Training Offered Non-Rated Air Guardsmen

AF announces openings in seven 1950 classes for Minutemen.

Must agree to serve total of four years duty after graduation

Officers of the Air National Guard may now apply for pilot training in regular flying schools the Air Force announced last month.

Beginning March 3, seven classes spaced about a month and a half apart will be open to ANG-men during the balance of 1950. The March 3 group will graduate March 28, 1951.

Guard officers will attend the flying schools in their National Guard grades. After graduation they must serve on active duty for one year, after which

they must return to the Air Guard for four years duty.

To qualify for pilot courses, the guardsmen must be recommended by their immediate commanding officer in a federally recognized air unit and must be enrolled before their 27th birthday. They must pass the Air Force physical examination for flying training, and, unless rated as navigators or bombardiers the A/C qualifying exam.

Ineligible for the course are officers who hold or have held a rating of pilot in any of the armed forces or who have been eliminated from pilot training.

### MEDAL FOR DAD



Young Randy Blair, Torrance, Calif., accepts DFC awarded posthumously to his father, Capt. William Blair, who was killed while on Reserve flight in Tenn. Col. C. E. Duncan made award.

### Tell Your WASP Friends: They Can Join the Air Reserve and AFA Both

Miss Jacquelin Cochran, wartime head of the Womens Air Force Service Pilots, has issued an appeal to all former members of her organization to apply for commissions in the Air Force Reserve as authorized by AF Regs.

Appointments are being made, Miss Cochran pointed out, in the ranks of 2nd Lt. to Major, according to the length of wartime service of the individual. As Air Reserve officers, former WASPS will be entitled to all benefits afforded any commissioned reservist (retirement, etc.) with the exception of those which accrue as a result of prior service such as GI Bill privileges.

Like all Reserve officers, WASPS will be eligible for assignment in Organized Reserve units wherever a position vacancy exists that they are qualified to fill. They will not be put on flying status, however. Promotions after appointment will be awarded according to the regular Reserve formula.

Appointments will be made according to the following table. Time in training is not counted.

Service Time	Rank
Up to nine months.....	2nd Lt.
9 to 17 months inclusive.....	1st Lt.
19 to 23 months inclusive.....	Capt.
24 months or over.....	Major

Necessary application forms, which must be completed and forwarded to Hqs. of the numbered Air Force having jurisdiction over the area in which the applicant resides, may be obtained from any AF installation, or from the Service Department, Air Force Association.

And, we hasten to add, as Reserve officers, all former WASPS will be welcomed with open arms into AFA.

### WHY NOT?

On January 7, 1950, a reserve T-11 took off from Selfridge AFB, Michigan, and headed toward the small town of Sandusky. Arriving there at about 11:35 p.m., the pilot, Lieutenant George Aubill, blinked his landing lights and changed his propeller pitch in a simulated signal of distress. Six minutes later the wheels came within inches of the highway.

That was the result of an idea of Pfc. Bruce Bissonette, of the 91st Troop Carrier Squadron, 439th Wing (Res.), at Selfridge. Bissonette, had been discussing plane losses with Sgt. Merrill Clark of the Michigan State Police. Sgt. Clark told Bissonette that they could set up an emergency strip on a highway at any time of day or night if the plane in distress could communicate with them.

Bissonette went home and talked the idea over with Lts. Aubill and Richard Swenson, both of the 91st Squadron. They agreed that it was practical, and decided to give it a try. Although the state police were expecting them, they had no idea of what day or time. Within 90 seconds of the distress signal four police cars were a mile and a half out of town.

The police picked a two-mile stretch of highway five miles from town. While two of the cars blocked off the end of the "strip," the other two planted flares along the sides of the road.

The plane could have been landed easily. Clark and Bissonette hope to get their idea adopted as a national safety measure.

### New Deal for Reserve Medics

Air Force Reserve physicians and dentists may now serve on active duty for one or two days a week at air bases near their homes with minimum interference to their civilian practices under a plan just announced by the Air Force.

Vacancies for physicians and dentists currently exist at all Continental Air Command bases and qualified practitioners may make arrangements for service on certain days each week suitable to the demands of the individual's civilian practice and the needs of the local base. Officers selected will serve in their current USAF Reserve commissioned grades. Interested officers should apply to the Commander of the particular Air Force base where they wish to serve.





### AFA Squadron Swings Savannah From Sea to Sky

**Frank O'D. Hunter, retired boss of 8th Fighter Command, assumes leadership of local squadron; urges US to keep strong Air Force**

Savannah, long a "John Paul Jones" community, has been transformed to a staunch supporter of Airpower during the past few months, due mainly to efforts of the recently-chartered AFA Squadron of Georgia's "Queen City."

Proof that the coastal city has gone air-minded came recently when the community joined hands to persuade the Air Force to retain its 2nd Bombardment Wing in the vicinity. The Wing will be moved from Chatham AF Base to Hunter Field this summer in a

development that is regarded as assuring Savannah a permanent Air Force installation.

Maj. Gen. Frank O'D. Hunter, (USAF Ret.), a native of Savannah, was recently installed as commander of the local AFA Squadron, succeeding Frank J. Skeffington.

Addressing the members at their annual installation of officers meeting at Chatham AF Base Officers' Club, General Hunter, a commander of the 8th Fighter Command in England during

the war, said that Airpower is the only thing a potential enemy will fear.

The General declared, "We are facing the problem of the survival of everything decent in the world today. We must stay strong!"

An "Ace" from World War I, General Hunter has been a fighter pilot all of his service life. He distinguished himself by introducing the P-47 Thunderbolt into action against the enemy. He directed the first sweep of Thunderbolts over Europe when they were put to the test in fighter combat and as bomber escorts.

General Hunter witnessed the crucial battle of Britain between the outnumbered RAF and the Luftwaffe. The knowledge gained there, combined with his long experience in pursuit flying, was put into action two years later when, in July, 1942, he was named commander of all American fighter plane units in the ETO.

A former head of the 1st Air Force, the General is known throughout the USAF for his forthright personality, a trigger-quick mind and a legend of good luck. Reason for the legend can be found in the fact that he is one of the few men to sustain a broken back twice and bail out of crippled aircraft three times and still be alive.

The new AFA Squadron Commander's decorations include: The DFC with four Oak Leaf Clusters, DSM, Legion of Merit, Silver Star, DFC, Purple Heart, Croix de Guerre with palm, and Commander of the Military Division of the Most Excellent Order of British Empire.

The new slate of AFA officers, in addition to General Hunter, who took office for the coming year, include: Joseph S. Ivey, vice-commander; Donald A. Miller, junior vice-commander; Herman Cranman, secretary; Andrew J. Swain, treasurer; Richard W. Lantz, public relations officer; and Alton Moore, sergeant-at-arms.

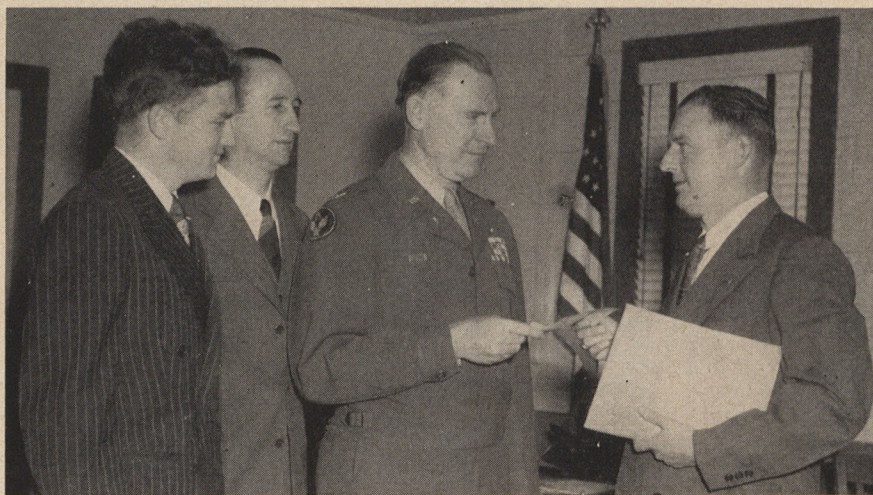
During the installation meeting the Savannah Squadron received its official charter in the Air Force Association, which was presented to Harry P. Palmer, retiring secretary. The presentation was made by J. A. Waterman, Southeastern Regional Vice-President of the Association and a National Director. Brig. Gen. Haywood S. Hansell was toastmaster for the affair.

A recent Squadron membership drive at Chatham AF Base resulted in the addition of 384 officers of the 2nd Bombardment Wing to the Savannah unit's roster. Plans are being made for a similar membership drive among airmen of the Wing.

The Savannah Squadron, AFA, meets the second Tuesday of each month in the American Legion Post No. 135. From 75 to 100 members attend each meeting.



Posing for first formal picture above, are newly elected officers of Savannah Squadron. Front row from left: H. S. Hansell, Councilman; F. J. Skeffington, Past-Pres.; J. A. Waterman, regional Vice-Pres.; Frank O'D. Hunter, Commander; A. J. Swain, Treas. In second row: Thomas Carlton, Councilman; Alton Moore, Sgt. at Arms; R. W. Lantz, Public Relations; D. L. Miller, Junior Vice-Commander; and J. S. Ivey, Vice-Commander. Secretary H. Cranman is absent.



Col. F. E. Glantzberg, CO of 2nd Bomb Wing, Chatham AFB, Ga., presents a check for \$1536.00 to Felix D. Cheely of AFA's Savannah squadron as payment of AFA dues for 384 Chatham officers. J. A. Stanford and F. J. Skeffington assist.



# AFA STATE ROUNDUP



## ILLINOIS

**Chicago:** The third annual dinner dance of Squadron 101, AFA, was held on February 11 at 5213 N. Pulaski Rd., Chicago. Entertainment, prizes and free drinks were features of the occasion.

The Squadron is headed by George A. Anderl, 412 No. Humphrey Avenue, Oak Park, Ill.

## KENTUCKY

**Covington:** Mr. Angus Wynn, who is in charge of engineering tests at General Electric Company's Gas Turbine Division, Lockland, Ohio, was guest speaker at the January meeting of the Covington Squadron No. 1, AFA.

Mr. Wynn is a graduate of the Illinois Institute of Technology and spoke on the history and theory of jet propulsion and its application to modern aircraft. The talk was supplemented with the Walt Disney color film "Jet Propulsion" and with slides.

## MASSACHUSETTS

**Taunton:** The Taunton Division, AFA, held a reunion recently at the YMCA. Wartime acquaintances were renewed and many air battles refought, according to Commander Arnold R. White. A private showing of "Operation Wing Ding" was screened.

## MICHIGAN

**Battle Creek:** J. Wayne Fredericks, who returned recently from 14 months in Africa, discussed his experiences there at a meeting on January 23 of the Battle Creek Squadron, AFA, at the Post Tavern. Mr. Fredericks was first commander of the squadron.

## NEW JERSEY

**Paterson:** Steve and Mike Hamas, activity directors for the paraplegic veterans athletic program working in conjunction with the Lodges of Elks, addressed the Passaic-Bergen Squadron, AFA, at a meeting on January 24 at Odom's Restaurant.

The annual beef-steak supper committee headed by Chairmen Charles Claeys and Alan Swartz announced their sub-committee selections to arrange for entertainment, location, tickets, and reception. This annual affair is expected to be the finest yet held by the Squadron, according to Commander Robert Westerveld.

Mr. Westerveld told the squadron what will be expected of it in the air-ability program sponsored by AFA.

## NEW YORK

**New York City:** Miss Allison Smith, 217 47th Street, Union City, N. J., was installed as commander of the New York Wac Squadron No. 1, AFA, at the unit's third anniversary celebration held at the Beverly Hotel on January 13.

Other officers of the squadron include: Emma Meister, vice-commander; Molly Kelley, recording secretary; Isabel Radin, corresponding secretary; and Mary Kenney, treasurer.

Council members for the coming year are: Mrs. Helen Karlsen, Mrs. Helen Chingos, Helena Kennedy, Ann Ryan,

Mildred Buck, Shirley Goodwin, Ruth Stern, Marian Garrett and Mrs. Mary Gill Rice.

General Doolittle, who had presented the temporary charter three years before, was on hand to present the Squadron's permanent charter.

AFA President Bob Johnson presented Stewart Rice with a scroll making him an honorary member of AFA.

Mrs. Doolittle on behalf of the squadron members presented past commander Mary Gill Rice with a handbag.

John Most, New York Wing Commander, handled the installation of officers. After the ceremonies, "Wing Ding" film was shown to approximately 75 guests.

**New York City:** The final meeting of the Executive Committee of the New York Wing, AFA, for the year will be held on March 18. The place has not been designated as yet, but it is expected to be held in the New York City area.

Plans will be finalized for the New York Wing convention to be held on May 13 at the Garden City Hotel, Garden City, N. Y.

Wing Commander John E. Most urges all New York AFAers to attend the convention.

**New York City:** Premieres of the 8th Air Force picture, "Twelve O'Clock High" are being sponsored by various AFA squadrons throughout the New York area.

The Mitchel Squadron, AFA, will sponsor the first run showing of the picture in Nassau County at the Rivoli

Theater in Hempstead on February 22.

The Passaic-Bergen Squadron, AFA, has been asked to co-sponsor an "Opening Night" for the showing of the film at the Fox Theater in Hackensack, New Jersey. The other co-sponsor will be the Paterson Volunteer Air Reserve Squadron.

The Brooklyn AFA Squadron will plug the picture from February 21 through February 27 when it will be featured at the Midwood Theater in Brooklyn.

The picture will be sponsored by the Queens Squadron, AFA, at the Merrick Theater in Queens on February 22.

The opening of the picture at the Glen Cove Theater on Long Island was handled by AFA on February 12.

## OHIO

**Portsmouth:** Plans to form a Portsmouth squadron of AFA were completed at a meeting held on February 10 at the American Legion Hall.

James Pendleton, fireman at Seventh Street station, who served with the 8th Air Force, is promoting organization plans and urges all Air Force veterans to get in touch with him.

A committee assisting Mr. Pendleton includes Donald F. Grashel, Maurice J. Brandel, John R. Black, Raymond Ackerman, Douglas L. Mays, John E. Burling, Frank M. Pickering, Eugene Campbell, James E. Dunn, Ray B. King and Tom Williams.

**Cleveland:** A Venison Dinner and Movie was presented for the entertainment of

(Continued on page 45)



AFA's President Bob Johnson presents scroll to Stewart Rice, right, making him honorary AFA member. Unique ceremony was part of recent meeting of AFA's Wac Sqdn. No. 1, in New York. Gen. Doolittle gave unit its permanent charter.



# BARGAINS IN BOOKS

**1. AVIATION RADIO.** By Henry W. Roberts. Complete, authoritative and heavily illustrated, this book covers the entire field.  
Pub. at \$7.50. A real buy at **\$3.00**

**2. AMERICAN GUERRILLA IN THE PHILIPPINES.** By Ira Wolfert. The amazing story of an American Officer's exploits behind the Jap lines.  
Pub. at \$2.75. Only **\$1.25**

**3. FIGHTING WINGS.** By Paust and Lancelot. War planes of all nations—from the Spad to the Mustang. Profusely illustrated with combat photos of both World Wars.  
Pub. at \$2.75. Only **\$1.70**

**4. AIRCRAFT INSTRUMENTS.** By Manuele Stieri. Another in the series of technical handbooks for those interested in what makes a plane tick. A must for a well-rounded library.  
Pub. at \$1.50. Only **\$0.95**

## 5. CARTOON PACKAGE

**MALE CALL.** By Milt Caniff. This is the odyssey of a girl named Lace and her adventures among her friends in the Armed Services. An old favorite in 112—er—well, strips.  
Pub. at \$1.00

**THE WOLF.** By Leonard Sansone. He got basic training, was shipped overseas and saw action, but his attitude toward a 2-day pass remained the same.  
Pub. at \$1.00

Both books for only **\$0.98**

**6. WE'LL SAY GOODBYE.** Story of the "Long Rangers"—This is a Unit History of the 307th Bomb Group in the South and Southwest Pacific. Printed in Australia and specially priced for AFA members.  
Only **\$3.00**

**7. MacARTHUR ON WAR.** The master strategist and tactician relates the theories that have made him one of the greatest American generals.  
Pub. at \$3.00. Only **\$2.00**

**8. BOMBER OFFENSIVE.** The RAF's "Bomber" Harris writes authoritatively on bombing in general and especially as related to the lessons of World War II.  
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**9. POEMS FOR A SON WITH WINGS.** By Robert P. Tristram Coffin. A collection of poems by one of America's most gifted writers growing out of the experiences of his aviator son during the war.  
Pub. at \$1.75. Only **\$1.00**

**10. TALES FOR MALES.** Ed. by Ed Fitzgerald. When you've got the house to yourself, take off your shoes, crack a can of beer and curl up with this tasty dish of rollicking, spiceful enjoyment.  
Pub. at \$3.00. Only **\$1.70**

**11. GUYS ON THE GROUND.** By Capt. Alfred Friendly. AT LAST—a book dedicated to the man behind the men in the air. A story of ingenuity and elbow grease.  
Pub. at \$2.50. Only **\$1.75**

**12. PRIVATE PAPERS.** (Poems of an Army Year.) By William Justema. These verses bring clearly back to mind the GI days.  
Pub. at \$1.50. Only **\$1.00**

**13. BASIC AIRCRAFT CONSTRUCTION.** By Peterson & Erickson. Covers the entire field of aircraft manufacture from blueprint to flight test.  
Pub. at \$2.50. Only **\$1.75**

**14. YANK, THE GI STORY OF THE WAR.** The number one book on World War II combat. All arms, all services. Over 100 superb combat photos.  
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**15. AIRCRAFT ENGINES.** By Manuele Stieri. An invaluable practical handbook for the beginner or the old hand by the noted aviation writer.  
Pub. at \$1.50. Only **\$0.95**

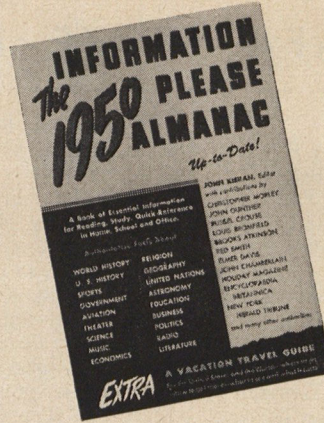
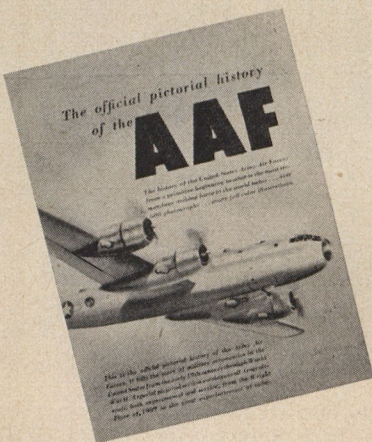
**16. BUILDING MODEL WAR PLANES.** By Manuele Stieri. A valuable guide for the model plane builder. Complete with templates, directions and half-tone illustrations.  
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**18. NONE SHALL SURVIVE.** By Burton Graham. The graphic story of the annihilation of the Japanese armada in the Bismarck Sea Battle.  
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Now only **\$3.95**



**20. INFORMATION PLEASE ALMANAC.** Edited by John Kieran. This is probably the only almanac in the world that you can sit down and read just for the pleasure of it. Packed with facts, the book also contains chapters on vacation travel in the United States and Europe, hotels of the world, and a complete review of the year with chapters on sports, Washington, literature, theater, and general news. A library "must" for everybody.  
**\$2.50**

**21. THE AIR OFFICER'S GUIDE.** This is a new edition of the famous military encyclopedia designed for Air Force officers of all grades. Here, in one book, are all the facts vital to your profession along with a healthy amount of good sound advice. The text is profusely illustrated with hundreds of charts, photos, maps and color plates and contains action shots of various types of aircraft.  
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**22. THE BISMARCK EPISODE.** By Capt. Russell Grenfell, R.N. The inside story of the sinking of the greatest of all German battleships. The Bismarck was an "unsinkable" as anything afloat, and its destruction marked the end of the battleship as a modern military weapon. A well-written account of a victory of air over sea.  
**\$3.00**

**23. GLOBAL MISSION.** By Gen. H. H. "Hap" Arnold. The Old Man's story from 1911 when the Wright brothers taught him to fly, to his retirement at the end of World War II. This book tells the inside story of the development of American airpower, how America invented the buzz bomb in 1917, Billy Mitchell's courtmartial and Hap's own exile. This is one of the most important and entertaining books to come out of World War II.  
**\$5.00**

**24. AIR POWER and UNIFICATION.** By Louis A. Sigaud. This is a timely and thought-provoking publication which re-examines the views of the noted Italian airpower exponent, General Giulio Douhet, and applies them to the problem of strengthening and unifying our armed forces for maximum combat effectiveness. An objective study of defense problems.  
**\$2.50**

**25. THE GATHERING STORM.** By Winston Churchill. One of the most important books of the year. Churchill is surely one of the great figures in world history. He is also a writer without peer and what he has to say about the events leading up to the great war must be of interest to every student of history. You'll find that Churchill the philosopher and Churchill the phrase-maker are an unbeatable combination.  
**\$6.00**

**26. WAR THROUGH THE AGES.** By Lynn Montross. A new enlarged and revised edition of a book hailed as an "important contribution to the literature of war" and "a storehouse of military lore." From spears to the atom bomb, this is a concise and vivid account of warfare from the earliest times, told in terms of the people who fought and the great conquerors who led them. 108 line drawings.  
**\$5.00**

# BOOKS

**27. HITCH YOUR WAGON.** By Knight and Durham. A brand new biography of Bernt Balchen. Here is his story of the first flight over the South Pole, rescue missions in Greenland, bombing missions of World War II, and finally the liberation of Norway. A colorful book about one of the air age's most colorful fliers.  
**\$3.50**

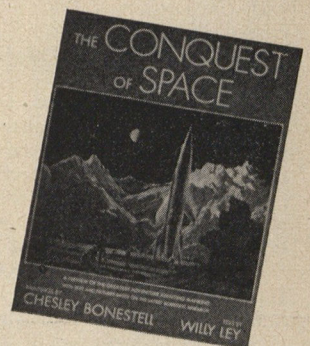
**28. DECISION IN GERMANY.** By Gen. Lucius D. Clay. How close was war in 1948? Was the blockade Russia's big mistake? Is German decartelization a joke? Answering hundreds of questions like these, Clay's book opens secret files and goes behind locked doors. This one is both historic and fascinating reading.  
**\$4.50**

**29. THE GALLERY.** By John Horne Burns. This is a novel about wartime Naples—of GIs and Italians, of love and dirt and misery. It is a shocking, bitter, powerful yet hopeful novel of the conquered and their conquerors. Burns has written a passionate indictment of what war does to human dignity.  
**\$3.00**

**30. AIR VICTORY.** By Harold Hinton. This is a must for your aviation library. Harold Hinton, noted correspondent for the *New York Times*, has detailed the story of how the weapon of airpower was forged from its earliest beginnings through World War II. It is the story of men and machines, of planners and dreamers, fighters and flyers.  
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**31. THE GERMAN AIR FORCE.** By Asher Lee. The story of the once proud Luftwaffe from the time it was secretly established in defiance of treaty regulations until it was swept from the sky by Allied airpower. Illustrated with 32 pages of photographs.  
**\$3.50**

**32. THE AAF AGAINST JAPAN.** By Vern Haugland. The story of all the Air Forces of the AAF whose target was Japan. Veterans of the Pacific will surely want this one. The inside story of what the various Air Forces did to bring about the downfall of Tojo and company. Illustrated with 24 pages of photographs.  
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**33. THE CONQUEST OF SPACE.** Painting by Bonestell; text by Ley. Here is a beautiful book depicting the universe our children will one day visit. Forty-eight pages of illustrations—many in full color—including the mountains of the moon and Venus, Jupiter and the landscapes of Mars. These pictures are suitable for framing and the accompanying text is as fascinating as the illustrations.  
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**34. MILITARY JUSTICE.** By Louis Aleya. A new book dealing with the changes in military justice brought about by the revisions recently made in the Articles of War and other courtmartial procedures. The book emphasizes the changes, citing the old Articles of War as well as the new.  
**\$2.50**



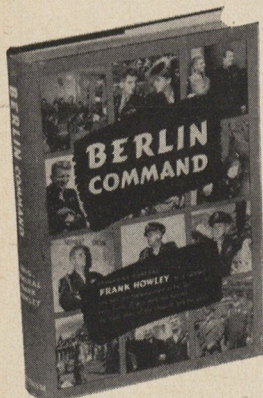
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**36. U. S. CAMERA ANNUAL 1950.** Edited by T. J. Maloney. The 15th Edition of the world's most beautiful photographic volume is just off the press featuring over 200 pages of fine pictures and over 200 historic news photos. Here are the best pictures of the year gathered from all over the world: Lovely nudes, breath-taking pictorials, portraits and stills, photos for all.

**\$6.50**

**37. THE ARMY AIR FORCES IN WORLD WAR II. Vol. I—Plans and Early Operations.** This book, assembled by the Historical Division of the AAF, charts the course of our youngest military service from a handful of men and ancient machines at the beginning of the war to a force of unprecedented range and striking power.

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**38. THE ARMY AIR FORCES IN WORLD WAR II. Vol. II—Europe—Torch to Pointblank.** This volume deals with the early phases of the air war against the Axis: in North Africa, Sicily, Italy, and over occupied countries and Germany. Great missions like Regensburg, Schweinfurt, Marienburg, Ploesti, etc., are described in detail. These books, and the other volumes still to be published, are the definitive reference works on the role of our Air Force during the war.

**\$6.00**

**39. THE NAKED AND THE DEAD.** By Norman Mailer. Perhaps the most widely read of all war novels, this book has been the center of a controversy that has rocked the literary world, and the book-reading public. To read this book is to have a violent opinion about it. Some say it is the dirtiest, filthiest piece of trash they have ever read. Others say it ranks with the few really great war novels with its realism and clarity. Nobody ever said it bored him.

**\$4.00**

**40. PURPLE HEART VALLEY.** By Margaret Bourke White. There were many purple heart valleys on the world's battlefronts. This particular one was in Italy, and from the mountains where the German 88s were, the valley caught hell. Margaret Bourke White went into the valley with her camera and her reporter's eye and this book is a pictorial record of what she saw.

**\$3.00**

**41. THE RED ARMY TODAY.** By Colonel Louis B. Ely. This book is a down-to-earth presentation of detailed information on the organization, equipment, and tactics of all branches of the Soviet Army, and an evaluation of Red Army combat effectiveness. The author tells everything from how "Ivan" eats, sleeps, thinks, and fights to what equipment he uses, how he uses it, and what may be expected from him in a future conflict.

**\$3.50**

**42. A TENT ON CORSICA.** By Martin Quigley. This is an airman's novel. Anyone who ever flew a mission, sweated out a buddy or tanked himself up on a three-day pass will find this a vividly familiar story. There haven't been many "Air Force" novels and this one you will want to own.

**\$2.75**

**43. THE EAGLE IN THE EGG.** By Oliver La Farge. One of the miracles of the war was the growth of the ATC from almost nothing at all to the mightiest system of airways the world has ever seen. By 1945 ATC flew routes all over the world: Over the "hump" and across the Sahara. A great book.

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**44. TO HELL AND BACK.** By Audie Murphy. America's most decorated GI recounts his personal experiences in the foxholes and dugouts of World War II. The story of the little men who had only their friends and their weapons between them and the enemy.

**\$3.00**

**45. SLIGHTLY OUT OF FOCUS.** By Robert Capa. Pretty hard to describe what this book is about. It has hundreds of photos Capa took throughout the fighting in the ETO. They rate with the best ever taken. It has a text of what happened to Capa and what happened to Capa probably never happened to anyone else. A thoroughly enjoyable and beautiful book which every vet of the European war will treasure.

**\$3.50**

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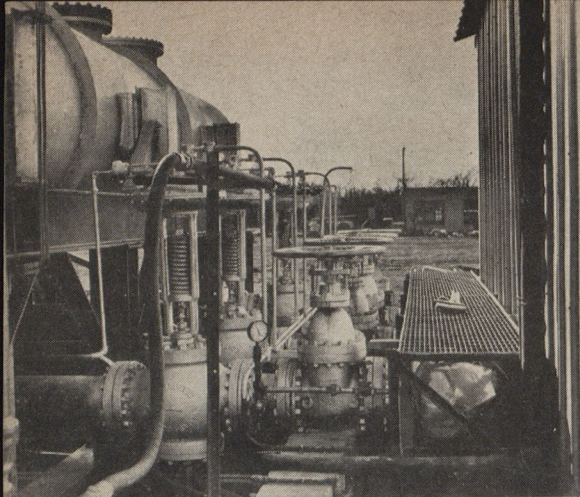
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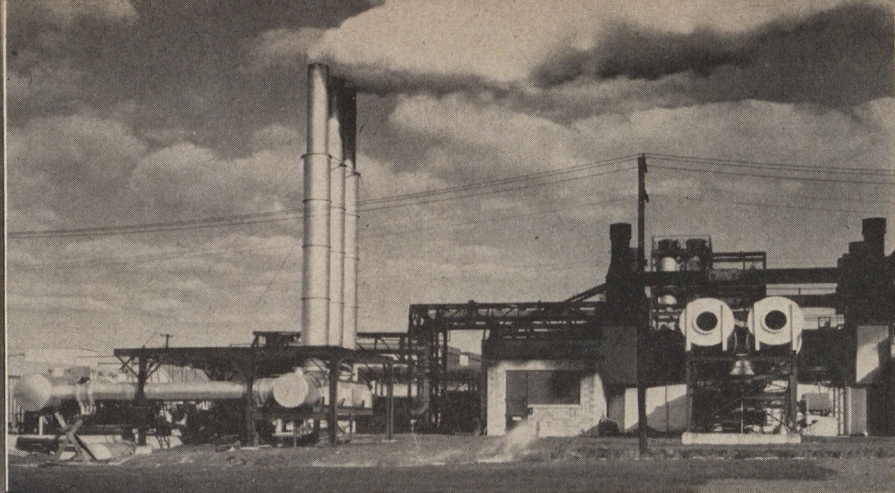
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Valves above send 150 tons of steam an hour into exhaust stream to speed flow of air through the test chamber.



Steam and exhaust from the test chamber billow into a high winter wind from the three silencer stacks at the rear of the new Wright lab. The new plant is part of multi-million dollar facility for testing all types of jet engines.

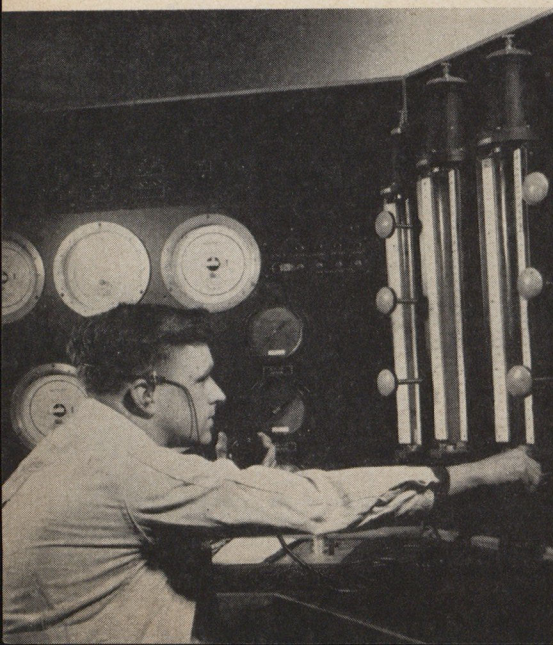
# Incubator for Intercontinental Missiles

Successor to bomber may be perfected in new ram-jet lab

The first instrument of intercontinental warfare, as everybody knows, was the Consolidated B-36. Operationally the plane has been in use less than two years, but already, as is normal in the rapid evolution of the science of war, the handwriting is plainly on the wall for Old Big and Mighty. Its immediate successor already has been announced as the Boeing all-jet B-52. What will come after that has not yet been revealed.

But last month the Air Force dropped a hint at the Wright Aeronautical plant at Wood Ridge, New Jersey, that we may have arrived at a point from which

At top power, the burners tested devour 6000 gals. of fuel per hour—or 14 tank cars a day. Below, an engineer watches one of six fuel meters.



we can predict with some accuracy the day when guided missiles and pilotless aircraft will take over most of the burden shouldered until now by planes.

The occasion was the opening for public inspection of the new ram jet testing laboratory built by Wright Aeronautical Corporation for the Air Force. The lab is concerned primarily with testing ram jet engines for intercontinental missiles and pilotless aircraft. It can test engines up to the incredible simulated speed of 2600 mph, and at altitudes of 80,000 feet. It will accommodate ram jets up to 20 inches in diameter. Future modifications to the chamber will make it possible to test units twice that size.

How near present engines will come to putting the new chamber to its peak capacity the Air Force will not say, but it is believed generally that ram jets with output performance two or three times as great as pure jet engines have already been perfected.

Released for publication were these

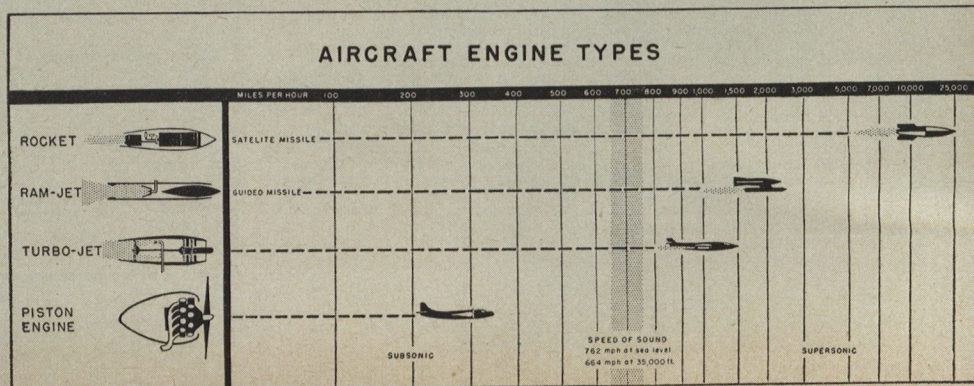
facts concerning the new plant:

Fuel pumps supplying an engine on test are capable of delivering more than 6000 gallons per hour, or the contents of 14 tank cars a day. Steam at the rate of 150 tons per hour is fed to the exhaust system to aid the escape of gases from the rear of the ram jet.

Air for the test chamber—at the rate of 140 tons per hour—is supplied from turbine compressors on test at the nearby Gas Turbine Development Laboratory, itself a \$3,500,000 structure erected two years ago.

An elaborate cooling system, which jackets the chamber with a layer of circulating water, was built as an integral part of the tank to absorb some of the great heat by the ram jet engines. At certain parts of the chamber, notably near the exhaust end, the temperature of the gases reaches 4000 degrees F. This heat causes the test chamber to expand about one inch over its entire length and it is consequently supported by rollers.

Diagram below, based on what is known to be possible for future flight, shows the merit of the ram jet engine compared with other types. Rocket is best adapted to outer-atmosphere flight. Nearer earth ram-jet has many advantages.





## ROUNDUP

CONTINUED

the Cuyahoga Founders' Squadron, AFA, at Harry Mamolen's on Jan. 21.

Ex-Governor and Mrs. Tom Herbert were among the guests present.

Donation was \$2.50 per person. Squadron Commander Kenneth G. Vetter stated that the treasury is a C note ahead. All proceeds over and above the actual costs of this dinner will go to the fund set aside for the AFA Clubhouse.

**Cleveland:** The prize list for the big Press-AFA Indoor Air Meet at Central Armory on Saturday, February 25, is complete, and it has been said to be the largest prize list ever offered indoor model fliers in Cleveland. All members are urged to come and see what the Cuyahoga Founders' Squadron, AFA, is doing to combat juvenile delinquency.

Heading the list are trophies and miniature gasoline motors. Other prizes include gift certificates, model kits, and magazine subscriptions.

In addition to prizes for individual winners there will also be special team trophies for winning four-man teams in the novice, junior and senior age divisions. These team trophies will be perpetual and will be up for competition in next year's indoor meet. These trophies were established by Cleveland Council of Model Aeronautics, Cleveland Aviation Club and the Air National Guard.

Canning & Clancy, 14401 Euclid Avenue, are donating milk for the contestants, and the Women's Auxiliary of CFS, AFA, will prepare sandwiches for the contestants.

Lloyd Vandervoort will be the contest director. The contest will be sanctioned by the Academy of Model Aeronautics and will be flown by AMA rules. Members of CFS, AFA, will serve as official timers, and ladies from the Cleveland Women's Chapter, NAA, will register the contestants.

### OREGON

**Portland:** The Portland Squadron is the only AFA unit operating its own night club. The Air Force Club, 819 S. W. Park Avenue, is the Squadron's Club and the treasury derives income from the business. Features of the club include the best little band in town and a girl singer.

The Portland Squadron has been engaged in assisting the Air Reserve recruiting. The Squadron handled an exhibit in the Francis Hopkins Building during the month of December.

### PENNSYLVANIA

**Philadelphia:** I. Brodsky, chairman of the membership committee of Philadelphia's Metropolitan Squadron, called Headquarters to request anything on hand that his unit could use in making their newly launched membership campaign the most successful held yet. He stated that his committee had mapped a program which he felt would swell the Squadron's roster.

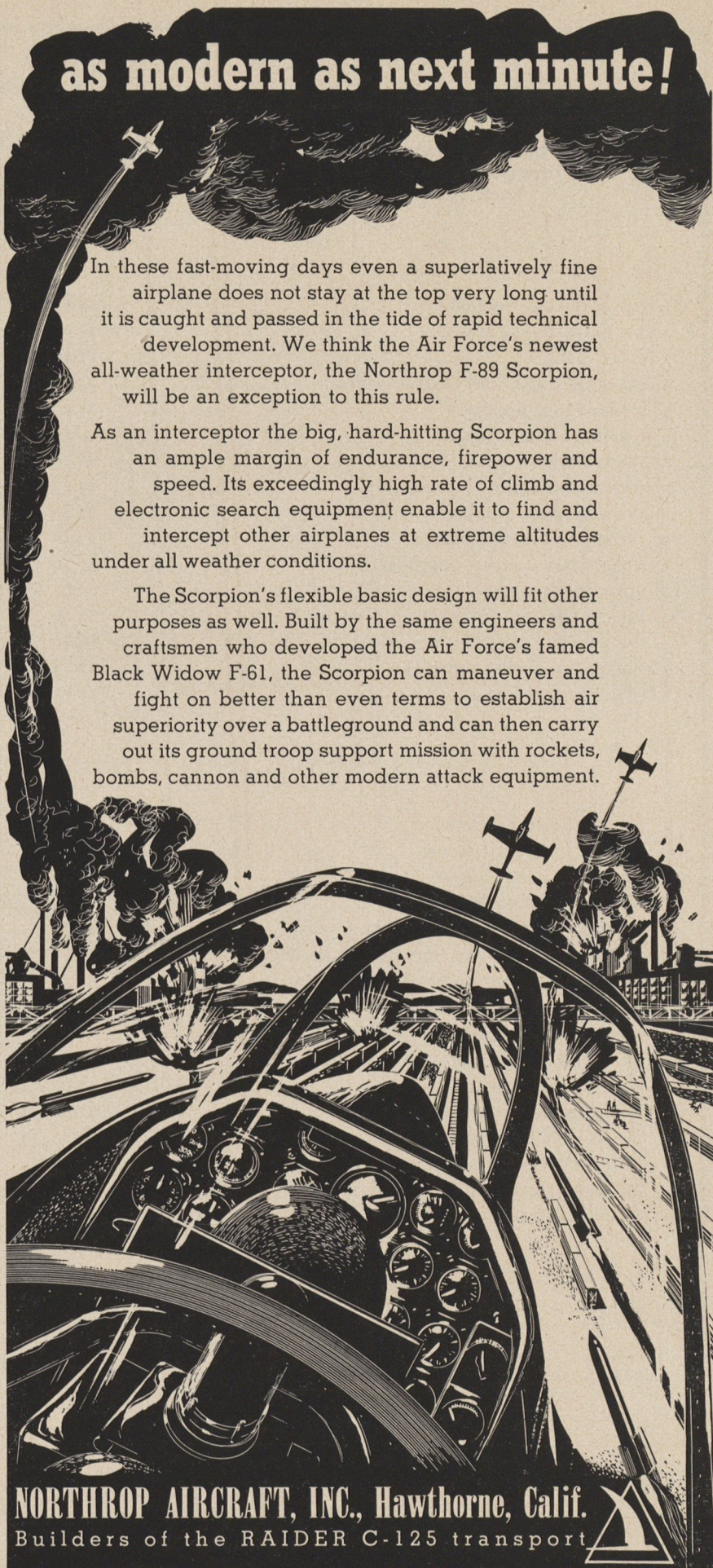
The Metropolitan Squadron was formed under the direction of Windell Stewart and E. Perry Campbell, the latter serving as its first commander.

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In these fast-moving days even a superlatively fine airplane does not stay at the top very long until it is caught and passed in the tide of rapid technical development. We think the Air Force's newest all-weather interceptor, the Northrop F-89 Scorpion, will be an exception to this rule.

As an interceptor the big, hard-hitting Scorpion has an ample margin of endurance, firepower and speed. Its exceedingly high rate of climb and electronic search equipment enable it to find and intercept other airplanes at extreme altitudes under all weather conditions.

The Scorpion's flexible basic design will fit other purposes as well. Built by the same engineers and craftsmen who developed the Air Force's famed Black Widow F-61, the Scorpion can maneuver and fight on better than even terms to establish air superiority over a battleground and can then carry out its ground troop support mission with rockets, bombs, cannon and other modern attack equipment.



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## FOOD FOR HUNGRY

### JETS CONTINUED

in jet fuel research.

While not closing their eyes to the possibilities of non-petroleum fuels, the research people nevertheless looked to crude oil as the source from which the fuel wanted would undoubtedly come. Their search was for a blend of crude oil which would have performance characteristics comparable to that of kerosene, would be available in quantity and still leave enough to take care of conventionally powered planes, gasoline and diesel powered vehicles, synthetic rubber, toluene, war essential chemicals, lubricating oils and waxes.

It became a problem in refining. Briefly, the process of breaking down a barrel of crude oil is one of fractional distillation. That is, oil is heated and as the temperature is increased, various products are vaporized off, passed through a condenser, and returned to liquid form again. Gasoline, for example, begins to boil at 92 degrees F. By controlling the temperature range from 92 to 350 degrees, you get aviation gasoline. By raising the upper limit another 50 degrees, automobile gas



Deep into the NEPA problem is Fairchild Engine and Airplane Corporation which has been working under Air Force contract. Their NEPA project is under the guidance of Andrew Kalitinsky (seated), chief engineer.

comes off. At higher temperatures, the heavier products are distilled—first kerosene, then diesel oil, then bunker fuels, etc.

The requirement was set for a fuel with a minimum availability of 50% of the barrel, and performance characteristics comparable to those of kerosene. All agencies joined in the job with private industry doing most of the actual research, and one combination after another was put through extensive tests. The fuel they finally came up with, now known as AN-F-58, was obtained by distilling off all products in the 92-600 degree boiling range. This took in all the gasoline, all the kerosene and some diesel oil or, roughly, 50 per cent of the barrel. By removing quantities of aviation gas and other products which might be needed, up to 40% of the barrel would still be available for jet fuel.

Since petroleum is always in critical demand in time of war, the Air Force



has looked into the possibility of using "substitute" fuels—metallic and non-metallic solids with high energies of combustion which are available in large quantities, are stable and can be used in aircraft installations. The list they finally came up with (See Figure 2) showed the best metallic element to be aluminum, which burns with more heat per pound or cubic foot than kerosene. Boron gives even more heat, but it has a high melting point and is not nearly as abundant as aluminum.

The most important limitations which affect the performance of aircraft with respect to high speed, maneuverability and range, are maximum allowable weight and maximum allowable size or internal volume of fuel tanks and it was not necessary to go to the laboratory to discover the impracticability of aluminum. A slide rule gave the answer.

Here is what would happen if aluminum were used instead of a petroleum fuel: A currently successful high performance fighter has a design take-off weight of 16,685 pounds with a fuel load of 848 gallons permitting a range of 1,754 nautical miles. Filling the space occupied by the 848 gallons of jet fuel with solid aluminum would more than double the range of the fighter to over 4,000 miles, because the aluminum, cubic foot for cubic foot, burns with twice as much heat as petroleum. However, the take-off weight would be increased to 29,795 pounds and the chances are you'd never get it off the ground. If, on the other hand,

Substance	Density lbs/cu ft	Heat Energy	
		Btu/lb	Btu/cu ft
Aluminum	169	12,800	2,160,000
Boron	153	23,025	3,540,000
Carbon	146	14,050	2,120,000
Magnesium	109	10,850	1,180,000
Lithium	33	27,000	1,212,000
(Kerosene)	51	18,400	931,000
(Octane)	43.3	20,600	891,000
(Atomic Fuel)		40,000,000,000	

Figure 2

you simply want to substitute solid aluminum for jet fuel without any increase in weight, the range would be cut to 1,200 miles. Of course the aluminum would take up much less space than the 848 gallons did and about three times as much additional armament and other equipment could be installed, providing it didn't weigh too much. Unfortunately it does. If the fuel load of aluminum were increased to the point where the range of the plane equalled that of the petroleum-powered fighter, the take-off weight would be about 19,000 pounds and the space saving in the aircraft structure would amount to about 130% of the volume originally occupied by the 848 gallons. The dilemma is, however, that with a plane already heavy, any utilization of the space saved would increase the weight of the plane to an intolerable degree.

The door hasn't been closed. Indeed, NACA has been assigned the task of conducting further investigation, but pe-

troleum still looks like our best bet.

Conventionally fueled high speed aircraft are limited in meeting one of the biggest requirements of the day. RANGE. True, range is not wholly a fuel problem. Airframe and engine designers are constantly striving for greater efficiency, but they are up against the inescapable fact that if you design for speed, you must sacrifice range. In any future conflict, the side that has *both* speed and range (and by range we mean the ability to fly half way around the world and back) will have a tremendous advantage. Chemically powered aircraft probably can't do it. At any given speed, you can add range by adding to the gross weight of the plane. (See Figure 3.) But there comes a point when even a substantial increase in the size and weight of your plane, will give you pitifully few additional miles of range in return. The extra weight goes for extra gas to carry the  
(Continued on page 48)

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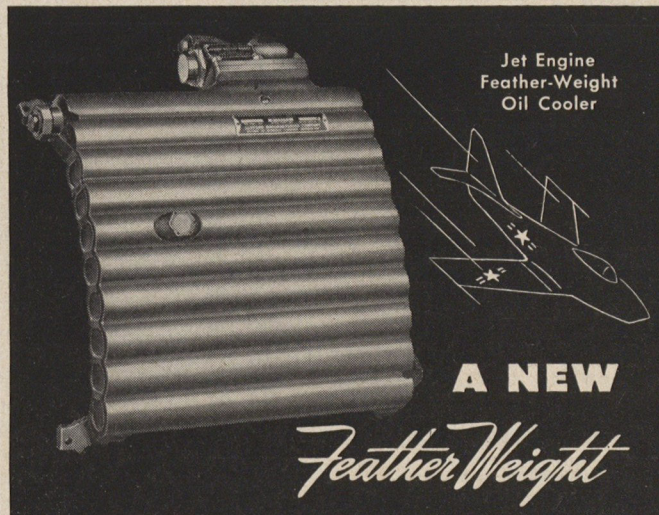
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## FOOD FOR HUNGRY JETS CONTINUED

extra weight and there's nothing you can do about it.

What is needed is revolutionary approach to the problem. A nuclear energy powered aircraft provides an ideal solution from the range point of view. At whatever gross weight and maximum speed the NEPA aircraft is designed for, it will have a range limited only by the endurance of the crew and proper functioning of the machinery itself. (See Figure 3.)

A congressional committee said: "In the event of war . . . nuclear energy for the propulsion of aircraft would be comparable in significance to the atomic

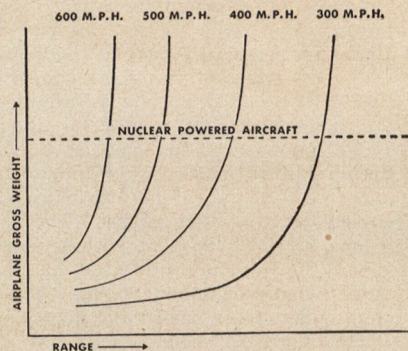


Figure 3

bomb itself. Presently known limitations inherent in all chemical fuels make difficult the delivery by air of atomic bombs against a distant enemy. Therefore, if the US had nuclear energy propulsion in addition to atomic bombs, it would be the dominant factor in maintaining world peace."

The decision to go ahead on the NEPA project has been made. In 1948 the Atomic Energy Commission contracted with the Massachusetts Institute of Technology to make a study of the problem and to come up with recommendations. The result of this study was the Lexington report, details of which are highly classified. The report, however, did indicate that the aircraft propulsion project should be continued in an intensive study phase for the next two or three years, at which time data might become available which would permit a more decisive conclusion. An immediate result of the Lexington report was the entrance of the AEC and NACA into the field which had heretofore been occupied by the Air Force.

Let's look at some of the problems involved. An atomic fuel is for all practical purposes an inexhaustible source of heat which will provide the energy for a modified turbo-jet, ram jet, or steam turbine power plant. The source of this energy is contained in what is called a reactor—an atomic pile which gives forth a steady stream of neutrons as well as tremendous quantities of heat. (See Figure 2.)

At the present time, we have reactors emitting streams of neutrons which are used to bombard uranium molecules

and thereby obtain fissionable material for atom bombs. The heat is wasted, for we have not yet reached the stage where our engineering know-how can put this heat to use. Until we can harness it on the ground, obviously we cannot harness it in the air.

Actually, tough a nut as it is, the shielding-maintenance nut is tougher. In any piloted aircraft the radiation intensities found in the reactor must be reduced by factors of many billion before they are safe for human organism. A good neutron reflector might turn back 90 percent of the neutrons, six inches of lead shielding might reduce radiation to one-thousandth of its original intensity, which sounds fine, but that's more likely to represent only ten percent of the job of reducing neutron escape to a tolerable level. A slight leakage in joints or seals in the shield might be a million times enough to kill you.

Assuming the problem can be solved, what will the atomic plane look like? Well, it will be big. Probably larger than any we have now. The shielding will probably account for most of its weight—the best known materials being concrete or lead, though a search is undoubtedly on for materials more suitable to aircraft. It will be a fast airplane because there would be no point in not taking advantage of the special characteristics of atomic power to make its application worthwhile. It must be designed for a landing weight equal to take off weight. No fuel will be "burned" and the plane will weigh as much at the end of a round the world flight as it would at the beginning. Since the fuel load will be concentrated in one spot, rather than widely distributed, the structural requirements will be somewhat different than conventional planes. The crew will probably be located as far away from the reactor as possible since the strength of radiation decreases with distance. This would permit some weight saving on shielding.

Just when an atomic plane can be built is the 64 billion dollar question. For the time being, however, we'd better get used to AN-F-58.

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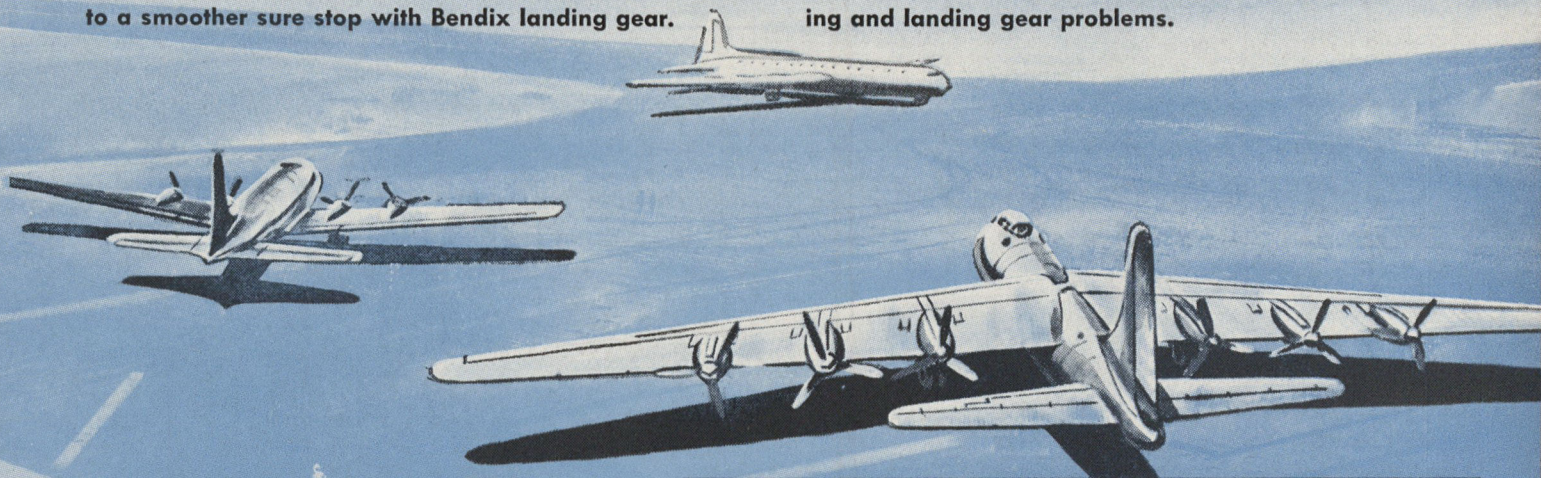
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The outstanding ability of Bendix Products in keeping pace with aviation progress is graphically demonstrated in the scope of its accomplishments.

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The fact that the experience and skill of Bendix Products are constantly utilized in record breaking achievements is ample evidence of its capacity to serve the practical needs of engine builders and airplane manufacturers.

Why not let this combination of engineering experience and manufacturing know-how help solve your fuel metering and landing gear problems.



**LEADER IN**

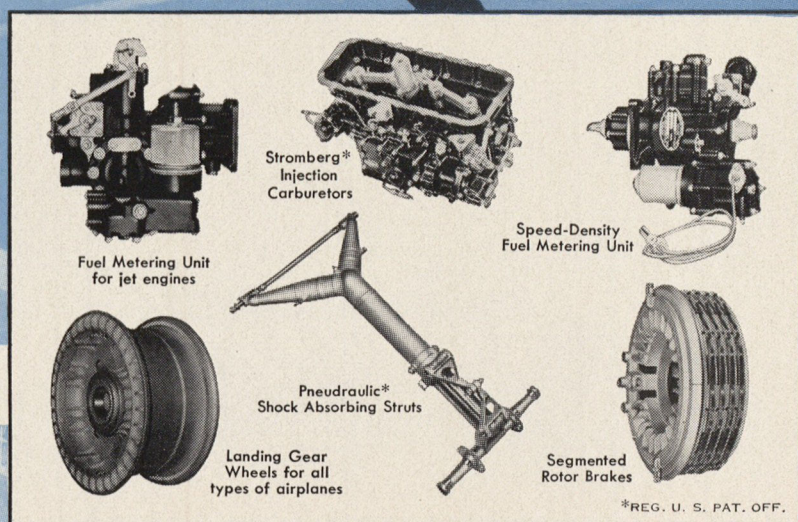
**LANDING**

**GEAR**

BENDIX PRODUCTS DIVISION of  
SOUTH BEND 20, INDIANA



Export Sales: Bendix International Division, 72 Fifth Ave., New York 11, N.Y.



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THE SHORTEST DISTANCE...."*



**THE CONVAIR\* XC-99,** FLYING ABOVE ALL BARRIERS,  
CAN DELIVER CARGO  
MORE THAN ONE-THIRD  
THE DISTANCE AROUND  
THE WORLD!

Free from limitations of terrain or weather, the XC-99 will reach points inaccessible to any surface transportation.

This intercontinental carrier, with an established ability to lift 100,000 pounds, can cut up to 20 days off the time required to load, dispatch and carry a similar cargo the same distance by land and water!

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