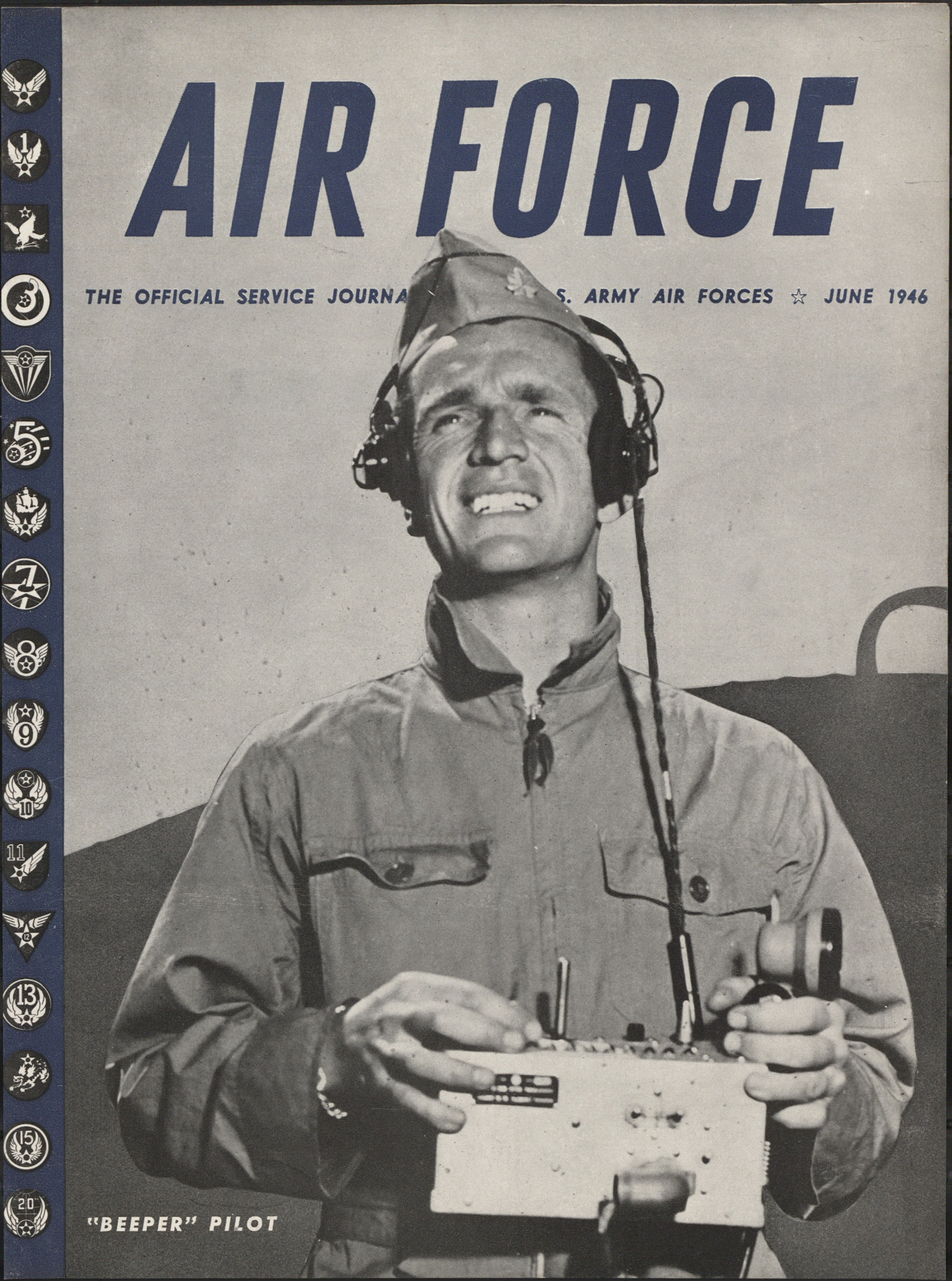
AIR FORCE

THE OFFICIAL SERVICE JOURNA S. ARMY AIR FORCES ☆ JUNE 1946



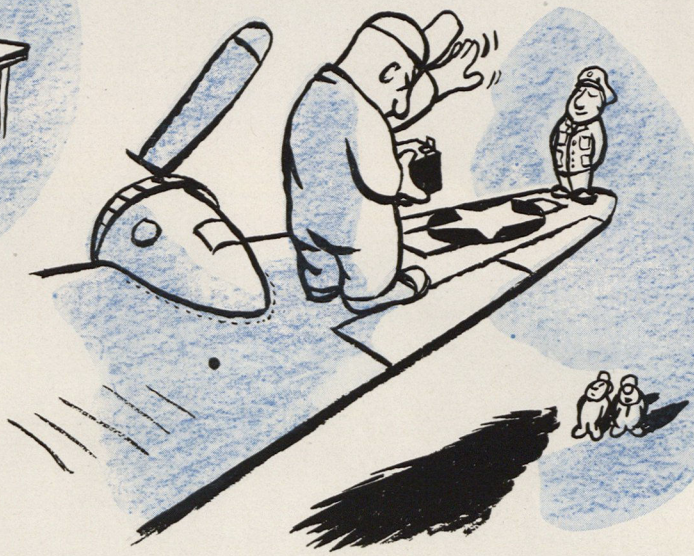
"BEEPER" PILOT

AAF SKETCH BOOK

by Cpl. P. Plasencia
Air Force Staff

"I don't know sir, but its been sitting there for the last three days now."

"Sometimes I wonder if they didn't carry these briefings too far."



"Frankly sergeant, I find this 'chute' far too uncomfortable."

Rendezvous

Medical Care for Dependents

Dear Editor:

Your article, "Think It Over" (January, 1946), states that "the Army provides medical care for you and your family."

Recently an announcement was made at Wright Field that medical facilities will no longer be available to dependents except in cases of acute emergency.

Is there any legislation (Army Regulation, War Department directive, etc.) which compels the Army to render medical care to dependents of personnel? If not, your article should be amended accordingly.

Leo Freedman,
1st Lt., A. C.

According to the Headquarters office which provided the article, the statement concerning medical care should be qualified by the phrase, "whenever facilities and personnel are available." In the interim Air Force, as in other branches of the Army and Navy, swift demobilization has often left hospitals undermanned. This condition, unavoidable under the circumstances, may continue for some months. In general, however, it is not typical of service available to military personnel under normal peacetime conditions.

Like Your Category?

Dear Editor:

Can an AUS officer change his category designation in regard to release from active duty? In other words can category 3 be changed to category 2 or vice versa?

Lt. Thomas A. DePaolis
Westover Field, Mass.

Yes, provided: (1) He is presently assigned to a zone of interior command or is in a foreign station and assigned to the Air Transport Command; (2) previously signed category II, III, IV or V; (3) is physically qualified for general duty; (4) is not over age for grade as defined in AAF Letter 35-305; (5) is presently performing duty assignment in certain specified MOS's or has been assigned to a duty assignment in those MOS's for at least six months subsequent to 1 January 1943; (6) requests authority for signature of new statements before actual commencement of separation processing; (7) is not a flight officer who meets requirements for involuntary relief from active duty.

Request of an officer for change of category statement to effect either immediate or earlier relief from active duty than that for which he originally volunteered will not be approved. An officer who has signed a voluntary category statement for retention and who desires relief from active duty at an earlier or immediate date can be discharged earlier if he is essential to National health, safety, and interest; suffers undue hardship; resigns; or is declared surplus under existing regulations. Officers listed as surplus are subject to reassignment either within the AAF or to the Army Ground Forces or Army Service Forces. Only those who are surplus to over-all, Army-wide needs will be relieved from active duty. (AAF Letter 35-308, 16 April 1946.)—Ed.

Vol. 29 No. 5 June, 1946

AIR FORCE

THE OFFICIAL SERVICE JOURNAL OF THE U. S. ARMY AIR FORCES

DEPARTMENTS AND FEATURES

Authorization—AIR FORCE (formerly the Air Forces News Letter) is printed monthly by authority of AAF Reg. 5-6A (24 Jan. 1945) under the immediate supervision and jurisdiction of the Chief of Air Staff, Headquarters, AAF, and with approval of the Bureau of the Budget, Executive Office of the President.

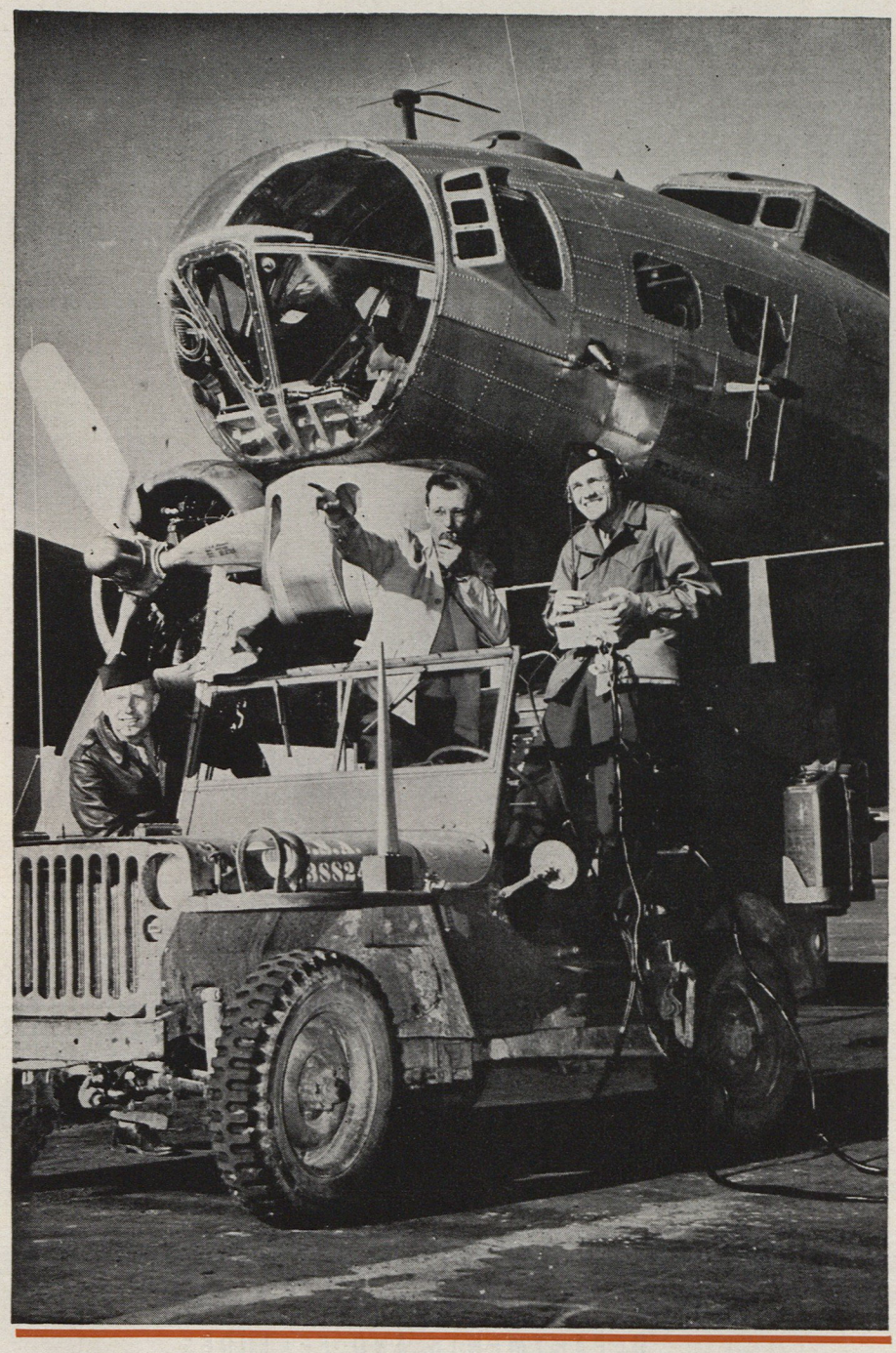
Publication—AIR FORCE is published by the U. S. Army Air Forces at the AIR FORCE Editorial Office, 52 Broadway, New York 4, N. Y. Director: Maj. Harry H. Ransom, AC, HQ, AAF, Washington 25, D. C. Editorial Director: Maj. Charles P. Beazley, AC, 52 Broadway, New York 4, N. Y.

Communication—Direct communication with the AIR FORCE Editorial Office is authorized on editorial and distribution matters. Address: AIR FORCE Editorial Office, 52 Broadway, New York 4, N. Y.; telephone HAnover 2-5200; teletype No. NY-1-2782. Washington office at Hqs. AAF, Washington, D. C. (telephone Republic 6700, Ext. 74562). Branch office at Wright Field, Dayton, Ohio (telephone Kenmore 7111, Ext. 29135).

Participation—AIR FORCE is primarily a medium for the exchange of ideas and information among Army Air Forces personnel. Readers are encouraged to submit articles, short subjects, photographs, art work. All contributions will be given consideration; suggestions and criticisms are welcomed. Opinions, expressed by individual contributors do not necessarily reflect the official attitude of the Army Air Forces or of the War Department. Material appearing in AIR FORCE is not to be reproduced without written permission.

Distribution—AIR FORCE is distributed in bulk shipments on a pro-rated basis to all units of the Army Air Forces throughout the world, in the United States according to the provisions of AAF Letter 5-14 (24 October 1944), and overseas in accordance with theater policy.

☆ U. S. GOVERNMENT PRINTING OFFICE—658353—PRINTED IN U. S. A.



How Sharp are YOU?

This picture shows one of two jeeps which control take-off and landing of robot planes that will be used in the atom bomb test described elsewhere in this issue. One of the mother planes which guide the "babe" after the take-off is in the background. To test your mental alertness take a look at the picture for a full 60 seconds, remembering as many details as possible, then turn to page 32 for a list of 10 questions. If your memory isn't as remotely controlled as the B-17, six correct answers is fair, seven good, eight excellent, and 10 puts you ahead of the quiz kids.

HOW SHARP ARE YOU?.....Turn to Page 32

Power-Boost for ME-110

Dear Editor:

According to a recent AAF Journal brought to my notice, it is stated that the power-boosting system G.M.-1 methanol injection (MW 50 or 30) and air intake fuel injection system have been incorporated into the two-engine Me-110 aircraft. As the engines are given as D. B. 605s, I understand that the aircraft thus equipped are of the later G series.

If it is possible, I would like to know the maximum speed of the Me-110 thus equipped, unless of course such information is of a restricted nature.

It is not always possible to get "AIR FORCE" out here, but occasional copies come along, and prove to be both interesting and informative, particularly the maintenance tips, as we are often called upon to service American machines. Thank you for a grand and helpful journal.

L. A. C. G. Brightwell
132 R & S Unit, RAF
South East Asia Air Forces

The ME-110 G&G series aircraft were fitted with the DB 605 engines. GM-1 was fitted for 45 minutes operation but our information indicates that MW-50 and intake fuel injection was not used. The German policy was not to fit MW-50 on bombers. The Me-110 was used more as a light bomber than as a fighter, therefore, it seems likely that MW-50 would not have been installed. The DB 605 engine was adopted for MW-50 and intake fuel injection, therefore it is not unlikely that it could have been fitted experimentally on a few Me-110s used as fighters. With GM-1 fitted, the maximum speed was 372 MPH at 19,000 feet.—Ed.

Long-Lived C-47s

Dear Editor:

Noticed in your March-April issue a picture of a C-47A #315737 that was boasting of 872,865 miles and/or 5,134½ hours to its credit.

I have flown from the ATC base in Naples, Italy, at least a half dozen C-47s with between 6,500 and 7,500 hours on them and over a million miles to their credit.

In "the world's worst weather" 872,865 miles is still a record to be proud of.—Ed.

Back with the Gang

Dear Editor:

I am writing this letter to inquire about my chances of reenlisting in the Regular Army Air Forces in my former grade and the possibility of my being stationed at the air base near my home.

I was discharged on the 5th of June, 1945 in the grade of master sergeant. I had 30 months of active service as an airplane and engine mechanic, working on B-17 and B-24 airplanes.

What are the possibilities of joining the unit on the air base near my home? I have numerous friends stationed here on the base (Wright Field) and I feel that if I were able to get back with the gang again with my old rating, I would be working under the most pleasant conditions possible.

Robert P. Coogman
Dayton, Ohio

It is possible for Coogman to join the Army and stay near home if he will settle for a technical sergeant rating. He can re-enlist in this grade since he was discharged after May 12, 1945 and held an MOS of 750 (airplane and engineer mechanic) for 30 months. If he enlists at Wright Field for a three-year period he may be initially assigned there, provided a vacancy exists in his job specialty. (WD Pamphlet 12-16, 24 April 1946, and WD Circular 110, 17 April 1946.)—Ed.

Promotion of AAF Reserve Officers

Dear Editor,

1. Are there any provisions for promotions of AAF reserve officers? If so will time in grade while on active duty count towards promotion as a reserve?

2. Where can I obtain pilot-operating instructions for P-47, P-51, and AT-6?

Lt. James C. Lawson
435 Riverside Ave.
Wellesville, Ohio

1. No. According to Section V, "Promotion," of AR 140-5, "Reserve Officers Not General Officers" are inoperative until the revision of AR 140-5 is completed.

2. Pilot-operating instructions for all current types of army aircraft should be available at any AAF air base.—Ed.

Air Corps Reserve Pilot

Dear Editor,

In the March-April issue of Air Force I read an article, "Reserves May Fly." I am a pilot on A. C. Reserve and would appreciate any additional information that you could send me.

Incidentally, the letter from Major H. W. Jesperson on page 3 is a bit wrong I believe. The 4th Squadron of the 60th T. C. should be the 4th Squadron of the 62nd T. C. Group. I was a member of the 62nd in Italy and know about the 4th.

Glenn L. Grigsby
215 N. Court Street
Marysville, Ohio

An aggressive program of training for members of the Air Reserve has been formulated and approved. Implementation of this program has necessarily been delayed by demobilization, redeployment and the lack of aircraft maintenance and other essential personnel. While funds for reserve flying are not now available, the AAF has been authorized to proceed with the initial activation of a number of Air Reserve bases, which will be established as rapidly as the availablility of personnel will permit. As each projected Air Reserve base is activated adequate publicity will be released and Air Reserve Personnel in that base area will be invited to report. To insure equitable opportunities for the assignment of all reserve personnel, a fair distribution of flying time, proper control of accounting and funds and the conduct of a supervised training program, proficiency piloting by reserve personnel not on active duty will be deferred pending the establishment of reserve base units activated and organized under the Air Defense Command.

In This Issue

On the front cover of this issue is pictured a "Beeper" pilot, so called because he operates a "magic" box by which he flies an aircraft by remote control. The Beeper Box radios to the crewless aircraft all of the pilot control actions which are as effective as if a pilot was actually sitting in the cockpit. The pilot is Lt. Col. Thomas C. Kelly, Chief of the Controlled Airplanes Section at Wright Field and at present in charge of the AMC detachment with the Air Instrumentation and Test Requirement Unit of Crossroads' Air Task Group 1.5. This unit has as its responsibility the development and operation of the remote control B-17 Babes or drones which will fly into the atomic cloud immediately after the atom bomb explosion over Bikini lagoon this July. See article beginning on Page 6. "Babes" thus remotely controlled will gather up atom gases for scientific analyses. Prior to this assignment Colonel Kelly served with the 15th Air Force in Italy as Commander of the 82nd Fighter Group.

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Under the "now it can be told" banner, Lt. Col. Herbert O. Johansen, AAF Reserve, formerly a member of AIR FORCE staff, tells how the New Guinea "angels" came to the rescue of air crews in the jungles of that wild, dangerous island back in the critical days of Port Moresby during 1943 and 1944. His story begins on Page 20. Until now the saga of the flying sergeants had been one of the secrets of the Southwest Pacific war. Theirs was a perilous task, that of flying "grasshopper" aircraft over Jap-infested, almost impenetrable jungles. Besides Kunai grasshopping, the L-4s and L-5s did a lot of aggressive fighting on their own. They led P-39s to their targets amid Jap fighters, and they strafed enemy huts with Tommy guns and hurled hand grenades at the Nipponese.

☆

Just a year after the Germans surrendered, Capt. Philip Santry, Chief of Art-Production Section of AIR FORCE, flew to England, France, and Germany to report on the activities of the United States Air Forces in Europe. He returned in late May, in time to prepare the pictorial center spread for this issue. Here are scenes of USAFE officers and enlisted men passing in review on V-E Day anniversary at Wiesbaden, Germany; of an aerial review at busy Orly airdrome, near Paris; of the Rhineland, as seen by the watchful eyes of American patrols—and of American aircrews preparing their B-29s at a British base for operational flights over Europe.

Our correspondent found conversion well under way. The occupational Air Force is well settled in Germany; in England and France commercial airliners take off sedately from airfields that once echoed to the cry of "Scramble."

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One of the ATC's hitherto little-known missions during the late war was that of ferrying heads of Allied nations and their top-ranking diplomats, military and naval leaders to all parts of the globe. Known as VIPs, the passengers of the "Brass Hat Squadron" moved under a cloak of great secrecy for reasons of military security and personal safety.

An account of its war-time missions together with a list of some of the Very, Very Important Persons ferried aboard the C-54s is to be found on Page 18. Incidentally, the author, Lt. Lawrence Gordon of AIR FORCE staff, was a Brass Hat navigator on some of the missions.

☆

A round-up of the latest information covering a variety of subjects constitutes a new feature for your readers. It is captioned "In the Wind", and appears on Page 46. In its columns from time to time will appear important tidbits of AAF news, in keeping with its caption.

☆

There has been a lot in the papers about Operation Musk Ox, the Arctic expedition for testing personnel, and equipment at temperatures far from comfortable. The AAF had a hand in this journey to the cold Canadian tundra. Some of the cold weather lessons our technicians and fliers learned appear in an article on Page 4.

ANNOUNCEMENT

Beginning with the July issue the **AAF REVIEW** will supersede AIR FORCE as the Official Service Journal of the U. S. Army Air Forces. The REVIEW will be published in a new format. At each AAF installation, the public relations office will be responsible for distribution.

Hereafter, AIR FORCE will be published as the official magazine of the Air Force Association, the organization knitting together all present and former members of the Army Air Forces. Membership in the AFA, whose Headquarters are at 1603 K St., N. W., Washington, D. C., includes a subscription to AIR FORCE.

Canadian Exercise in Arctic Gave AAF Opportunity to Test Equipment Under Actual Cold Weather Conditions; New Navigation Aids Tried Out

By Lt. Gilbert M. Billings and Lt. Harmon H. Harper
HQ, 3rd Air Force AIR FORCE *Staff*

In legend and history book, the Arctic is a bleak, frigid land of snow and ice and more snow—merciless to the unwary intruder. But the war taught the Canadians that they have to know the Arctic. With this in mind three projects were conducted last winter by the Canadian Army: "Polar Bear," "Eskimo" and "Lemming." The latest venture, "Musk Ox," was a test of army and air force equipment and a probe of the icy wastes on a scale never before attempted. The Dominion's expedition consisted of a group of about 65 men, including Canadian military personnel, scientists, and U. S. and British observers. They covered an estimated 3,130 miles in 81 days.

Planned and directed by the Canadian Army, in collaboration with the RCAF, Operation Musk Ox was undertaken to study, under far northern conditions, army-air cooperation, methods of air supply, the mobility of over-snow vehicles, the effect of the magnetic pole on navigational instruments and the problems affecting the arctic operation of an air force unit. The American Army Air Force, the Ground Force, the Navy, and the Quartermaster Corps participated in the Musk Ox operation upon an invitation by the Canadian Joint Chiefs of Staff.

As a part of the testing program a ground force of Canadian Army and American personnel in 12 snowmobiles left Churchill, Manitoba, Feb. 15 on a trek that carried them northward into the Arctic Circle, across the Northwest Territory, the Barren Lands, down the Alcan Highway to Edmonton, Alberta. This force, moving through many areas never explored, was entirely dependent on aircraft for supplies during the 81 days' travel.

The supply of the moving force by aircraft was perhaps one of the most important phases of the operation because it entailed the testing of old supply techniques, the development of new ones, the winterization of aircraft operating in sub-zero temperatures, and the testing of navigational equipment used by the ground force and supply planes.

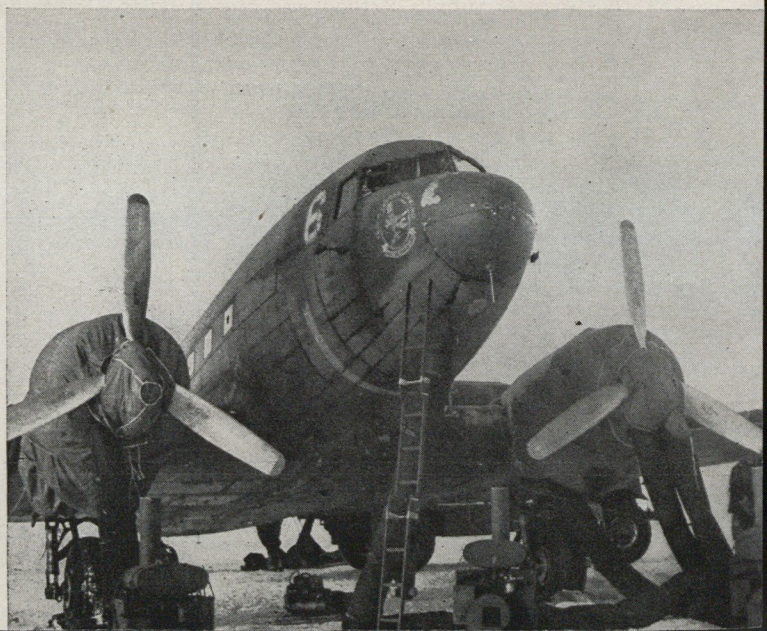
Operation Musk Ox was under the command of Lt. Col. Patrick Baird of the Canadian Army. Before the war he and Maj. Graham Rowley explored the Arctic Melville Peninsula and Baffin Island. The RCAF unit, commanded by Wing Commander Jack Showler, was made up of men who were bush pilots and transport pilots during the War. Official AAF observer was Lt. Col. Edward Butler. The distinctive patch worn by members of the party was oval in shape, depicting a plane, boat and an igloo—all against a background of sky, mountains, river and shoreline.

The exercise was non-tactical. All troops participating were specialists and no weapons larger than rifles were carried. The expedition tested clothing, food and equipment designed for Arctic weather. Resembling men from another world, personnel wore fish net string underwear, flannel shirts, high-neck sweaters, battle dress, pile-lined parka jackets and fur trimmed hoods, chamois masks, anti-glare goggles, and scarves. Each wore three pairs of mitts, two pairs of socks, felt boots and canvas "mukluks."

Some of the men grew beards in the belief that hair insulates the face, while the clean-shaven declared that hair would foster the legendary 'ice-worm,' said to breed in igloo ice blocks.

Operation . . . .

Snowmobile gets rolling on start of 3,130 mile journey



Starting engines of supply planes required use of pre-heaters.

Troops participating in far north exercise tested clothing, food and equipment. At right, the snowmobiles bivouac for the night.

. . MUSK . . OX . . .

Despite extensive preparations for the comfort of the men, life was not easy for the "Musk Oxers," and at times became extremely dangerous. Much of the area traversed was uncharted or mapped incorrectly. Frozen lakes appeared where none should be and landmarks were scarce. Forward progress was made over great, piled-up ice barriers rising 40 and 50 feet, with rock-strewn ridges. There was no movement except that of swirling snow. One threat to the expedition was the breaking-up of ice on one of the big rivers in the path of the party. And always there was the cold. The men bedded down under nylon tents, naked in feather-filled sleeping bags closed with zippers.

A two-week supply of food was carried by the force, besides a dry-food ration, but the supply task was the main responsibility of the Royal Canadian Air Force and the AAF Third Air Force (Troop Carrier). From five bases—Churchill, Baker Lake, Norman Wells, Fort Nelson and Yellowknife—five Douglas AAF C-47s and seven AAF Troop Carrier gliders flew out to drop food and fuel by parachute several times a week in what was the closest approximation to actual military air transport operations ever attempted under Arctic conditions.

Three smaller Norsemen planes, equipped with skis, were used on emergency flights. A B-17 Flying Fortress was ready for possible long-range searching. Navigation was a problem. According to Lt. Darroll L. Burchfield, the magnetic compass would swing through 60 degrees like a pendulum. "We were flying so near the magnetic pole the compass was virtually useless," the C-47 navigator explained, "and we relied on dead reckoning, celestial observation and radio."

The functioning of electronic equipment in the areas affected by the magnetic pole was of prime interest because of data required for future over-the-pole flights and operations in arctic regions. The C-47 cargo planes were specially equipped with Loran, one of the AAF's latest electronic devices for navigation. The ground force was also supplied with Loran to take directional fixes and determine their exact location. Loran (Long Range Navigation) is a radar system developed and used during the war for long-range flights. It was used principally in transoceanic navigation where vast distances encountered over the sea rendered radio communication impracticable.

Special Loran stations transmit increment radio signals, which, when picked up by airborne receiving sets, permit the navigator to determine the exact position of the plane. This is done by the navigator measuring the difference in time required for the signals to reach the plane from two different stations whose locations are previously known. This data is plotted on a Loran chart which shows time difference lines from the various transmitting stations. By taking another reading from a new pair of stations, the Loran operator can plot a new line on the chart. The intersection point of the two lines shows the exact location of the aircraft. Distances determined by Loran are accurate to within one per cent at a range of 800 miles at night and 1,600 miles during the daylight hours.

On operation Musk Ox, the ground party took fixes by its Loran system and radioed this information to supply planes by the standard ground-to-air radio liaison set. The C-47s flying from five different bases in the Hudson Bay region took their fixes from Loran stations established in Manitoba, Saskatchewan and British Columbia. Rebecca-Eureka radar beacons were used by the ground party to guide the supply planes the last few miles to the drop area. These sets are the same that were used during the war to direct paratroopers to the drop zone.

Additional technical data on the functioning of Loran

(*Continued on Page 47*)

SGT. YEHUDI and the BABES

Four robot Fortresses, vanguard of a coming era of pilotless aircraft, are being readied for Operation Crossroads and a flight through the atom cloud

By CHARLOTTE KNIGHT AIR FORCE Staff

Out on Eniwetok, the boys swap stories about a character rapidly becoming as legendary as the fabulous Kilroy. At the drop of a 50-mission cap, they will dwell at length on his many remarkable talents, not the least of which is his astonishing ability to fly a plane without being in it. What's more, they can produce a most impressive flight record to prove it. Admittedly, his friends point out, this makes him unique, even among hangar pilots.

He is generally conceded to be a regular Joe and for the most part a "damned good throttle-jockey." However he is addicted to certain unpredictable actions and at odd times is given to peculiar flying maneuvers not in line with approved pilotage doctrine. Since these embarrassing incidents almost invariably occur when VIPs are present, however, it has been assumed that this is largely due to the pilot's extreme self-consciousness and the actions have been accordingly forgiven. Some of his landings, for instance, have been rough to the point of near-crashes but so far—to the great delight of his colleagues—the Office of Flying Safety has never been able to catch up with him. In fact there seems to be a silent, fraternal movement afoot to protect him against the indignities of any disciplinary action, his supporters taking the view that these aeronautical vagaries are merely additional evidence of this particular pilot's rather eccentric charm.

He has never been graduated from flying school and as a result his grade is that of a non-com, a situation his friends desire most earnestly to correct. And at this point, it seems scarcely necessary to add that his name is Staff Sergeant Yehudi, a distant kin of Kilroy's and an older brother to the little man who wasn't there.

Yehudi is a miniature, five-pound shiny metal device called a Control Stick Box which does all the remote-control "flying" of the AAF's new robot B-17s, now rehearsing on Eniwetok island for their public debut in Operation Crossroads in July. As such, "he" has accumulated hundreds of flying hours and his chiefs insist that they faithfully enter his name on Form 1s after each of his flights. They will also tell you (with straight faces) that Yehudi's Form 5 got mixed up in the official shuffle once with the result that the Finance Officer mailed him his flight pay.

Maj. Gen. E. E. Partridge, Assistant Chief of Air Staff A-3, here watches Lt. Col. R. A. Campbell fly "Babe" plane with control box.

While it is true that Yehudi may be regarded as something of a phantom figure, he is certainly no less weird than the planes he "flies." Any resemblance these Fortresses bear to the war-time or "human" B-17s can be considered almost coincidental. For these Crossroads robots are soulless creatures full of frightening arrays of strange instruments, scopes, gauges and electronic gadgets galore. And where once sat flesh-and-blood crew members there now repose only the cold, inanimate "stage-props" of an incredible Wellsian drama.

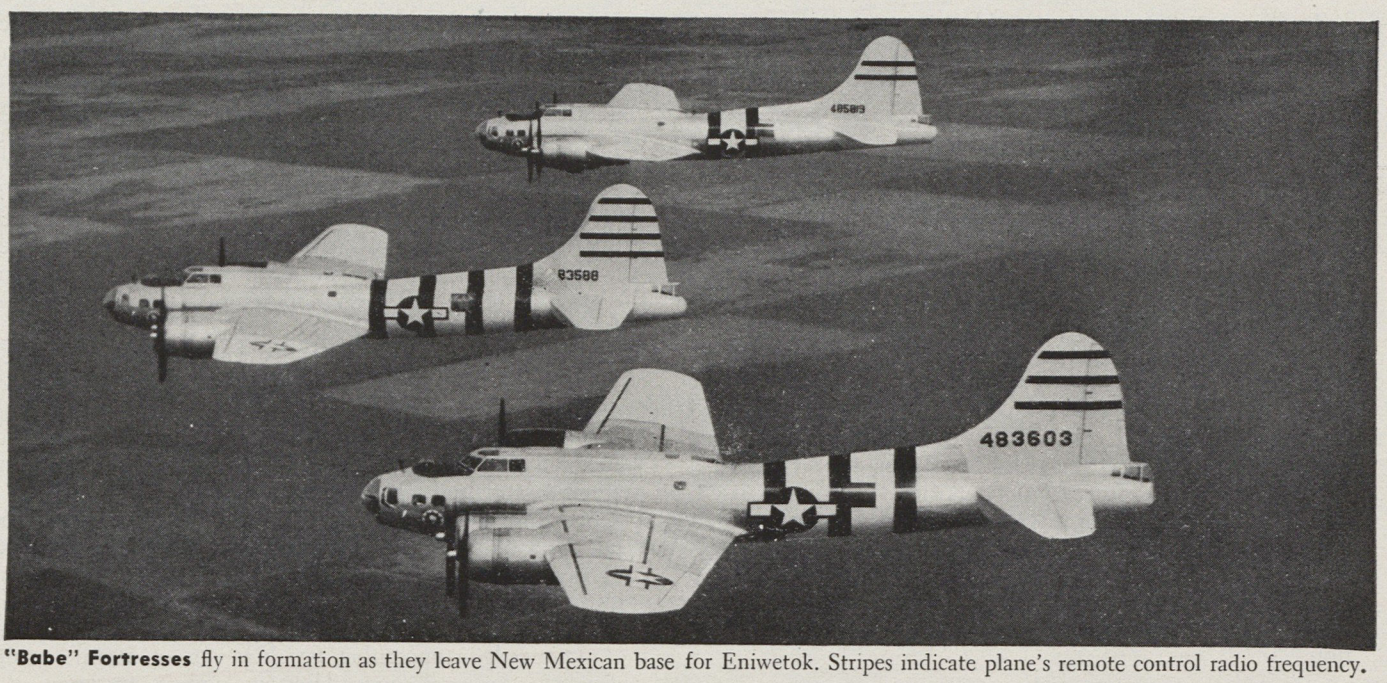
Vanguard of a coming era of pilotless aircraft, these strange new bombers are about to take off on a mission which was clearly never anticipated in the Boeing book. In fact it can be said with no exaggeration that never before in aviation history have any aircraft been given an assignment at once as important and as fantastic as this one.

On the day of the atomic bomb test in lonely Bikini atoll, four of these robot planes—called "Babes" or drones—will be remotely directed by "Mother" aircraft (equipped with Yehudi's control stick boxes into the gigantic, turbulent cloud which follows the bomb-burst. When—and if—they come out of the cloud, these flying guinea pigs will bring back data which may have a profound influence on our future military tactics, airplane design, communications research, and the development of possible defensive measures against the A-bomb itself.

This is how we expect to get that data: On D-Day at 0630 the Babes will take off by remote control by means of control stick boxes installed in jeeps near the runway. High-powered VHF (very high frequency) radio transmitting equipment has been installed in each of the jeeps and also in the Mother planes. The control box operates on one radio channel with 10 audio-frequencies, one for each of the distinct functions which must be accomplished by radio, such as opening or closing the throttles, applying the brakes, retracting or extending the wheels, operation of the wing flaps, turning, etc.

At each of the boxes (often called "Beep" or "Beeper" boxes because of the beep-like signals which they send out) sits a rated, highly-trained Beeper pilot who is thoroughly familiar not only with the flying habits of the B-17 but also with Yehudi's occasional caprices. By pressing a tiny "stick" on the box a proper number of times, the transmitter sends out a specific signal which is received in a corresponding radio-receiving cabinet in the Babe plane. Through a series of complicated radio relays, this impulse in turn induces a signal into the autopilot which accomplishes the desired flying maneuver.

Take-offs are controlled from the ground jeeps until the



"Babe" Fortresses fly in formation as they leave New Mexican base for Eniwetok. Stripes indicate plane's remote control radio frequency.

Babe is about 400 feet above ground, at which point the control is turned over to another Beeper pilot seated in the nose of the Mother aircraft. In addition to the magic stick box, this Beeper pilot has before him a scope or screen on a television receiving set. By simply pushing a button he can see on his screen either of two actions taking place many miles away at that very instant: (1) Changes on the instrument panel inside the Babe plane, or (2) whatever is happening directly outside the Babe. This is made possible by two television transmitting sets installed in the Babe, one of which is focused on the instruments, the other on the view out the nose.

The Beeper pilot can, therefore, control the Babe even though it may be hidden in clouds or beyond the range of optical vision. Although present range of television control is about 25 miles, this can be extended to 75 miles, if necessary, by turning on a power amplifier. (However, during the Bikini show, it is not anticipated that the Babes will be more than 20 miles away from their Mothers.)

Leaving Eniwetok, the Babes will be flown to predetermined orbit points near the target in Bikini atoll some 200 miles away. There they will orbit their stations until detonation of the A-bomb. Exactly two minutes after bomb-burst (M-time), Babe III will be sent into the cloud column at 24,000 feet, heading due east. Babe I will be sent in at 14,000 feet at M plus 6 minutes, and in the next four minutes, Babe II and Babe IV will take their turns entering the cloud at 18,000 and 30,000 feet respectively.

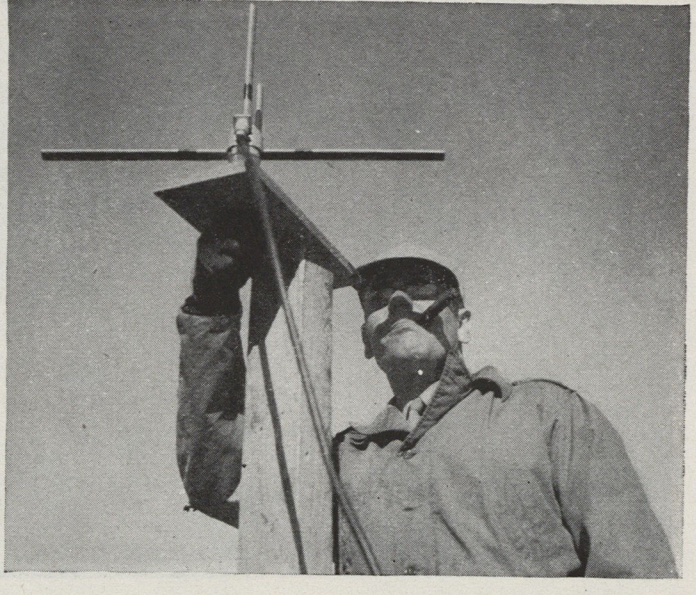
Each of the robots will be put on gyro control and after a precalculated time-delay, will automatically make a turn of 180 degrees and head back through the cloud, finally emerging, it is hoped, somewhere near the spot where it entered. As it comes out of the atomic mushroom, the Babe will be "picked up" again by its own Mother (which has been circling at a safe distance of about 20 miles from the center of the burst) and sent back through the cloud once again. Babes will be kept in the cloud vicinity until M plus 30 minutes and then Mothers will lead them back to base unless otherwise directed at the time by Radiological Safety Officers of Joint Army-Navy Task Force One.

Obviously a considerable part of this plan is based on pure speculation. It is *hoped* that the operation will work as it has been outlined here. This is strictly an expedition into the unknown and it is anybody's guess as to what might happen. Crossroads people have adopted the healthy laboratory policy of wait-and-see.

Nobody knows better than the men who "created" the Babes the infinite number of things which might conceivably go wrong. Here are some of them: First of all, the planes might not be able to withstand the terrific shocks and blast pressures that result from the explosion, in which case they will simply fall apart. The extreme turbulence may upset the planes' stabilizing instruments and cause sudden falls, spins, temporary or permanent loss of control. Or it might be that ignition systems will be knocked out.

And there is the matter of radio control. Since no one knows precisely what effect atomic radiations will have on radio and television, it is within the realm of possibility that the intense radio-activity present in the cloud may completely black out any receiving set in the area. If this happens, the Babes' radio controls will be rendered totally ineffective and the planes will fall straight into the drink.

Television antenna is adjusted by Martian-looking T. J. Wilson, "Tech-Rep" assigned to Instrumentation and Test Requirement Unit.



There are a dozen unpredictables, too many for any safe odds. However, on the eve of the great adventure, Babe-betting is high on Eniwetok, with most of the wagers running like this: that at least three of the planes will come out of the cloud intact.

"The chances are that we will lose the first plane we send into the column—the Babe III which follows bomb-detonation by just two minutes," ventured Col. Harvey T. Alness, CO of the Air Task Group's Instrumentation and Test Requirement Unit which has been charged with the Babe project, "but in the loss itself there will be a great deal of extremely valuable, even though negative, data.

"Our television and camera-recording equipment will be operating right up to the point of loss and we shall get pictures not only of what is happening inside the cloud itself just before the plane disintegrates, but also of the bomb-burst's effects on the plane's instruments, all of which may be much more important to us than the aircraft itself. If we see on the television screen in the Mother plane that the Babe's manifold pressure, for instance, dropped to zero, or that the free air temperature registered well above 400 degrees, or that the accelerometer indicated 10 G just before the plane disappeared, that in itself is significant information."

It is highly probable that, even if the planes survive, they will be tossed around a good deal inside the mushroom and the point at which they emerge from their atomic foray may be several thousand feet above, below, or away from the place of entry. Since each Mother has but one remote radio frequency on which she can control only her own particular Babe, to forestall the confusion that might result from improper identification, each Babe has been painted a bright yellow with one to four heavy black stripes on fuselage and tail, the number of stripes indicating the specific radio and television frequency on which that Babe is operating.

Circling above her entire family will be a Super-Mother, equipped with enough radio channels to control any one of the Babes should she spot one flying around "lost." If this happens, the Super-Mother simply notes the number of stripes on the Babe, switches over to the corresponding frequency, and leads the errant child back to its Mother.

During their brief but spectacular sojourn in the cloud itself, the Babes will be quite literally flying laboratory centers. Manhattan District, AAF and Navy officers are counting heavily on the data the Babes bring back from their extraordinary mission to supply them with much of their knowledge concerning the behavior of atomic explosion. They will want to know the degree of ionization caused by the disturbance, the effect of the bomb on radio frequency radiation and propagation, what it does to vacuum tubes and crystal detectors, the concussion effect of the blast, and its shock in terms of Gs.

Old hands in the new field of robot flight are Capt. R. M. Seldomridge, Capt. W. F. (Pappy) Tooman and Lt. Pete Murray. All three participated in the famous "Weary Willie" project.

And there are other questions: Will the disturbance ignite gasoline and other fuels? What will it do to crew equipment such as clothing and oxygen masks, etc.? How will it affect magnetic compasses? What is the safe altitude for a bomber formation?

The responsibility for collecting and analyzing the scientific information which will probably provide answers to these and countless other technical imponderables goes to Col. Robert E. Jarmon and his staff. On leave from his job as chief of Wright Field's Armament Laboratory, Colonel Jarmon now heads the Field Evaluation section of Crossroads' Task Group 1.5. He and his men have planned and selected the scores of different recording instruments necessary to get the most out of the test, adapted them for remote-control operation, and installed in each of the Babes more equipment than any B-17 has ever seen before.

In addition to the standard radio transmitters and receivers and the remote control flight equipment, each Babe carries—to name just a few of the gadgets present—the following assortment:

(a) Two television transmitters, previously mentioned, trained out the nose and on the instrument panel. It will be noted, in connection with all the equipment listed here, that com-

plementary sets are also installed in the Mother planes so that complete televised records can be kept of activities in the Babe planes. In the case of the television transmitters, for instance, there are in each Mother plane cameras which film whatever appears on the two television receiving scopes.

(b) A Jerome B-2 35mm motion picture camera installed in the nose, which will be triggered off by radio and will record on film the picture of whatever is taking place outside the plane.

(c) High-powered radar transmitting sets which will operate during the entire time the aircraft is in the cloud to test radiation effects on the 1,000-megacycle wave band.

(d) RCM (radar counter-measure) equipment which will be used for two purposes: to determine propagation effects of electronic signals transmitted through the atom cloud; and to search the entire electro-magnetic spectrum of 0.5 to 4,000 megacycles for signals radiated by the cloud itself.

(e) Four automatic ink recorders which are connected with a special torque nose installed on the number 3 engine and which will record (1) fuel pressure on this engine, (2) torque, (3) normal temperature range (up to 300-400 degrees) and (4) temperature ranges beyond this point.

(f) An air foil type filter installed on the top of the aircraft in such a position that over it will flow several thousand cubic feet of atomic atmosphere. Residue or "dust" from the atomic cloud will be collected on filter paper for later analysis of its chemical and radio-active properties by the Manhattan District scientists.

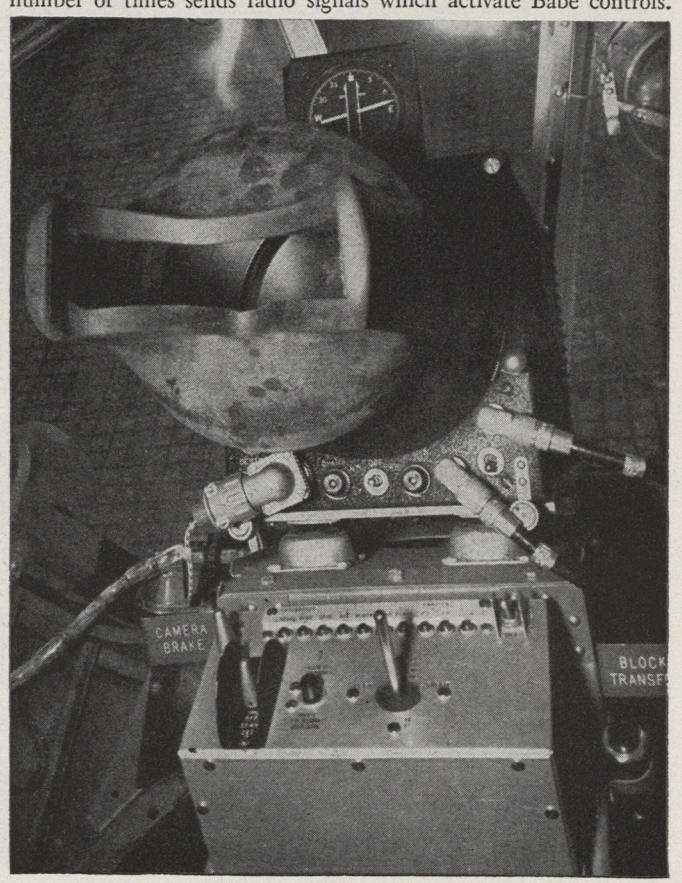
(g) Los Alamos radiation counters, a form of Geiger-Muller counter, which will measure the exact degree of radio-activity present in a particular area. Installed directly below the center of the filter paper, this counter is connected with a standard VHF transmitting set which broadcasts the "clicks" of the counter as it registers radio-activity. The greater the radio-activity, the faster the clicks. Radiological safety monitors from the Manhattan District, seated by a VHF receiver in the Mother plane, can listen to the number of clicks being broadcast and determine at any given moment exactly how "hot" it is inside the atomic cloud.

(h) Two Air Sampler Bags in the bomb bays of the Babes which will collect 90 cubic feet each of "contaminated" air from the atomic cloud as the planes pass through. When the Geiger counter clicks are coming fast enough—at a specific rate yet to be set—the Beeper pilot will press a lever on his Control Stick box and open, by remote control, valves on an air scoop attached to a large rubber and nylon bag, causing the bag to fill with radio-active matter for Manhattan District analysis. The Beeper pilot will keep the bag open for 15 seconds and then will close the valve. The remaining bag is opened and closed in similar fashion on the Babes' second run through the cloud.

Assuming that the Babes do make it back to Eniwetok reasonably intact, the instrumentation unit's officers have worked out an elaborate procedure by which to remove the air sampler bags without exposing personnel to dangerous radio-activity longer than is safe. The planes, and especially the bags, are quite likely to be bristling with gamma rays when they return, so the first step will be up to the radiological officer present. He will approach the "hot" Babe with a Geiger counter. If—and only if—the count is sufficiently low for safety, then a member of the unit will rush forward and slide a sheet of plywood under the bomb bay doors. Three other crew members, in quick succession, will run to the rear of the B-17 and pull special handles which open the bomb bay doors and release the bags. Each man will be exposed only 10 seconds at a distance many

Television Scope in nose of Mother plane records what is happening to instruments in Babe plane. By watching scope Capt. J. A. Evans, a beeper pilot, flies Babe plane with special control stick box.

Control stick box as installed in Mother plane below television scope. Pressing miniature "stick" on the control box a specific number of times sends radio signals which activate Babe controls.

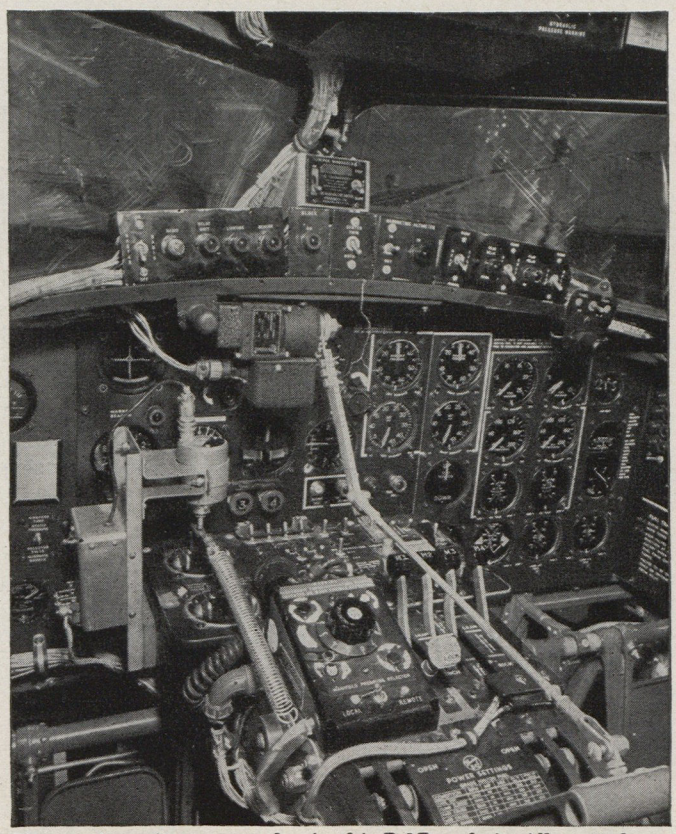


feet from the bags.

Sweating out D-Day and their Babes with all the normal anxiety of fond parents at a performance starring their children are the men who have made these robot bombers not a matter of some distant Buck Rogers future but an immediate, practical reality, with all its attendant commercial and military implications. Dozens of electronic experts, technicians and pilots have had a hand in this amazing achievement. First of all, there is Lt. Pete Murray, an electronics engineer from Wright Field who developed the control stick box and who is acknowledged by all his bosses to be "the brains behind the present remote-control system." Murray, a civilian technician until a year ago, is a veteran of the first radio-controlled "target" aircraft development dating back to the OQs of 1938 and including the later stages of PQ-8s and 14s, and finally the B-17 Weary Willies (which could fly by radio-control but could not take off or land) of 8th Air Force fame.

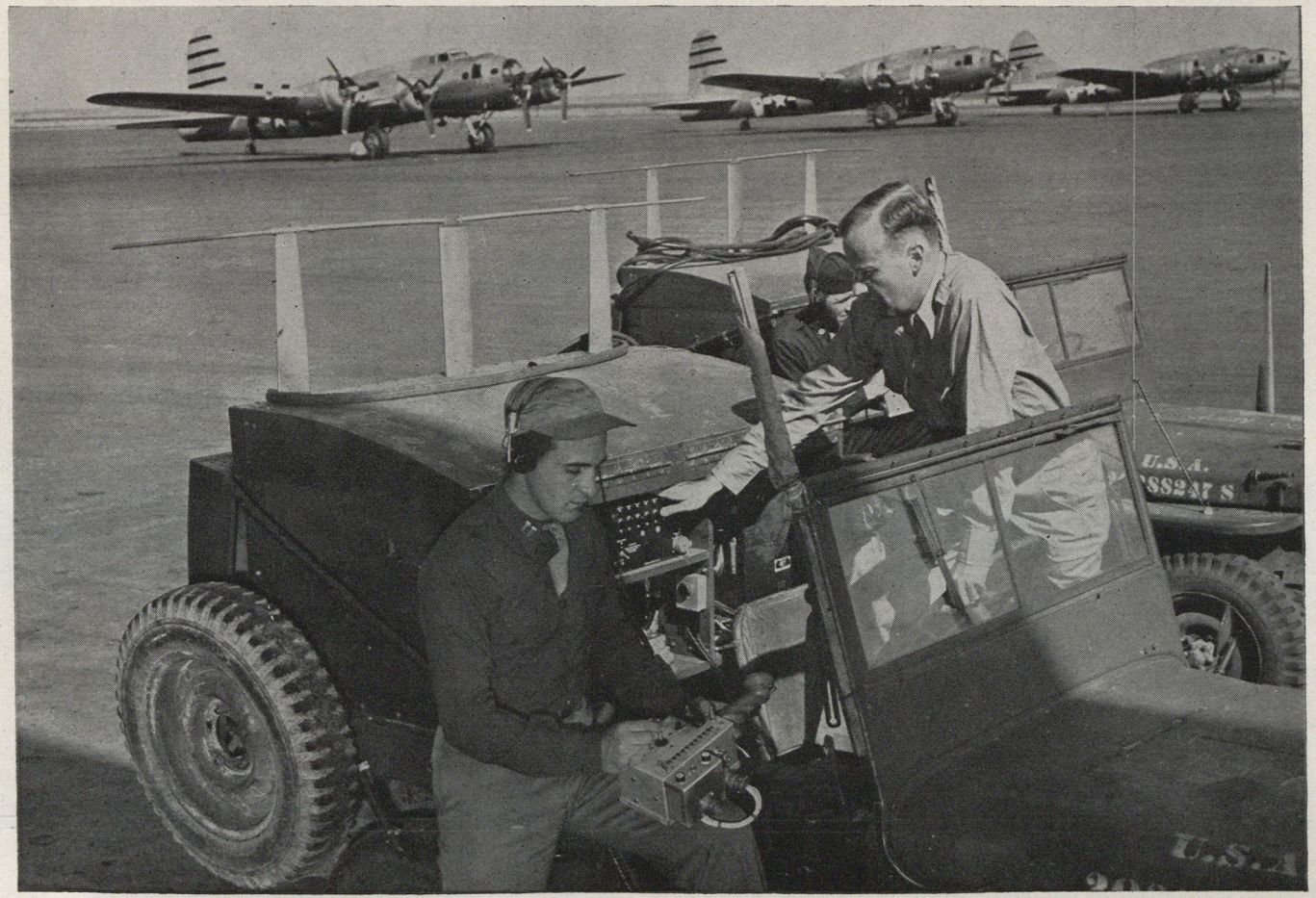
Heading the Wright Field detachment with the Instrumentation and Test Requirement Unit is Lt. Col. Thomas C. Kelly, chief of Wright Field's Controlled Aircraft section, and a former CO of the 82nd Fighter Group in Italy. The AAF's First Guided Missiles Group is represented by three key officers in the Crossroads' Babe unit: Colonel Alness, CO both of the Guided Missiles Group and now of the instrumentation unit; Lt. Col. William B. Kyes, deputy CO, and Lt. Col. R. A. "Jocko" Campbell, the unit's operations officer.

And finally, there is Yehudi himself. With all bets on the table, no one is awaiting the D-Day payoff more anxiously than he. For the boys have promised him faithfully that if he pulls it off in creditable fashion, they'll promote him to a Master Sergeant. ☆



Pilot and co-pilot are surplus in this B-17 cockpit. All controls are activated by radio signals sent from the Mother plane or jeeps.

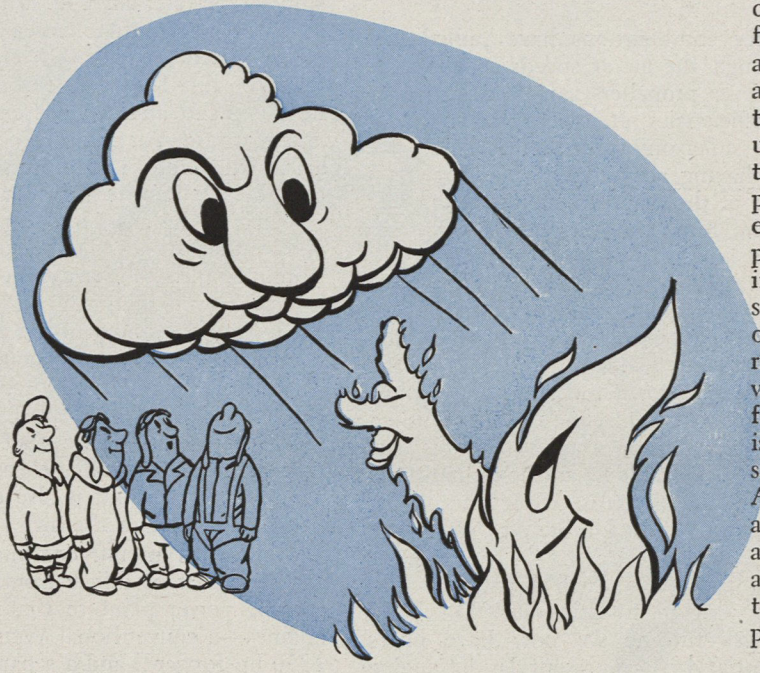
Two jeeps near runway control take-off and landing of Babe plane. One works elevators and throttle while other controls direction.



Joint Army-Navy experiments will test latest fog dispersers

Mark Twain's much-quoted expression has been modified recently to read, "Everyone talks about the weather but the Army and Navy are doing something about it." By joint action they are literally telling old man fog where to get off.

Anyone who has flown knows how fog can restrict flight operations. Combat missions, ferrying trips, important administrative flights and commercial traffic have been hampered by low hanging scud the world over—from the Aleutians, where weather was more of an enemy than the Japs, to the South Atlantic, where many flights are delayed by early morning jungle fog. During its first winter in England the Eighth Air Force had three out of five missions cancelled because of adverse weather conditions. Many times fog caused these flights to be scrubbed. On other occasions, after bombing enemy installations, squadrons returned to their home stations and found them closeted by fog, necessitating diversion of the planes to a clear field.



To eliminate this fog menace a joint experimental and research project to test landing aids under adverse weather conditions has been set up by the AAF and the Navy Bureau of Aeronautics at the Naval Auxiliary Air Station, Arcata, Calif. The Civil Aeronautics Administration is also participating in the experiments, which will include the development of automatically controlled fog dispersal equipment and the accumulation of information on the coordinated use of radio aids, high intensity lights and fog dispersal equipment. In addition, the Air Transport Association and the Air Line Pilots Association have been invited to take part in the tests.

Experiments are scheduled to begin early this month at Arcata where the Navy has conducted previous tests on fog dispersal equipment. Fido (Fog Intensive, Dispersal Of) systems, which proved extremely valuable in the British Isles during the war, have been completed and flight-tested at Arcata and are now being used to evaluate new developments. Fido, originally developed and used almost exclusively by the British, was the use of gasoline burners along runways to produce a heat sufficient to free a field from fog long enough to permit the take-off or landing of bombers. Fifteen bomber command airfields in England were equipped with this system, making possible countless missions that otherwise would not have been flown. In this early development the cost of gas burned was between four and five thousand dollars to land one plane. One of the Fido systems tested at Arcata has reduced the cost to approximately $150 per landing. This method, called Elmer, is a diesel burning installation which provides necessary clearance for aircraft to take off or land.

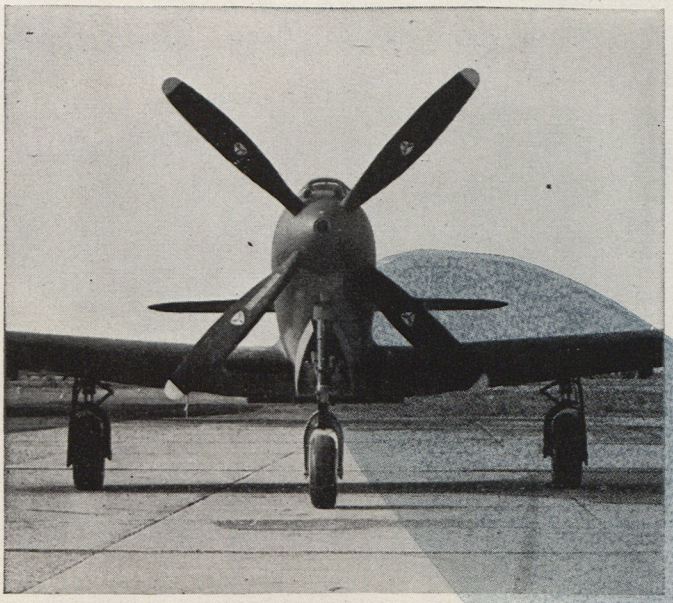
The AAF has had several Fido programs at Newark and Wright Field, but the weather in those areas was much too good. Arcata, on the other hand, is one of the most consistently fog-bound places in the United States. Objectives of the experimental station include the development of automatically controlled fog dispersal equipment of an economical type, the accumulation of information on the coordinated use of radio aids, high intensity lights and fog dispersal equipment and the effects on varying atmospheric conditions. A steering committee has been set up to determine policy of the station and originate research projects. The University of Southern California will supply administrative, research and construction personnel. The AAF, Navy, CAA, ATA and ALPA will devote time and personnel to observe and perform actual flight tests of installations and plan new developments.

In addition to burning off fog, various other dispersal methods are used. Sonic aids are based upon the principle of changing fog to rain by blasting it with high frequency sound waves which bump the fog particles around causing them to meet, thus forming units large enough for precipitation.

Another method that may prove valuable when there is a strong wind on the runway is the wind current system. With a crosswind blowing on the field, a huge blower throws a curtain of hot air at right angles to the wind, causing the wind to move in a vertical circle and break up the fog. ☆

PROPS O

Propeller-Driven Aircraft Are Far
Envisioning Supersonic Speeds Wi
Scientists and Pilots Explore the



Propeller design may change radically to reach sonic speeds.

In the opinion of at least one expert, the propeller-driven airplane is not obsolete despite talk about the superiority of jet-propelled aircraft. He is Dr. R. H. Mills, Chief of the Aerodynamics Branch of the AMC Propeller Laboratory, and he pointedly explains: "The advent of jet propulsion will no more replace conventional propeller installations than will the pure rocket replace the jet engine." Contrary to general beliefs, he declares the jet turbine is the biggest boon to propellers since we switched from wood to metal.

Present engine-propeller combinations have pulled one experimental fighter through the air at speeds in excess of 500 mph. Dr. Mills believes propellers can be designed to compare with present efficiencies at twice the speed of sound. He envisions the supersonic propeller as being five or six feet in diameter, having six or eight blades with a spinner half the diameter of the blade to cut down on drag which builds up near the hub, and running at 7,000 to 8,000 rpm—triple that of anything now in existence.

Already under consideration and in the planning stages, this high-speed prop will make use of a thin, triangular-shaped airfoil cross-section, its blades having sharp leading and trailing edges. Tips of the blades will be swept back like a Turkish scimitar to slow down the enormous airflow which induces compressibility, an idea already established with swept-back wing designs. The limited diameter is necessary to get proper ground clearance and eliminate the need for putting the airplane on stilts, while the multiple blade arrangement permits "biting more air" to get increased forward thrust.

"Crux of the problem for use of such a propeller has been a powerful enough engine to drive it," Dr. Mills asserts. The successful gas turbine we now have offers the necessary power potential, for our present-day jet engine is nothing more than a *small package of dynamite* that burns a lot of fuel to get an amazing amount of power."

It is comparatively simple to drive a propeller from an engine like the I-40 which powers the P-80. The turbine is built large enough to extract internally the energy from the heated gases. This energy is used to turn gears connected to the propeller. Instead of the gases being expelled from a small jet in the rear to provide thrust-power, they are employed to turn a turbine geared to the prop, getting thrust from a conventional air screw. It is thus possible to have one large turbine engine located inside a giant bomber driving several propellers, although from the safety standpoint multiple engines driving various prop arrangements would be more desirable. Likewise, it is no major accomplishment to take the exhaust gases from a large conventional engine such as the P&W 4360 to operate a gas turbine geared to the crankshaft, which by a system of reduction gearing drives the propeller.

Currently the AAF is using a new General Electric gas turbine which not only rotates the prop but supplies a certain amount of jet thrust. This turbine, an axial flow design as compared with centrifugal blower types, has already passed rigid test stand-runs and has been installed in XP-81 fighter aircraft. General Electric engineers are in accord with Dr. Mills when they predict: "Based on the tremendous power potential of these gas turbines, these types of units will be the main power plants for huge airliners, cargo planes and bombers of the near tomorrow."

The gas turbine engine is so simple to design it actually has only one moving part, the turbine wheel which spins at better than 10,000 rpm. After rotating the turbine at such speeds there is enough remaining energy in the gases generated in the engine to create an auxiliary jet thrust. The gas turbine is installed in the nose of the plane and the jet exhaust is discharged downward and rearward. Air rams into the gas turbine through ducts around the nose, is compressed and forced into combustion chambers where it mixes with burning fuel, raising the velocity of the gases and expanding them to produce great energy that strikes the buckets of the turbine wheel. The spinning turbine drives the compressor and rotates the propeller by reduction gear. The reactive thrust, created by the energy remaining in the gases escaping rearward through the turbine wheel and exhaust, serves as a pure jet.

Meanwhile, publicized reports on actual performance of the Navy's FR-1 "Fireball," a jet-pushed and propeller-pulled fighter, indicate that it can hold its own against conventional Navy planes and is not only efficient as a combat machine but is also extremely simple to handle on the ground and in the air.

While this aircraft combines the advantages of prop-pull and jet-thrust, it differs from the principle of the single gas turbine power plant in that it is powered by two separate engines—a conventional Wright Cyclone gasoline engine of 1350 hp forward, and a separate jet engine in the rear. The forward engine of the Fireball is normally used for take-offs, landings and economical cruising. Tremendous added power for combat and high altitude flying is derived from the rear jet engine which requires only about 12 seconds to get into full operation.

Test pilots state that light controls coupled with high effectiveness bring immediate response at low or high altitudes, and that control forces blend exceptionally well with air speed, an important factor in high speed fighter planes. At speeds of 400 mph and over the Fireball is described as "steady as an arrow."

R JETS?

From Obsolete, says AMC Expert
th Blades Turning At 7,000 RPM.
Future of High Speed Propulsion

It is also reported that performance of the fighter with both engines operating is remarkable. In a climb it fairly shoots into the air, maintaining a steep rate of climb well above average for great distances. Pilots have pulled it up to 5,000 feet directly from take-off at an angle that would cause the conventional type plane to stall.

One test pilot said recovery of the Fireball from a dive reminded him of a ping pong ball ricocheting off a concrete floor.

"There is a feeling," he said, "that the airplane is flying through every turn no matter how sharp. There is not the sensation of mushing or skidding your tires in dive recoveries that there is in other airplanes of heavier wing loading. In a stall there is no tendency to whip off on one wing or to roll. The nose drops gradually as flying speed is reached, and the ailerons remain effective until the airplane is completely stalled."

Despite the remarkable performances of the Fireball and other propjet combinations in aircraft now under experimentation, Dr. Mills points out that the propjet is admittedly not as fast as the pure jet, and he points out that the turbine-driven airplane will not achieve the extreme speeds of the P-80 and other fighters until it gets the supersonic propeller which he predicts will come.

The current barrier is compressibility. The gas turbine, however, outdistances the pure jet under present fuel consumption tables. Ranges for this type power unit will be both widespread and economical. Flights from New York to San Francisco or from Washington to London unquestionably will be possible with aircraft powered by turbine-driven propellers, and speeds will be above 500 mph. Electrically-driven propellers also stem from the gas turbine engine whose energy may be used to operate generators which supply current for electric motors.

"Regarding the use of rockets for prop power," Dr. Mills says, "this is shooting pretty far ahead. But it is conceivable that some day when we get metals that can withstand the intense heat, liquid rocket fuels will operate the turbines which in turn can be used to whirl the propellers." It is common knowledge, however, that no standard engine-propeller installation has approached the thrust-power of the jet. But in this war, research in propeller development has maintained at a high level the efficiency of the propeller in the over 400 mph range.

Dr. Mills cites two major propeller developments resulting from wartime experimentation: Aerodynamic changes in blade design, and lowering of the weight-per-horsepower ratio; the first embodies continuation of the airfoil section of the blade right down to the hub, replacing the rounded shank, eliminating drag and adding thrust; the second development, based on new construction methods and better design, permits as much as a 60 per cent reduction in weight per unit of power.

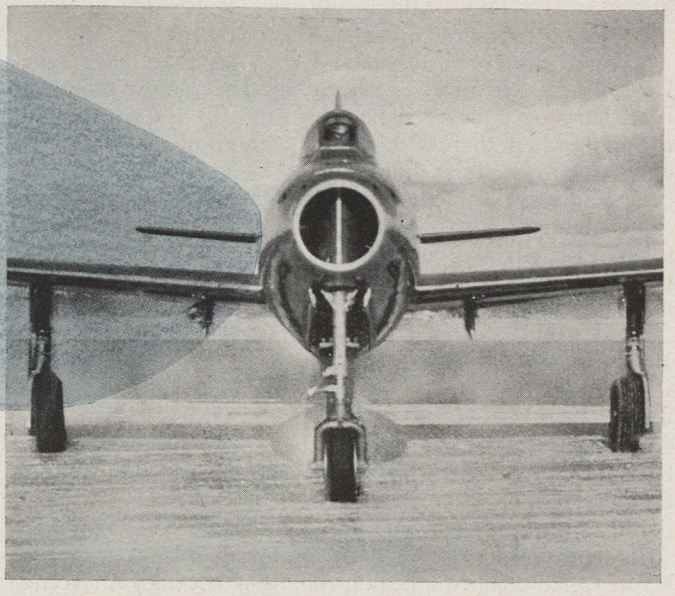
Experiments with new metals and other materials have also contributed to research progress: One propeller made entirely of a glass cloth laminated plastic offers new possibilities; solid blades forged from magnesium have reduced weight; and new steel and aluminum alloys have lessened abrasion effects. These are projects which may help to increase the efficiency ratio. "By concentrating on development rather than production," Dr. Mills states, "we will have propeller-driven airplanes approaching the speed of sound in the immediate future."

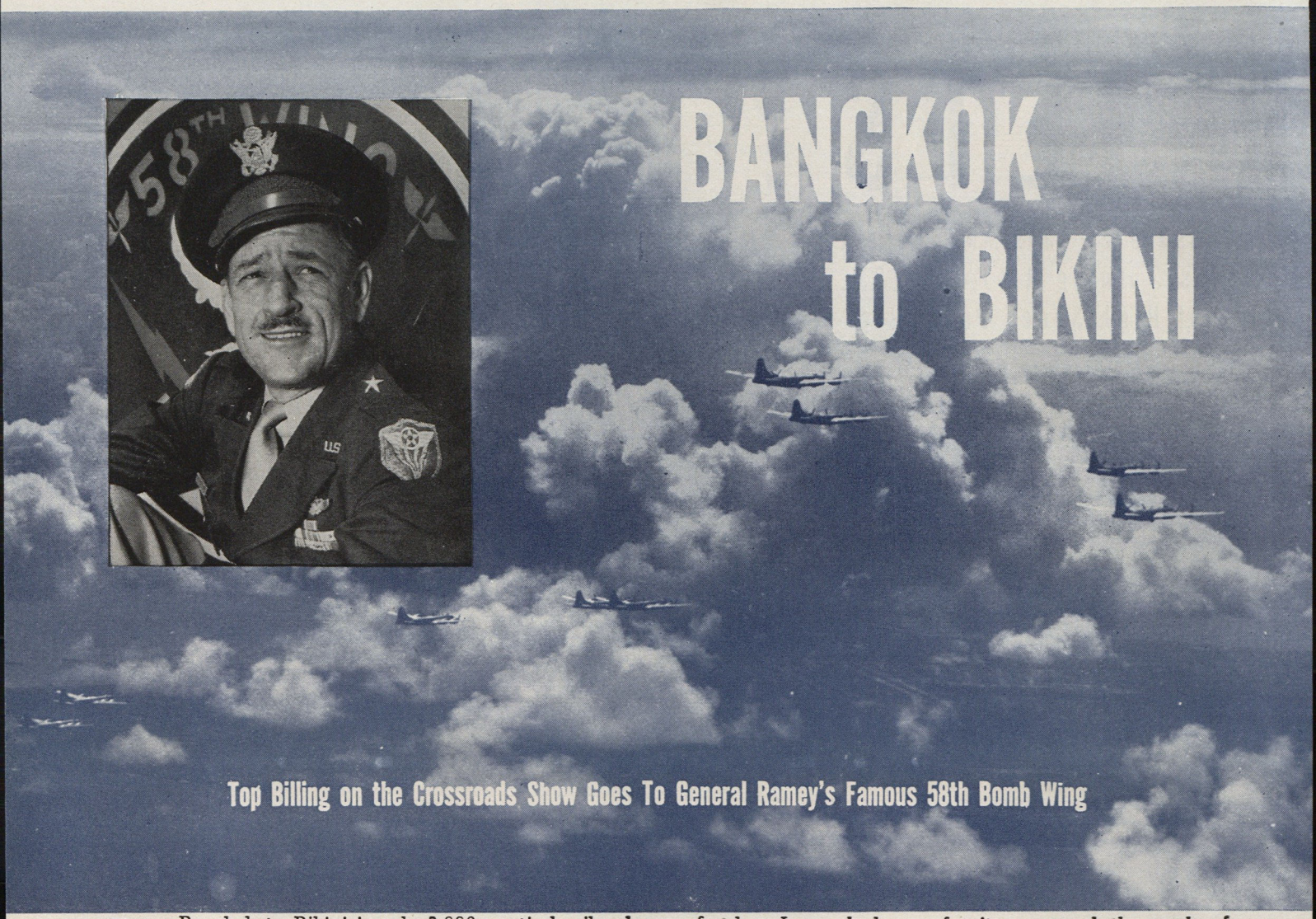
Counter-rotating propellers may be one answer. Large-diameter, four-bladed propellers mounted on the same shaft and turning in opposite directions to offset torque forces are indicative of thrust-power to come. Tried on certain experimental aircraft, such an arrangement was held back principally because of lack of power which is now available in the turbine engines. Pusher propellers being used for the first time on a large scale for the B-36 and B-35 bombers offer something new toward the solution of high-speed problems. They permit uninterrupted air flow over the leading edge of the wing normally subjected to blasts from a tractor propeller, causing the wing to get into high-speed ranges before other parts of the airplane.

Extreme high altitude operation is also influencing the size of prop blades. Because of the difference in density of the air, from 30,000 to 47,000 feet the blade area must be doubled to get effective power absorption. Blades up to 30 feet in diameter are being considered and already 25-foot diameter propellers are on order for the immediate future, and will be driven by power plants producing three times the power of present engines. The single, large-bladed propeller is less complicated than dual installations, yet it provides sufficient blade area to produce increased performance; it has no intricate gear mechanisms and has some advantages at take-off and under cruising conditions.

"To get the most from propellers," Dr. Mills declares, "we must fit them to aircraft as a tailor fits a suit. Currently we have a standard propeller for liquid and air-cooled engines, but we know that propellers designed specifically for each type would produce better results, and that's something we're working on. The whole field of jet propulsion and rockets has expanded potential uses of the propeller, and in line with extensive new plans for research we are looking forward to an era of revitalization." ☆

Powered by the new axial flow jet unit, planes without props like the XP-84 are in the attack on barrier of compressibility.





BANGKOK to BIKINI

Top Billing on the Crossroads Show Goes To General Ramey's Famous 58th Bomb Wing

From Bangkok to Bikini is only 3,880 nautical miles due east as the plane flies, but for the 58th Bombardment Wing (Very Heavy) it is a trip that took more than two years along the tortuous route through blinding monsoon rains over Burma, against hundred-mile winds over the highest and most treacherous of all Hump routes to China, through flak-filled skies over Japan and Formosa, to battle-scarred, grave-marked Tinian in the Marianas, to the States and HOME—and finally back to the Pacific again, this time to raise the curtain on Operation Crossroads.

This is a success story about a Wing that made good. Like most career pieces, it begins darkly, against seemingly overwhelming odds—the flaming wreck of the first XB-29, the days when there was only one training plane in existence, the incredibly difficult task of production, supply, crew training, the race against time and the Japs, and most discouraging of all, the near-failure of those first few combat missions. Only the continual encouragement of those who had faith in its career kept it going. Fortunately they had not long to wait to see this faith vindicated.

That first shakedown strike against Bangkok on June 5, 1944, opened the 58th's combat book with the first mission of the first B-29s in Asia. All bombs did NOT hit Target Area. It was a moot point whether any of them did. Certainly it was not an auspicious beginning. But before it reached the Bikini chapter, the Wing had filled the intervening pages with one of the truly great stories in Air Force annals, had pioneered extremely long-range air attacks (nearly double anything that had been attempted before), had reached a peak of bombing accuracy unexcelled in combat, had burned out and bombed out a major part of urban Japan, had won for its personnel thousands of decorations, had made the last major raid on Japan, and had flown surviving members home without a casualty.

The victory was not without its cost, however, and somewhere in the steaming jungles of Burma, the frozen Himalayas, the waters of the China Sea, and the islands of the "The Empire," many American airmen of the 58th lost their lives, scores more were taken prisoner. And its heroes, those who came back and those who didn't, are legion.

Associated with the Wing have been some of the most colorful airmen in the AAF—such VHB figures as Curtis E. LeMay, K. B. Wolfe, "Blondie" Saunders, Dick Carmichael (shot down on the first Empire raid, liberated after V-J), Jim Edmundson, "Kal" Kalberer, Al Clark, "Jake" Harmon, "Butch" Blanchard, and a host of others who, regardless of present assignment still take an almost fanatical pride in having been part of the 58th. Many of them are still with the Wing right now as it gets ready for one of its greatest missions: the dropping of the world's fourth atomic bomb in the Bikini test in July.

Commanding the 58th is Brig. Gen. Roger M. Ramey, former CG of the 5th Bomber Command and deputy commander of the 21st Bomber Command. He came to the Wing in February, 1945, when headquarters was still in Kharapur, India, and, insists the General, after Generals Wolfe, Saunders, and LeMay had made it one of the finest fighting outfits in the world.

Under General Ramey at the time were the four India- and China-based VHB groups which made up the 20th Bomber Command—the 40th, 444th, 462nd, and 468th, and their attached service groups. In April, 1945, after

almost a year of strikes aginst Manchuria, Japan, Singapore, Saigon, and Rangoon, he led the Wing in a mass flight through Luliang, China, to the recently won Marianas. With headquarters on Tinian, the Wing continued its missions against the Jap homeland, as part of the 20th Air Force under General LeMay, until V-J Day.

Those Tinian operations, Wing veterans recall all too vividly, were strictly "full throttle." Along with the other wings of the 20th, the groups of the 58th hammered the Empire with relentless fury. There were day raids and night raids, and while one strike was on, the next would be set up. Crews flew well over 100 combat hours a month, some of them 150. And one by one, Japan's cities (57 of them) began to be cleaned off the target slate—Nagoya, Osaka, Yokohama, Kobe, dozens of others. More than 70 per cent destruction of target (this, the official figure, later found to be greatly underestimated) became SOP. More than a year after the 58th's first and rather embarrassingly unsuccessful raid on Japan with Yawata as target, the Wing gave that city a revenge strike. Nothing could have proved more dramatically that the Wing had made good: this time nothing was left of Yawata but the fringes. The boys were happier than they had been in a year.

The 58th began the VHB war against Japan—and it ended it. Five days after the Nagasaki A-bomb had failed to bring an unconditional surrender from an already defeated Empire, a mission was laid on for the 58th. Airplane commanders took off with their bomb loads, fully expecting to be called home by the code word "Utah" which would mean that surrender had come. The word never came and the planes loosed their bombs as scheduled on the 4,500,000 square feet of Hikari naval base. It was to be the last big raid of World War II. Ironically, it was also the most effective. Every bomb hit TA and the naval base was obliterated. That night, word came of the Jap surrender.

At war's end, General Ramey planned and led Operation Sunset which brought the Wing's 14,000 veterans home by plane from the Pacific without loss or accident.

With shop once again set up in the United States—this time at March Field, Calif., the 58th was handed these assignments: that of forming a well-trained, strategic striking force, fully equipped with atomic and standard bombs, capable of hitting anywhere in the world on short notice should it become necessary in the interests of the nation's defense; and, that of developing new heavy aircraft, and the necessary crew training in the use of the newest weapons.

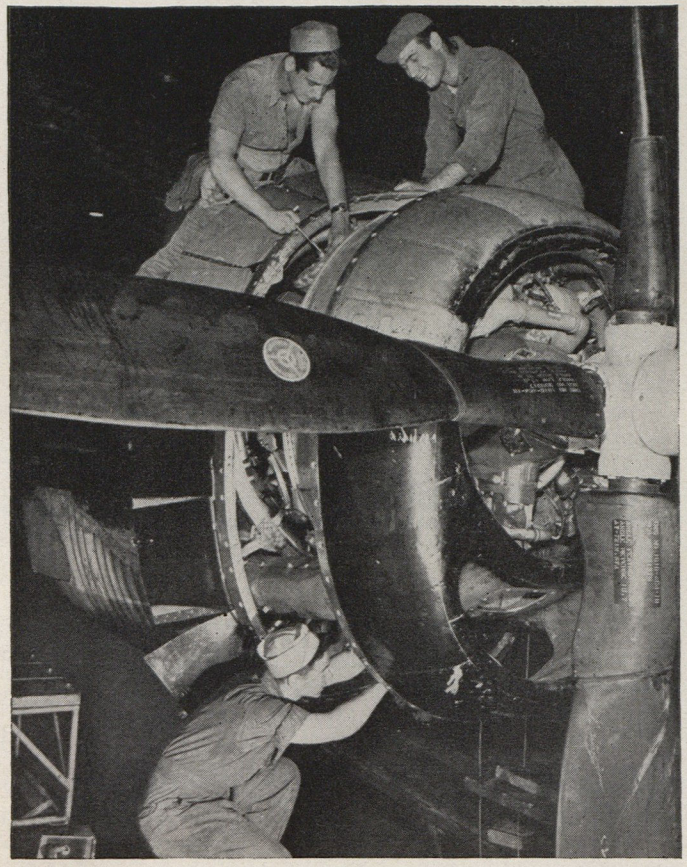
The mission was one of the biggest peacetime jobs ever handed to a Wing—and it caught the 58th at a time when landslide demobilization had affected it in precisely the same way it had every other unit in the entire AAF, which is to say that it practically flattened it.

"In an incredibly short time after our arrival in the U. S.," said General Ramey, "the 58th went from a highly efficient war machine to an almost completely disorganized one with only a handful of officers and practically no enlisted men. Too rapid demobilization had all but paralyzed our military resources."

Generally the only people left in the 58th at that time were high-ranking officers and Army regulars. It was a standard gag that the bird colonels outnumbered the EM by about two to one, a situation that General Ramey describes as "All Chief and no Indians." At any rate, the Wing had to be built up again almost from scratch.

About this time the 509th Composite Group (the Hiroshima-Nagasaki atom-bombing unit) which had suffered the same demobilization fate, was assigned to the 58th Wing with Col. William H. Blanchard, former CO of the 40th Bomb Group, later A-3 for the 20th Air Force, and more recently in the news as the Hokkaido-Chicago nonstop pilot, as its commanding officer. The plan was to take

The First Atom Bombers: Maj. T. J. VanKirk, navigator; Col. P. W. Tibbets, pilot; Maj. T. Ferebee, bombardier, compete for new task.



Crossroads' bombers must be in top condition and these 58th Wing crew chiefs are giving one of their B-29s final going over before the big bombers departed New Mexico for their Kwajalein bases.

the 509th, bring it to full strength and divide its highly technical atom-bombing know-how among the other two groups which were to remain in the wing: the 40th under Col. Al Harvey and the 444th under Col. James C. "Bromo" Selser. Col. A. F. Kalberer's 462nd (the Hellbirds) and Col. James Edmundson's colorful 468th were temporarily inactivated to allow their key people to fill vital spots throughout the Wing.

Despite demobilization, many of the original crew members of the Hiroshima-Nagasaki bombing teams are still in the 509th. Col. Paul W. Tibbets, "Enola Gay" pilot and now technical director of 1.5, and his bombardier, Major Tom Ferebee, are included in the four crews still in the running for the Bikini A-bomb drop. Major Charles Sweeney and Capt. Kermit Beahan, of Nagasaki fame, are now teaching other crews the intricacies of atom-bombing.

The addition of the Composite Group made the 58th the only Wing in the world trained and equipped to drop the atomic bomb, and it was for this reason as well as for its highly efficient combat record that Joint Army-Navy Task Force One selected it in January to form Task Group 1.5 and charged it with all AAF operations for Project Crossroads. At the present moment, therefore, General Ramey wears two hats: one as CG of the 58th Wing, and the other as commander of Task Group 1.5 whose headquarters is on Kwajalein.

The 58th's dual mission both as a strategic Wing and as a Task Group gave it a high priority for assignment of the best available personnel still in the Army and before long headquarters began to resemble an Air Force Hall of Fame. Every air force in the global AAF is currently represented by at least a score of much-decorated airmen who have slugged it out in skies over Ploesti and Tunis, Schweinfurt and Saigon, Salerno, Omaha Beach.

Among the "Chiefs" present are Col. Millard C. "Chet" Young, SW Pacific veteran of 39 months who won consid-

Army regulars and civilian technicians install equipment and check "Mother" Fortress before the Big Show at Bikini later this month.

erable recognition for establishing a system of air service liaison offices in that theatre, now on hand as chief of staff for Task Group 1.5; Col. Alan D. Clark, original 58th Wing officer, now deputy chief of staff for operations for Wing headquarters at March Field and A-3 for the Task Group; Col. Hewitt T. Wheless, whose heroism in Pacific combat won him special recognition in a Presidential broadcast during the war's early days, now Wing A-3; and Col. John A. Roberts, Wing A-5 who was at one time CO of the famed 19th Bomb Group.

And there are others: Colonel Kalberer, with 16,000 flying hours, drawn from his own Hellbird 462nd to become A-2 for the Task Group; Col. L. B. Woods, its A-4, who held the same post with the 9th Air Force and the 29th TAC in the ETO; Col. R. E. Jarmon, chief of Wright's Armament Lab, now heading the Task Group's Field Evaluation section; Lt. Col. Bill Savoie, shot down over China, walked 1800 miles out of occupied territory, now the Group's A-1; Lt. Col. John A. Roche, awarded the DSC for a mission over Ploesti, now with Crossroads as chief of the service unit for 1.5; and Lt. Col. U. S. "Sam" Nero, bombardier for Billy Mitchell in the battleship-sinking demonstrations off Cape Hatteras in 1923, now chief of maintenance.

In addition to standard Wing organization, special units were activated to perform specific jobs connected with Crossroads, such as photographic, meteorological, instrumentation and test requirement ("drone" group), transport and service units. The logistical problem alone will indicate the magnitude of this operation: the transport unit has the responsibility of moving from Roswell to Kwajalein the 2,160 AAF men and 16,500 ship and air tons of supplies needed to drop just one atomic bomb. To man the various units, "Indians" were called in from every air force unit in the country, some 3,600 enlisted men, many of them Regulars, some re-enlistees: experienced technicians, radar and communications experts, maintenance men, instrumentation specialists, photographers.

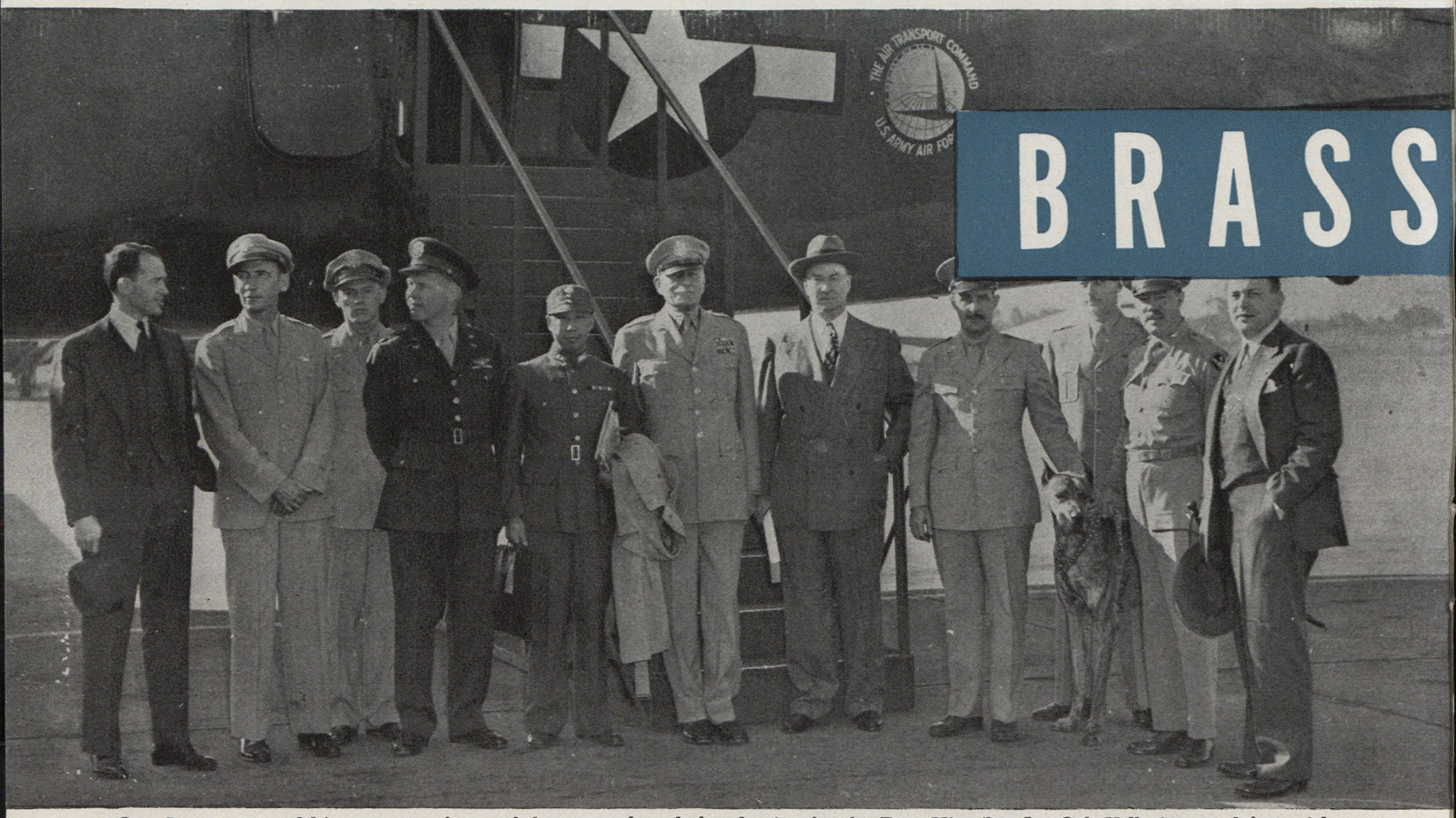
With the cast assembled, the Wing focused its immediate attention on the forthcoming A-bomb test, and embarked upon the most intensive training period in its hard-working career. No earlier military operation has ever demanded of A Wing such precision bombing and split-second timing.

"At the beginning of the war the AAF could not have successfully dropped the atomic bomb with the accuracy this operation demands, nor would it have been able to record the findings we are now prepared to get," said General Ramey. "In a sense, it has taken four long years of battle-practice for us to work up to the dropping of this one bomb, which, incidentally, requires just as much effort, training, and supply as if we were going to drop 100 bombs.

"We welcome the test for two very practical reasons," he continued. "It will be at once an extremely important training maneuver and at the same time a means of obtaining valuable scientific data which we need if we are to guarantee a first-rate first-line defense against atomic warfare. The training value of Crossroads cannot be overemphasized: it will be the very best possible way to teach the Wing the tactics and techniques of the atom-bombing business. The 58th, in turn, will then be used as the nucleus for training all AAF very heavy bombardment units in the use of A-bombs and the latest standard weapons.

"D-Day at Bikini represents for the 58th Wing the climax of a career which brings it to a crossroads affecting not only sea power and air power, but all the people on this earth. We in the 58th sincerely hope that we will never have to use our atom-bombing experience upon any nation at any time. But we firmly believe that in knowledge there is strength, and we cannot afford *not* to find out all we can about atomic warfare: the more we know about it, the better we will be able to meet this kind of attack if that ever becomes necessary."—*Charlotte Knight* ☆

Original members of 58th Wing getting a laugh. Left to right: Cols. L. B. Woods, W. H. Blanchard, A. D. Clark, and A. F. Kalberer.



BRASS

Gen. Pat Hurley and his party pose for usual departure photo before leaving for the East. His pilot, Lt. Col. Kelly is second from right.

Gulliver himself couldn't have provided better transportation service to world-traveling, high-ranking diplomats than the special missions crews of the Air Transport Command. Although they didn't have to seek such places as Brobdignag, Laputa, and Lilliput, the members of this elite flying fraternity blazed pioneer global air trails to remote corners of the earth. While Gulliver faced the dangers of giants, these highly qualified fliers had to conquer giant distances. Unlike Gulliver and the Lilliputians, however, the special mission fliers are not fictional characters, but their accomplishments have a story book quality which makes them almost legendary in the Army Air Forces.

Known officially as the Special Missions Division of the 503rd AAFBU, this group of airmen is unofficially and more popularly called the Brass Hat Squadron, so nicknamed because of the number of world leaders they have carried on flights. The Brass Hatters regard the transport of presidents, ambassadors, foreign ministers, cabinet members and senators as routine.

Lt. Gen. Harold L. George paid special tribute to this unusual group of fliers in a memorandum to General Arnold when he wrote: "The special missions unit . . . has consisted of 26 specially selected airline pilots who entered the military service shortly after war began. Without doubt, there exists nowhere in the world such a group of superior pilots. The same high degree of technical skill applies to the other members of the flight and ground crews."

Qualifications for pilots in the Brass Hat Squadron required them to be former airline pilots with at least 4,000 hours airline experience. Actually, most of the 503rd's first pilots had 10 years commercial experience and approximately 10,000 hours scheduled airline flying time.

Originally called the 10th Ferrying Squadron and stationed at Bolling Field, Washington, the unit moved to Milwaukee March 1, 1943. It soon became the 26th Transport Group and was assigned to LaGuardia Field, New York. Because most trips originated in Washington, the squadron was transferred back there the following year and combined with ATC's National Airport Staff Squadron. In the spring of 1944, General George assumed jurisdiction of the airport and the Staff Squadron was expanded into the 503rd AAFBU.

The airport was also an embarkation point for personnel going overseas and because of the large number of high-ranking officers leaving the US from there, ATC found it necessary to define a special mission as "aircraft earmarked for exclusive use of specific parties." This definition was important because the procedures by which passengers were transported, the type of service they received and the manner in which the flight was conducted were determined by the status of the flight. Regular passenger flights carrying Very Important Persons (VIPs) were treated as routine traffic.

During the epic months of 1944 and 1945, world leaders conferred frequently. Generals on inspection tours, diplomats on security-veiled missions, priority mail and top secret documents were speeded to their destinations by Brass Hat crews which made transoceanic flights seem like routine ferry crossings of the Hudson River. The seven-league boots for VIPs were big 4-engine C-54s modified with conveniences almost equal to those of a Hollywood-designed mansion.

There were excellent reasons for these special missions. Greater secrecy and security were permitted. There were less opportunities for classified trips to be discovered than if personnel had travelled on regularly scheduled flights. Brass Hat planes could speed over the shortest route, eliminating routine landings necessary for regular Army airline traffic. Inasmuch as most of the trips were long and tedious, aircraft often were specially outfitted to make a trip more comfortable. Planes usually had several berths and were provided with desks so that important work could be completed in flight. Last-minute changes in itinerary and indefinite stopovers required that planes and crews be assigned to a single mission. Many destinations were not served by regular flights. Most important, the special passengers and cargo called for the highest standard of efficiency and ability of crew personnel.

HATTERS

Unpublicized for security reasons, the Special Missions unit at Washington speeded world-leaders everywhere on historic War Missions

BY 1st LT. LAWRENCE T. GORDON
AIR FORCE Staff

About 45 pilots and navigators were usually available for trips. A crew normally consisted of a chief pilot, co-pilot, navigator, radio operator, flight engineer, assistant flight engineer and flight steward.

Very important missions called for two chief pilots so that fatigue would not delay or endanger long flights. The same crew and plane remained with the mission until its completion. Crews were not selected on the basis of aerial proficiency alone. Great emphasis was placed upon their character, personality, intelligence and ability to get along well with people. They were not only airmen but also ambassadors of good will. The result of this careful selection can be seen in safety statistics. The "roses" file in General George's office is filled with testimonials from the world's outstanding statesmen and military leaders.

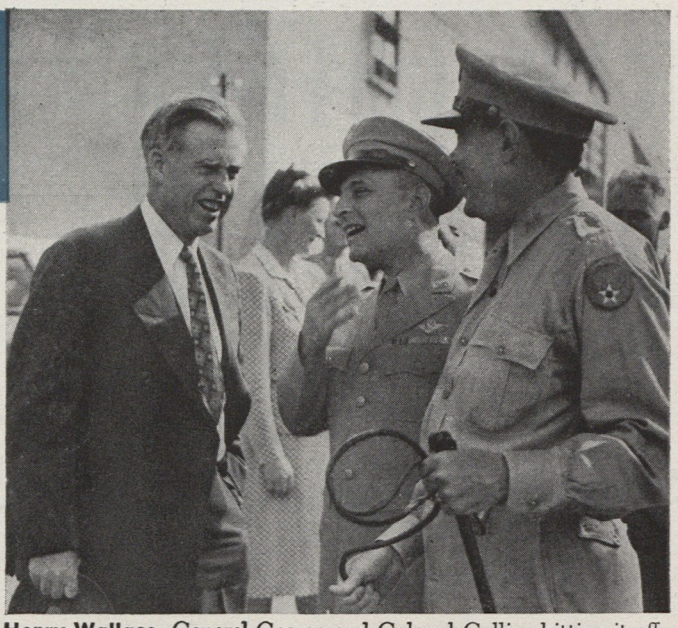
The Brass Hat Squadron carried more than 14,000 passengers without a fatality. Considering the constant threat of weather, uncharted routes, poor communications, unknown airfield conditions and other dangers apparent in the pioneering nature of such trips, the Squadron is justified in being proud of its record. In addition to these hazards, the peril of enemy interception was always present. One of the aircraft assigned to President Roosevelt's mission to Yalta for the Big Three conference, a cargo carrier piloted by Maj. Levi B. Dice, was fired upon by anti-aircraft. The plane had left Malta for Saki and its course led over Antikythera, a small island about 12 miles from the northwest corner of Crete, defended by German guns.

Major Dice and his crew were making this flight over a broken undercast. At the ETA for Antikythera, land was sighted through the clouds. But it was Crete, not Antikythera. As Dice altered course 90 degrees to the left, flak bursts appeared ahead and to his right. By this time Nazi gunners had the range of the Skymaster, and three fragments went through the plane. It escaped, however, and no one was injured.

Another flight nearly ended in disaster. Maj. John S. MacManus, piloting a C-54 over the "Hump" from Chungking in July 1944 with Madame Chiang Kai-Shek and party aboard, was informed on his arrival at Chabua, India, that 18 Zeros and several Jap fighter-bombers had been waiting to jump him over Mytikyina. American P-40s and anti-aircraft knocked out 12 of the Zeros, averting what would have been a tragedy.

Not all trips were endangered by enemy activity. Many of the missions were interesting and crews often received hospitality and comforts originally intended for VIPs. Maj. William F. Richmond and his crew will always remember their trip with Secretary of State Edward R. Stettinius in the winter of 1945. This journey was part of the Yalta Mission. At Naples, Harry Hopkins and his son were taken aboard and transported to Malta. Two days later the plane

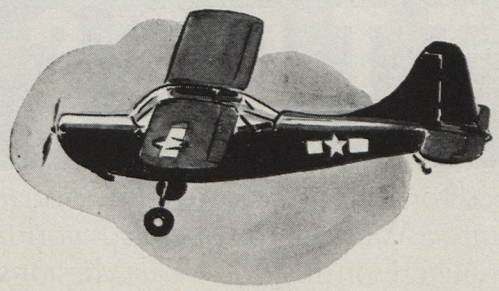
(*Continued on Page 48*)



Henry Wallace, General George and Colonel Collins hitting it off.

Everyone seems happy when they fly with the Brass Hat Squadron. **"Mustache"** Colonna and "Nose" Hope land after a USO trip.

NEW GUINEA ANGELS



Sergeant pilots flying liaison planes rescued combat crews, strafed enemy huts, and led fighters to concealed jungle targets

BY LT. COL. HERBERT O. JOHANSEN
Formerly of AIR FORCE Staff

Before V-J Day Colonel Johansen visited a liaison squadron at Hollandia, Netherlands East Indies, and learned the details for this article. Only recently released from restricted status, the story can now be told.

They were a pretty tough bunch of "angels" gathered around the operations tent of a Fifth Air Force liaison squadron at Hollandia: half a dozen sergeants wearing pilot's wings with an "L" superimposed.

A staff car drove up in a cloud of dust and out stepped a two-star general. No one jumped to attention; it was all very casual.

"Okay, Walt," one of the sergeants called out. "How about taking the general across the bay?"

"Sure thing, sarge." Walt got to his feet and went off with the general to a clearing where a number of liaison planes were parked.

In a few minutes an L-5 was running down the strip for a 10-minute flight across the bay to an Army base headquarters. The trip would have taken more than two hours by jeep, duck, and jeep again.

"Walt will be back in a few minutes," said the spokesman for the group—T/Sgt. Allen Lockwood. "He'll tell you about the time he rescued the pilot and gunner of an A-20 that crashed down the Ramu valley. . . ."

"Yeah," chimed in another sergeant, ". . . that was when the pilot called him an angel."

These were the men who flew the L-4s and L-5s of the "Guinea Short Line," as they named their squadron at Port Moresby back on Christmas Day, 1943. Almost immediately on arrival they were attached to General George C. Kenney's Third Air Task Force. And when these veteran sergeant pilots mentioned action, they meant ACTION. During their first 12 months of operations, they rescued some 15 pilots and aircrews who had crashed or bailed out in the impenetrable New Guinea jungle; they led P-39s to their targets amid Jap fighters and ack-ack; they bombed with gasoline-filled belly tanks, food and every type of rescue equipment; they strafed Jap huts with Tommy guns and even got two Nips with hand grenades hurled from aloft.

No hit and miss proposition, this rescue of stranded air-crews according to Sergeant Lockwood.

"It was a serious and systematic business. First you had to locate the crashed plane, and that was no cinch when it was among 12-foot kunai grass or dense rain forest. Next you had to drop messages to the guys down there on the ground telling them to stay put and not get panicky. If they wandered off, well, if the Nips didn't get them, something else would. Best way to get them to stay put was to drop food and guns and blankets and stuff to make them sort of cozy.

"Then we had to figure the best way to get them out. Sometimes we worked with them from the air to prepare an emergency landing strip, if it was kunai grass. If that couldn't be done, we reconnoitered and mapped the best route for them to walk out. Other times, if they were near a river, we dropped life rafts and floated them out.

"Some A-20s operating out of Gusap got into a hunk of bad weather coming back from a mission. Three of them were straggling and almost out of gas. The flight leader told them they were on their own . . . and they were. They came down at different places in the Ramu valley; that was unexplored jungle, with Japs all around.

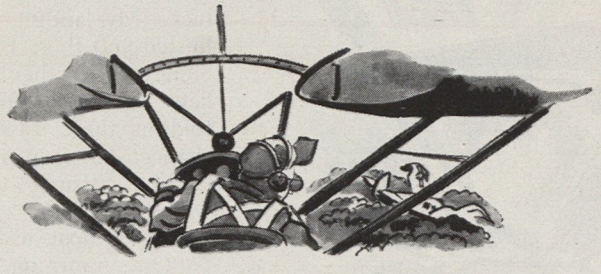
"When we got the word," Sergeant Lockwood recalled,

"we went up along with some P-40s to try and locate them. Walt (T/Sgt. Walter James) and I were flying L-5s. Walt spotted the first wreck . . . and then the others. We dropped supplies and messages telling the crews to remain where they were, not to make too much noise and to avoid contact even with the natives. . . ."

Sergeant Lockwood explained how a rescue is initiated and carried out. In the case of the first A-20 wreck sighted, the crew (pilot and gunner) were located near the plane. Lockwood flew over the area several times reconnoitering, at the same time dropping food and messages, "keeping them happy" as he called it. He determined that it would be impossible to clear any sort of a landing strip at the scene of the crash. However, he located a place about a mile or so away that might make a fair strip with the kunai grass cleared off.

As it is easy to get hopelessly lost on even a mile trek through the jungle, the next step was to map a route from the crash site to the proposed rescue location. An overlay was prepared and dropped with a message of instructions for the pilot and gunner to follow the route marked on the map and await developments.

A couple of P-40s, guided by Sergeant Lockwood in his L-5, dropped belly tanks filled with gasoline in the kunai grass covering the selected area. A few strafing runs ignited



the gasoline and burned off the grass. This strafing method didn't prove too satisfactory and the next time detonators were attached to the belly tanks.

Even with the grass burned off, there were still obstacles in the form of trees; the pilot and gunner were instructed to cut these down. The next message asked that when the plane flew over the following day, they should indicate that the strip was in good shape for a landing by lying on their backs, heads in the direction the landing should be made.

"You had to be careful about that," Sergeant Lockwood pointed out . . . about the condition of the landing strip. Those guys were lonely down there and at times got a bit too eager for company; they would signal that a strip was in good shape when a toy glider couldn't land on it.

"This time the strip looked pretty good, even with clods and lumps a foot high all over the place. I landed an L-4, but it was pretty rough. As we knew there were Japs around, I decided on an immediate take-off, and got in to test the strip. It was too soft and muddy and I ended up with my prop churning kunai grass. Luckily it didn't damage the plane. Then we worked for two days lengthening and widening the makeshift strip.

"I tested it again, solo, and this time I got into the air, but it was nip and tuck. A repeat performance, especially with a passenger, wasn't my idea of a picnic exactly. I sure was tempted to stay up there and wing it back to Gusap, but those guys were counting on me, so what the hell could I do? I came in for a landing, and a couple of minutes later was off again, this time with the pilot who had a bad scalp wound. Next day Sergeant James went in and got the gunner out."

By this time Sergeant James was back from flying the general across the bay, and Lockwood asked him to tell about rescuing the crew of the second A-20 . . . "the guy that called you an angel.

Sergeant James obliged. "Two of us flew in around Annenbert near the Ramu river where this plane had crashed. We looked over the ground, Sergeant Callan and myself, dropping food and stuff while we buzzed to get the lay of the land. The only spot we could find that looked as if it might make a landing strip would have been quite a walk for those boys, so we figured the best way was to float them down the river. Next day we dropped them an overlay map and a couple of one-man life rafts. It took them four days to float down, fighting crocodiles most of the way.

"In the meantime we led two P-40s in and they did their stuff dropping the gasoline tanks, with detonators attached this time. It burned the kunai grass off all right, but left the strip littered with belly tanks. When the pilot and his gunner arrived at the spot, we told them to clear the strip and work it into good shape for a landing.

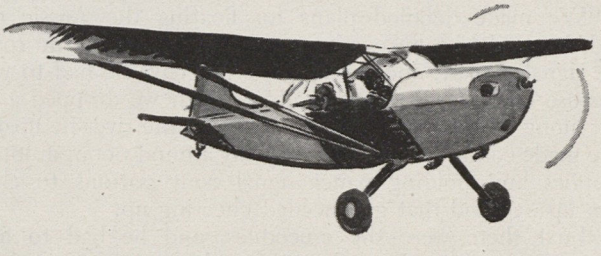
"When I flew over, it didn't look as good as I had expected, especially when I dragged the field a few times and saw there was a big hump right in the middle and swamps all around. I came in and made it, but it sure was a close shave with my wings mowing down two feet of kunai grass on each side. . . ."

"That's when the pilot . . ."

"Okay, Al . . . I'll tell it. When I walked over this pilot almost embraced me and said, 'You sure look like an angel to me!' . . . 'Brother, I told him, you are in bed shape.' Then, after looking around, I told him he'd be in worse shape if we didn't get to work on the strip so I could take off.

"Then, believe it or not, that A-20 pilot and gunner started arguing with me, saying it was a cinch for that toy plane of mine to take off. They must have thought I had a helicopter, and I had to get tough. Guess the guy changed his mind about my being an angel when I told him and his gunner that if they didn't get to swinging those machetes I'd leave them to walk out. After that they sure sweated those machetes.

"The pilot worked so hard he slipped and cut his leg pretty bad, so when the strip was in fair shape I chanced



it and got off with him all right. Next day Callan got the gunner out."

Sergeant Lockwood then explained that the third A-20 crew was taken out much the same way, and turned the session over to T/Sgt. Eugene Salitrnik, whose contribution concerned an Australian P-40 pilot who had crashed in the jungle south of Hollandia.

"This P-40," began the sergeant, "was coming home from a fighter sweep out of here. He got into some kind of trouble up in a cloud and came out in a spin. He bailed out and his plane crashed into a tree and burned.

"We got word around sunset and I took off. It was quite a while before I saw some smoke. At first I thought it was just a native fire, but then I saw a tiny flame through the thicket and swooped down. I could tell by the smell of the smoke that it was a plane burning. It was

late then, and I came back the following morning to hunt for the Aussie pilot. By sheer luck I spotted his parachute in a clearing on the bank of a creek . . . and luckier for him that he had landed there; it was the only clearing within 50 miles. If he had come down in the jungle, I don't think I would ever have found him.

"He was in a bad spot. It would have taken a gang of lumberjacks a week to chop down enough jungle to make a landing strip, even for an L-4. We didn't tell him that at first, but dropped him blankets, food, medicine, a jungle hammock, a pistol, some rockets and a cheering note telling him to stay where he was for the time being and make himself at home.

"It was a tough one, and we flew reconnaissance flights for several days trying to figure it out. In the meantime we continued dropping the poor guy this and that, and we made up a panel signal system of our own, adding to it every day until we could hold regular conversations.

"Well, anyway, we decided this time we couldn't land anywhere around there. The Aussie would have to get out by himself. Maps showed only unexplored regions, so we studied the territory from the air to try and route him out the easiest way. The creek he was stranded on became a river some distance down, and flowed inland into a lake about 60 miles away. You probably won't find this lake on the maps. We named it Krau Lake after a native village that was supposed to be somewhere in the locality.

"We made detailed plans for floating the Aussie out, and dropped him an overlay map showing the entire route. He signaled okay, and for the first two days he had to walk because the creek was too shallow. Then we dropped a life raft along with all the fixings, and down the river he floated. We made contact with him every day around noon, dropping supplies and holding panel signal conversations to cheer him up . . . and that guy needed cheering up.

"First there were the crocodiles, and he had to fight them all the way. Later he told us he hadn't minded the 15-foot ones, but the 25 and 30-foot ones were a bit tough. One almost swallowed his paddle. A couple of others he killed by firing his .38 right into their gaping jaws. We dropped him a 30-caliber rifle and he did better.

"There were also quite a few Japs around, and he went by a number of their camps, but they didn't do anything. He passed one Nip sitting along the river bank fishing—a gaunt, naked, miserable looking man; instead of taking hostile action, the Jap shouted something that sounded to the Aussie like pleadings not to be left behind.

"He got to the lake but our troubles, and his, weren't over. We tried to borrow a Catalina from the Dutch, but they said they knew the lake and it was too shallow for a landing. Finally the Australians got hold of an ancient Walrus biplane pusher flying boat. That did the trick. We landed on July 4th and brought the Aussie out."

When Sergeant Salitrnik had finished, T/Sgt. James Nichols turned to him. "Remember that other P-40 that crashed about 80 miles northwest of Dumpu?"

"Do I remember? Why, that guy picked about the worst rain forest and mangrove swamp country in all New Guinea."

"That's right," Sergeant Nichols continued, "but after a lot of buzzing around we saw a kunai grass strip that looked as if the grass was only some two feet high. That was good enough for Gene here, and he landed his L-5—only the two-foot high kunai grass turned out to be 10 feet high. He got tangled up in it and went over on his back. The plane was a wreck, but Salitrnik was okay.

"A few days later T/Sgt. Thomas Stalone landed another L-5 and damaged his left landing gear. He couldn't take off with a passenger but managed to get back solo. Next day I tried it, with even less luck. My landing gear busted and there I was. Some of the other boys flew over and finally told us there wasn't a chance of clearing a landing strip; there wasn't even a river handy to float us out.

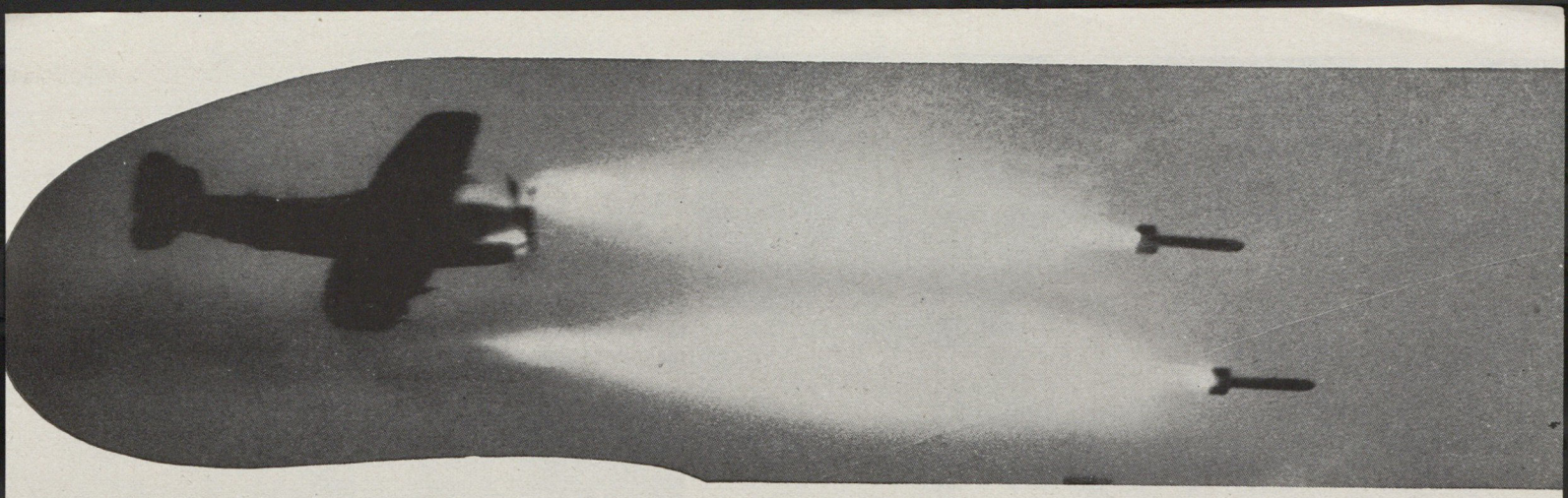
"One morning our planes flew over and dropped food and equipment, followed by a parachute from which dangled an Aussie commando who had volunteered to guide us out of the jungle. . . . Well, to make a long story short, Gene had made the first landing on February 15. We didn't get out of that mess until March 12, and half dead at that. The boys flew over us every day, we found out later, but couldn't spot us. Once they zoomed within 100 feet and still didn't see us in spite of the signal fire we had going."

"Well, that about tells the story of this rescue business," Sergeant Lockwood said. "It's only one of the jobs these L-5s have done, though. You wouldn't believe it to look at them, but they've been through some real combat action too.

"That's right, sarge, and not just strafing Jap huts with Tommy guns up at Wewak," added T/Sgt. Zaven Sadoian.

"Or those Nips you got with hand grenades at Sarmi."

"That was just dumb luck," explained Sadoian. "I mean when we used to lead those P-39s to their targets at Wewak. . . . You see, the Jap targets were pretty small and well camouflaged. It was too easy for the P-39s to whizz right by them at better than 300 miles an hour and overshoot. That wasn't so good with our own troops right close by So we came in with our L-5s. Crawling through the air at 100 miles an hour, we could spot the Japs, make passes at them and let the 39s know we'd found their target. Once a ZEKE flew right past me without firing a shot; guess he was going so fast he couldn't even see me." ☆



TINY TIM

By LT. OWEN N. DAILEY, AMC

Developed late in the war, airborne rockets with tremendous striking power, weighing approximately 1,300 pounds and traveling over 1,000 mph, proved a potent weapon in the Okinawa campaign. It was found that very few targets could withstand a projectile of this size and speed.

Because of the development of the 5.0-inch High Velocity Aircraft Rocket for firing from wings of fighter aircraft and its outstandingly successful employment against tanks, supply trains and similar lightly armored units, an immediate need for larger and more powerful airborne rockets became evident. It was decided to design a rocket which would have the power and penetration of the largest artillery shells and also the speed and maneuverability of current models of fighter and attack bombers. "Tiny Tim" was the result.

In February 1944, the best minds of the National Defense Research Council and the California Institute of Technology Rocket Group met to consider the problems, and preliminary specifications were agreed upon: An airborne rocket approximately 12 inches in diameter, weighing around 1,300 pounds. The new rocket was approximately 12 feet long, fin-stabilized, with a 590-pound semi-armor-piercing bomb as a warhead. The motor tube comprising the rear half of the projectile carried a propellant charge of four ballistite grains. The thrust developed by the rapid burning of the propellant charge amounted to 37,000 pounds—as compared to the 700-pound thrust of the Nazi V-1 Buzz-bomb, the 58,000 pounds of the 48-foot German V-2 super rocket and the 4,000 pounds of the jet engine used in the P-80 "Shooting Star" fighter.

The tremendous blast of the new rocket posed many problems in launching from an aircraft, as it was believed that close proximity to the shock wave of the Tiny Tim would shatter the flight surfaces of the firing aircraft. A drop-launching technique was developed, whereby the rocket was suspended from bomb shackles under the wings of fighters or in the bomb bays of attack bombers. When released, the rocket fell free in a horizontal position into the air stream, aligning itself in the relative wind.

A steel cable lanyard attached to the rocket paid out from a reel for a predetermined distance, usually from 60 to 70 inches, at which time an electrical contact in the firing circuit was closed, igniting the rocket. Many ground tests were conducted with the test aircraft mounted on a ramp high enough to permit drop-launching, and finally the first high altitude firing test proved the feasibility of firing the rocket from a relatively small aircraft.

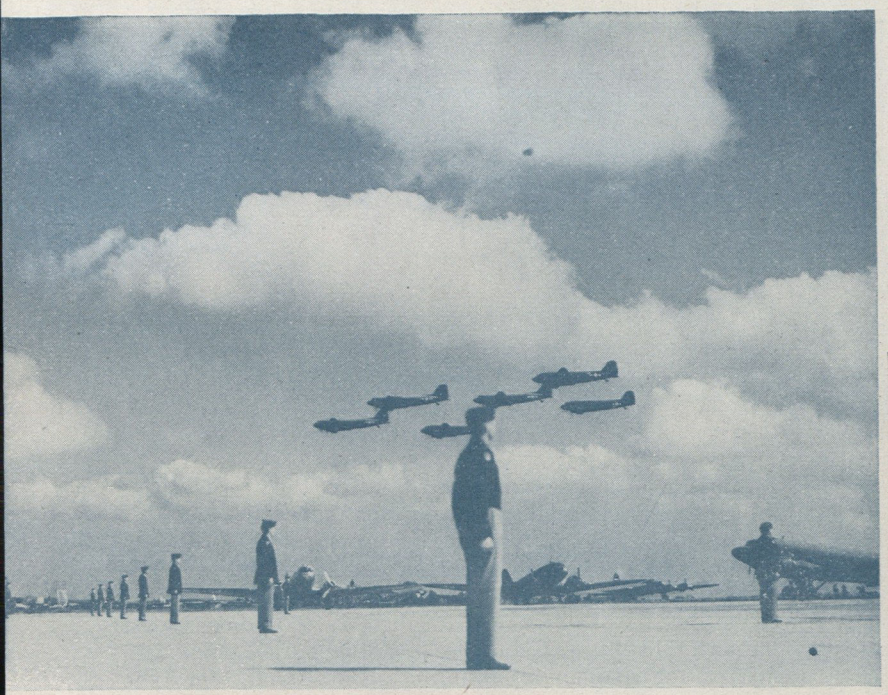
This type of launching proved reasonably accurate when firing at ground targets, and in conjunction with the California Technology group under Dr. Carl Anderson, the Navy Bureau of Ordnance at the Naval Ordnance test station at Inyokern, Calif., began testing various shipboard fighters for adaptability to firing of the Tiny Tim. The Army Air Force rocket experimental unit, 4146th AAF Base Unit, Dover, Del., maintained a detachment at the Air Materiel Command's Flight Test Base, Muroc, Calif., and this organization undertook the testing of AAF aircraft for Tiny Tims at the Muroc Base.

First firing trials were from Douglas A-20s and A-26s. Drop-launching was attempted from bomb-bays of these aircraft, and later from the wing bomb racks of Republic's P-47 "Thunderbolt." Various types of releases, reels, ignition and timing devices were tested on these aircraft in conjunction with several types of dive bombing sights. Standard procedure was established and sighting tables worked out for operational speeds and dive angles.

Blast effect upon the firing aircraft was studied constantly to minimize danger to the pilots who would ultimately use the rockets on combat operations. Each type of airplane was first ground-tested with the rockets fired while the plane was mounted on a ramp. The second phase included high speed aerial photography of the aircraft dropping dummy rockets, to determine angular rotation of the rounds in free fall before the launching point was reached. Finally, the high altitude firing of live rounds was photographed from a companion aircraft flying wing-to-wing formation with the firing aircraft. In each case, photo evaluation and actual firing provided the necessary knowledge to proceed with compilation of sighting data.

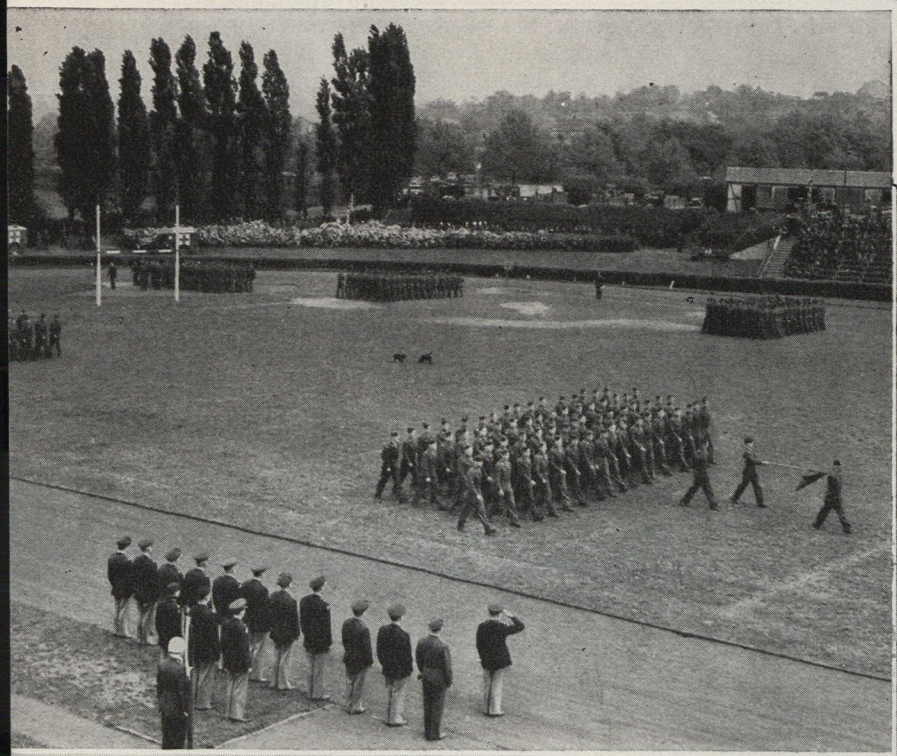
Tremendous fire-power was developed and targets of high strength, reinforced concrete were penetrated by direct hits. It was believed, however, that greater accuracy could be achieved by firing the rockets directly from zero-rail launchers mounted on the under side of the wings, in the same manner in which 5.0-inch High Velocity Aircraft Rockets were launched. A launcher was designed for the P-47 Thunderbolt fighter and again ground tests showed negligible damage to the aircraft.

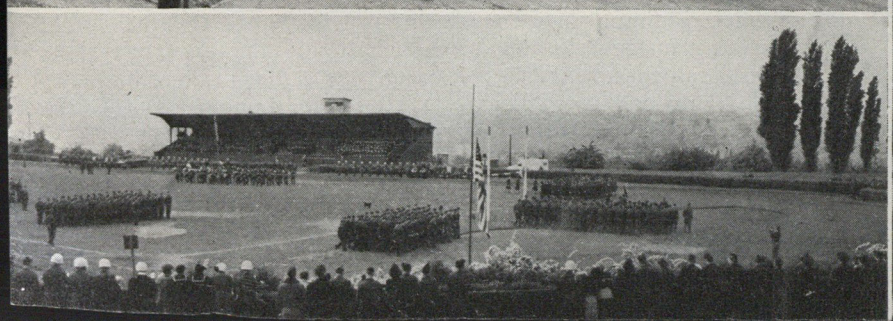
The 4146th AAF Base Unit (Experimental Projects) under the command of Col. Donald B. Diehl undertook the first air firing tests from the wing launchers at Muroc, Calif., in July, 1945. These were completely successful and showed far more accuracy than the earlier drop-launchings produced. Surprisingly enough, little of the shock of firing proved damaging to the firing aircraft and the pilot retained full control, even when firing pairs of the 11.75-inch Tiny Tims and ten 5.0-inch HVAR, in addition to a full combat load of 50-caliber ammunition and fuel in a conventional P-47 fighter. So equipped, a fighter aircraft becomes an extremely potent weapon against all types of shipping and heavily fortified ground installations. ☆



V-E Anniversary

A year after German troops threw in the official "sponge," the American Army of Occupation celebrated the historic date at many stations throughout Europe. The two views below show USAFE enlisted men marching in review on the athletic field at the installation in Wiesbaden, Germany.



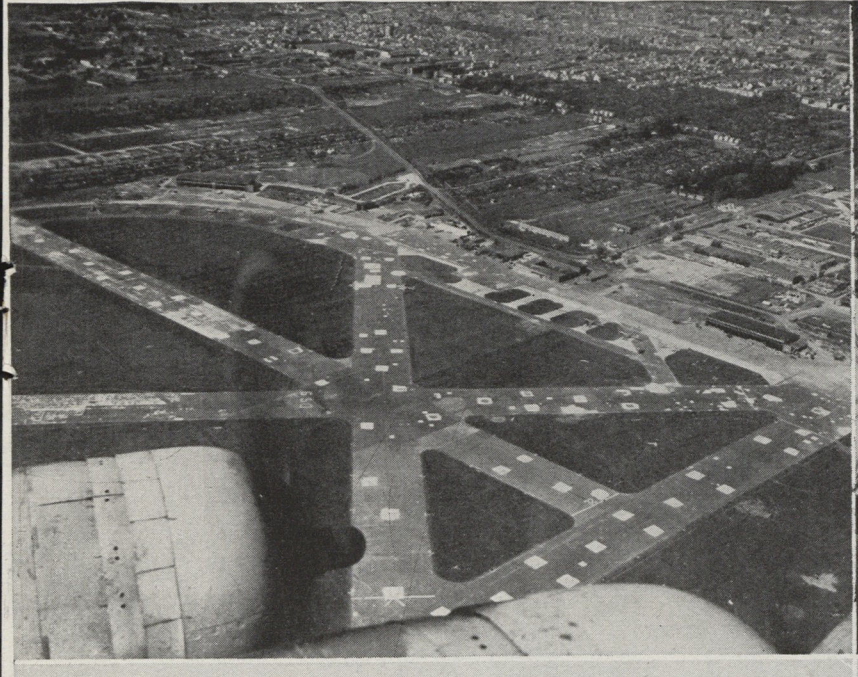


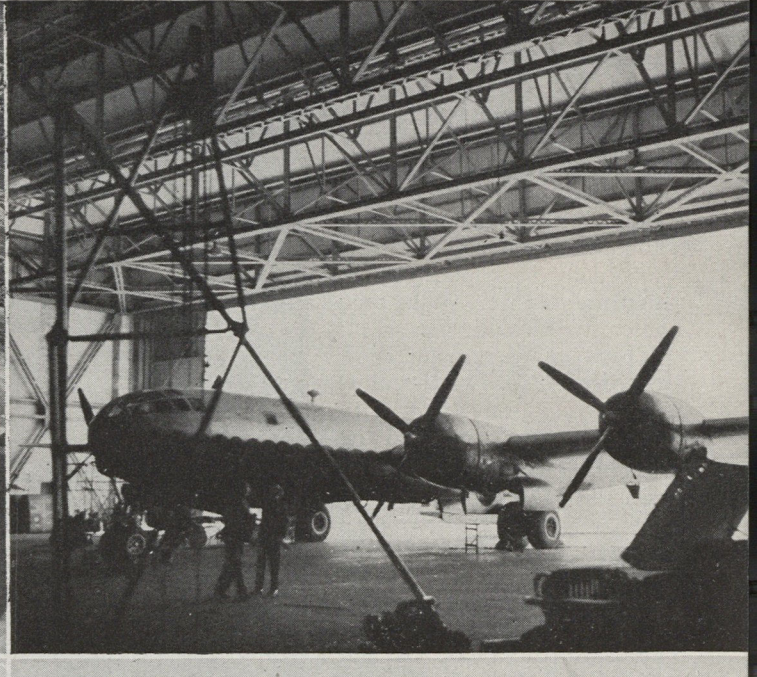
At Orly, Paris, the V-E anniversary review was held, left, as a flight of C-47s passed overhead. Below, an air view of the peaceful Netherlands from 10,000 feet up reveals none of the scars of the bitter struggle that raged little more than a year ago. This particular shot was taken while flying over the famous body of water known as the Zuider Zee.

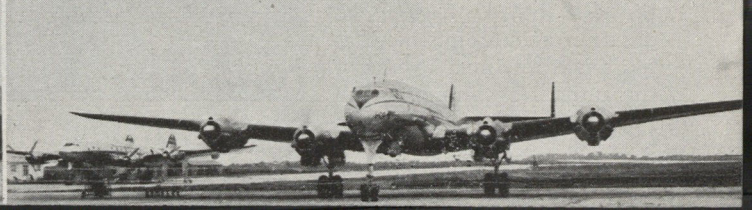
The usual German thoroughness is nowhere in evidence at Wiesbaden, or anywhere else in Germany for that matter, as the bombed-out sections are left practically as they were when hit. Two German civilians are shown here casually ignoring the ruins of a building to their left.

The Air Force in Europe these days is keeping a sharp eye out for any trouble that may develop. This is part of the face of Germany, above, in the upper reaches of the Rhine. Below, a B-17 drags the field before landing at Bremen and, bottom, an American patrol boat kicks up spray as it makes one of its regular runs down the famed River Rhine.

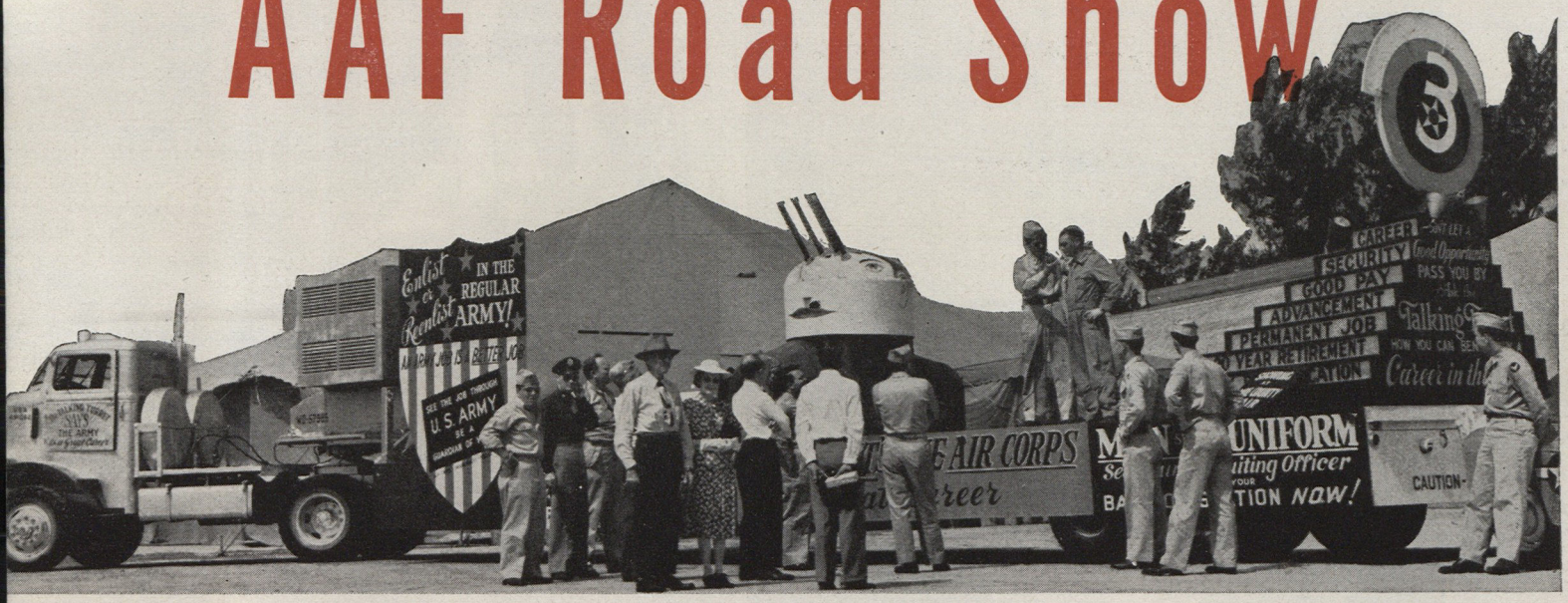
Wings over Germany today belong to the Allies, and a large number of them bear the label, "Made in the USA." Above is shown an American ground crew readying a B-29 at Borham Airbase in England. Below, a B-29 is serviced in a RAF hangar at Borham, and two Constellations are poised for flight from Orly, Paris.







AAF Road Show



Recruiting teams tour America to tell home folks of Air Force enlistment advantages

AAF troupes are putting on shows all over the country. Taking their cues from the questions people ask about the Air Force, and using wartime secret equipment for stage props, their performances are designed to explain the benefits of enlisting in the AAF.

Twelve mobile recruiting units are fanning out over the length and breadth of America, stopping at big cities, small towns and rural villages, fairs, rodeos, centennials—wherever there are people—to set up exhibits. They show the hometown folks four-gun turrets, bombsights, and mechanical eyes that see through fog, rain and darkness. Specially trained personnel travel with these units to explain the operation of engines, superchargers, radar and walkie-talkies, and the public has been eating it up. One unit, on a run through various cities and towns in Illinois, counted 50,000 visitors daily of which 600 of that number were young men interested in enlisting.

Built by the major AAF commands, sizes of the units vary—from a small team with a staff car and trailer to the largest caravan consisting of 15 vehicles, including a natty blue and yellow jeep and a box-car size C-2 wrecking trailer. The officers and enlisted men with the units are fully conversant with WD circulars, pamphlets, ARs and the GI Bill of Rights; no question about enlistment is too tough for them. Some of the units are equipped with motion picture projectors and a library of combat and other AAF films to show in the trailers or at local high school auditoriums.

Itinerary of the units is controlled by the Service Commands under direction of the War Department Personnel Procurement Office of the Adjutant General. The War Department directs the displays to selected important public gatherings such as air shows and state fairs, while the Service Command schedules the remainder of the itinerary.

Men traveling with the caravans describe them as the "greatest show on earth" because spectators are offered careers. Those who view the exhibits are told of the unexcelled training in aviation offered by the Army Air Force, the retirement benefits, free medical care, pay and opportunities for advancement.

A favorite talking point is the new War Department Pamphlet 12-16 which offers veterans honorably discharged after May 12, 1945, enlistment in grades ranging from technical sergeant to corporal, depending on length of service and specialty. To benefit from these provisions an applicant must enlist before June 30, 1946. Beginning July 1, men who enlist for three years will have the same privileges if they enlist within three months after the date of their discharge. ☆

News and Views around the World

CROSS COUNTRY

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Demotions Are in Order

As part of its general demobilization program, the War Department has announced a system for the reduction of temporary grades of colonels, lieutenant colonels, majors, and captains. As wartime positions are consolidated or eliminated, fewer officers in higher grades will be needed. The demotion system went into effect on May 1, when approximately 500 colonels were reduced to lieutenant colonels. Of this number, approximately 100 were AAF officers. Reductions of other colonels and officers of lower rank will be announced from time to time.

All components, including the Regular Army, are affected by this policy. Selection of Air Force officers for demotion will be made by the Commanding General, AAF, in order of the date of current temporary rank, beginning with those who most recently attained that rank.

Lists of officers selected for demotion will go to commanding officers 30 days before the effective date of demotion. Fifteen days before that effective date, each officer will be offered appointment in the lower grade. Regular Army officers who decline this appointment will be reduced to their permanent grade, except that those who have 25 years or more of service can elect retirement. Non-Regular officers who decline will be relieved from active duty as surplus. This procedure will not affect a non-Regular officer's eligibility for separation from the service at his highest wartime grade. Officers in process of separation or on terminal leave will not be included in the reduction system.

Trainers Earn Their Keep

At least 524 lives, $129,613,105 and 30,692,263 man-hours were saved in one year through the AAF's use of 11 synthetic training devices, according to a survey conducted for the Air Forces by independent research analysts. The survey report also stated that use of these devices actually freed 15,043 men for other military duties.

In general, the savings in lives, time and money were figured on the basis of estimating how many additional flying hours would have been needed to complete training for a crew position without the devices. Trainers for instrument flying and landing, automatic pilot, three types of navigation and four types of bombing were studied in making the survey.

Air Reserve Association

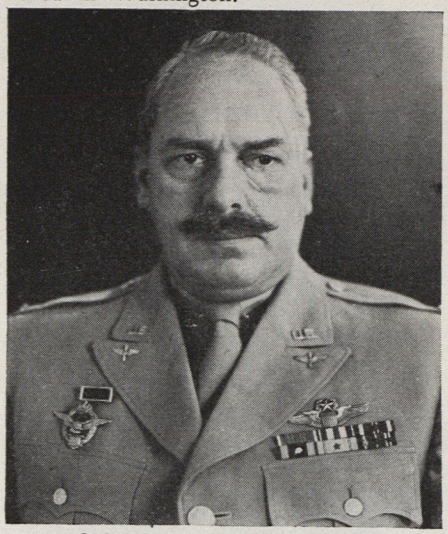
The Air Reserve Association, which for a decade prior to World War II was successful in sponsoring Federal legislation of benefit to Air Reserve officers and their flying proficiency, has begun functioning again after a four-year period of inactivity because of the war.

Recently, a large group of AAF ranking officers from all over the United States met at West Palm Beach, Fla., to outline future objectives, arrange a national convention and provide for membership solicitation. Col. William C. Lewis of Oklahoma, acting executive director, has established temporary headquarters at 1720 M. Street, N. W., Washington, D. C., from which the Association's activity is being directed at present. Applications for membership are being received there.

Col. Theodore Quentin Graff of Coalingo, Calif., is national president of the Association. A veteran of the Middle East and MTO campaigns, Colonel Graff wears the Silver Star, Legion of Merit, Distinguished Flying Cross and Air Medal with five clusters. At present he is commanding officer of Hickam Field.

When it was organized in 1932, the ARA set up as one of its objectives: "To support and assist in the development and maintenance of an adequate Air Corps Reserve for the United States, and to coordinate the activities of the Air Reserve Associations of the several corps areas." And that objective is as timely today as it was 14 years ago, Colonel Lewis said.

In the near future a national convention will be called and a permanent national headquarters with a full-time staff established in Washington.



Col. Theodore Quentin Graff

As regards the future of ARA, Colonel Lewis observed: "Young Americans who led the nation to victory are now civilians again, for the most part. Yet they have retained, naturally, a strong interest in their country's air arm, and desire as reservists to contribute to its progress. There is a definite place for them in the Air Reserve Association. Our rosters are open to Air Reserve officers, AUS air officers, flight officers and non-regular officers who served with or were attached to the Army Air Forces. They should include in their letters of application their rank, branch, serial number, component, and their present duty address and permanent address. A nominal annual fee is charged for membership."

In retrospect Colonel Lewis recalled that in the early 30s the Association's leaders fostered a program resulting in the Air Reserve Officer Corps being recognized as an integral part of national defense. In 1935 the War Department regulations were revised to increase the flying time of reservists on inactive status from 24 to 100 hours a year, and the radius of cross country flights from 100 to 250 miles. A year later BT-9 aircraft were purchased for reservists to help them maintain flying efficiency.

In those days a reservist paid his own travel costs from home to the nearest Air Corps training detachment, and he was also required to sign a waiver to the effect that if he were injured or killed while flying, the government assumed no responsibility. The ARA directed its attention to this, and in 1937 it saw legislation enacted that provided death and disability benefits for reserve officers on extended active duty. Two years later the benefits were increased to include all reserve officers suffering injury or death while on active duty, engaged in authorized travel to or from active duty or while in authorized training without pay, which included inactive status flying. Cross country was permitted up to a 500-mile radius and flying hours increased to 150 a year. Over-age officers who had not been commissioned since World War I were given a limited number of commissions through another law sponsored in 1939. The Association aided several hundred reservists to get jobs with commercial aviation companies.

Among its post-war objectives the Association has these in view: Inactive duty pay for officers who desire to maintain standards of training proficiency; an Air Corps Reserve Officers Bureau with general officers in the Air Corps Reserve, similar to the National Guard Bureau; assignment of a greater percentage of flying officers to the Command and General Staff School; revision of the present regulations which render ineligible Air Reserve officers in the War Department pool for renewal of commission or for promotion, and suitable bonuses.

All the present national officers and former presidents of the Air Reserve Association served during the late war, and several have remained on active duty with the Army Air Forces.

AAF Aids CAP

Ten teams of trained AAF personnel officers are touring Civil Air Patrol units throughout the United States to stimulate interest in and assist work being done by the CAP in its employment service for veterans.

Organized in response to a request from the AAF, the CAP Employment Service is designed to help place veterans in civilian jobs for which they are best fitted. Veterans Placement Committees are being organized by over 1,000 CAP units. These committees will work with all interested agencies in each community to encourage industry to take advantage of returnees' capabilities which have been developed during military training and service.

The AAF teams display a film as part of a program to explain to prospective employers how the specialized training received in the Air Force may be utilized in civilian positions, address meetings of the Placement Committees and civic agencies, and participate in discussions of employment.

Crew Chieftainess

Cpl. Torchy West claims the distinction of being the only woman checked out as a flight engineer on transoceanic trips. Assigned to the West Coast Wing of ATC, Corporal West flies on C-54s when she isn't giving the 4-engined Skymasters their final pre-flight inspections.

Women as ground inspectors are not uncommon, but few have ever been checked out as qualified flight engineers on the AAF's huge transport planes. The freckled Oklahoma girl has made four round trips to Hawaii as a crew member on a C-54, responsible for smooth operation of the plane's complicated mechanism.

Corporal West, 23, has been working on airplanes since 1942 when she completed a course in aircraft inspection at the Aircraft Training School of Oklahoma City. For two years she worked as an inspector on C-47 transports at the Douglas Aircraft plant. Not satisfied with just working on the planes before they were flown and eager to get overseas, Torchy resigned from her job and enlisted in the WAC.

After extensive army training to familiarize her with B-24s and B-17s, Corporal West thought she was on her way to an overseas assignment. But the AAF decided her previous experience was too valuable and she was assigned to inspecting C-47s at Love Field, Dallas, Tex. Following V-J Day she was transferred to her present job at Hamilton Field, and now intends to remain in service as long as it is possible for her to fly. ☆

A Book for Kriegies

When, in January 1945, AAF prisoners were forced to leave Stalag Luft III before advancing Russian troops, few personal belongings could be carried along. Souvenirs of prison life, like the files of the *Kriegie Klarion* (see AIR FORCE, March-April), had to be left behind in favor of food. And even food had to be discarded to save weight on the blizzardy march from Sagan.

In view of these difficulties it is fortunate that kriegie Bob Neary was able to keep the scraps of paper on which he had sketched life at Stalag Luft III, for around these sketches he has built a book that may help replace the souvenirs which kriegies had to leave behind. Titled "Stalag Luft III," it includes 20 sketches of prison life and 17,000 words of descriptive text. The book has been accepted officially by the AAF Prisoner of War Exhibition now touring the US and will be part of the AAF's permanent POW exhibit.

New Guns for B-29

To increase firepower and cone of fire in the B-29 tail turret, a four-gun installation is being tested. Ball-bearing mounted, the four .50 caliber machine guns may replace three-gun installations and those having two guns and 20-mm cannon.

Another B-29 having a special tail-gun turret is the guinea pig for trying out the turrets for a Flying Wing bomber.

QUESTIONS

on Policy and Procedure

Q. May an officer or an enlisted man request duty with the Air National Guard?
A. *Yes. AAF Ltr 35-134, 22 March 1946, subject, "Application for Assignments as Instructor with the Air National Guard," sets forth the qualifications required for assignment to the Air National Guard and establishes the procedure to be followed in making application.*

Q. What effect does enlistment or reenlistment at an ORD have on the assignment status of an individual who is on overseas orders?
A. *AAF Ltr 35-8, 25 January 1946, states that once the name of an individual in a replacement depot is placed on an oversea travel order, for oversea shipment, he may be required to proceed overseas before being permitted to enlist or reenlist in the Regular Army.*

Q. Are Officer Candidate Schools still operating?
A. *Yes. Cir 78, WD, Sec. 1, 20 March 1946, covers the attendance of Regular Army enlisted men at Officer Candidate Schools. This Circular states that qualified personnel should be afforded every opportunity and encouraged to apply for Officer Candidate School.*

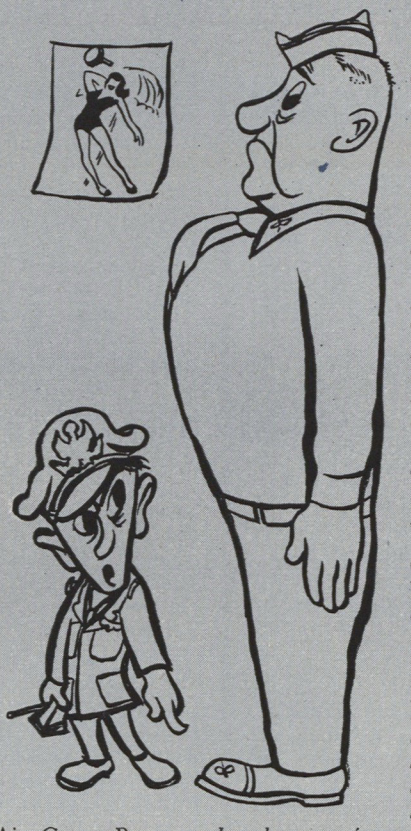
Q. Have minimum annual flying requirements been established?
A. *Yes. AAF Regulation, 50-2, 7 March 1946, sets forth minimum annual flying requirements for rated personnel.*

Q. What effect does refusal to accept a commission in the Regular Army, when tendered, have upon the eligibility of an Air Corps Reserve Officer to receive the lump sum payment?
A. *The Air Judge Advocate has ruled on several occasions that refusal of an Air Corps Reserve Officer to accept a Regular Army commission, when tendered, nullifies his eligibility to receive a lump sum payment under AR 35-3420.*

Q. Who has authority to award the Army Commendation Ribbon?
A. *Authority to award the Army Commendation Ribbon in the name of the Secretary of War is delegated to Major Generals or officers of higher grade or commanders of any command, force, or installation normally the command of a Major General or higher.*

Q. Does failure to enlist in the organized reserves at the time of separation preclude subsequent appointment or enlistment?
A. *No. Failure to enlist at the time of separation will not prohibit the later enlistment in the Enlisted Reserve Corps. (Cir 75, WD, Sec. I, 15 March 1946).*

Q. Is there an insignia for photographers, and, if so, who is authorized to wear it?
A. *Cir 72, WD, 12 March 1946, authorizes an Army photographer's sleeve insignia for wear by personnel actually assigned to operate a still or motion picture camera in the performance of official duties.*



Q. May service time accumulated by an individual before he reached the age of 18 years be credited in computing longevity pay?
A. *Yes. Service of members of the Army, or of any of the reserve components thereof, will be credited for the purpose of computing longevity pay, or for other pay purposes, notwithstanding the fact that such service was, or shall be, performed prior to the attainment of the age of 18 years. (Cir 100, WD, Sec. IV, 3 April 1946).*

Q. May an individual be awarded two Army of Occupation Medals if he has served with two Armies of Occupation?
A. *No. Not more than one "Occupation" Medal will be awarded to any individual regardless of whether service has been performed with more than one Army of Occupation (Cir 102, WD, Sec. I, 5 April 1946).*

Q. Is it possible to establish an amateur radio station at an AAF installation?
A. *Yes. Base commanders have been authorized to permit the establishment of amateur radio stations on their bases. License applications, certified by the Base Commander, must be forwarded to the Federal Communications Commission by personnel interested in operating an amateur radio station. (AAF Ltr 100-83, 1 April 1946).*

NEW BOOKS

WAR

THE LONG WAY HOME. *Millard Lampbell.* The effect of war on men of the Army Air Forces told in a series of radio scripts. N. Y., JULIAN MESSNER CO., 1945.

ON TO WESTWARD. *Robert Sherrod.* Sixteen months and 3,500 miles of war in the Central Pacific. N. Y., DUELL SLOAN & PEARCE, 1945.

HISTORICAL

EDDIE RICKENBACKER. *Hans C. Adamson.* The life story of an important figure in American aviation. N. Y., MACMILLAN CO., 1946.

POST-WAR

YOUR POST-WAR PLACE IN AVIATION. *Russ Brinkley.* A civil aviation guide for veterans. N. Y., AVIATION PRESS, 1946.

TECHNICAL

AMERICAN MACHINISTS' HANDBOOK. *Colvin and Stanley.* The latest edition of a standard handbook containing the latest technical data. N. Y., MC GRAW-HILL BOOK CO., 1945.

ELECTRONS IN ACTION. *James Stokley.* The elements, characteristics and applications of electron tubes. N. Y., WHITTLESEY HOUSE, 1946.

TELEVISION SIMPLIFIED. *Milton S. Kiver.* A practical explanation of television covering theory, mechanics, repair and servicing. N. Y., D. VAN NOSTRAND CO., 1946.

YOU AND THE UNIVERSE. *John J. O'Neill.* The discoveries and problems of science which affect our modern society. N. Y., IVES WASHBURN, 1946.

ONE WORLD OR NONE. *Dexter Masters, and Katharine Way.* Those responsible for the development of atomic energy report on present applications and future potentialities. N. Y., WHITTLESEY HOUSE, 1946.

YEARBOOKS

THE AIRCRAFT ANNUAL 1946. *David C. Cooke.* Sets for the latest developments in military and civilian aviation. N. Y., ROBERT MC BRIDE, 1946.

THE AVIATION ANNUAL OF 1946. *Reginald M. Cleveland, and Frederick P. Graham.* An account of flying activities during the past year. N. Y., DOUBLEDAY DORAN, 1945.

SOCIETY OF AUTOMOTIVE ENGINEERS S. A. E. HANDBOOK. *Society of Automotive Engineers.* The latest edition of a standard work. N. Y., SOCIETY OF AUTOMOTIVE ENGINEERS, 1945.

These books are available to AAF personnel through the AAF Technical Library Service, which provides for technical libraries at all major installations. For a complete list of books so available, see TECHNICAL PUBLICATIONS FOR ARMY AIR FORCES TECHNICAL LIBRARIES, Book List No. 2, March 1945 and supplements thereto. These lists are compiled by the Library Section, Personnel Services Division, Headquarters AAF. Personal copies of these books may be obtained from the publishers or retail bookstores.

CROSS COUNTRY

G. I. Ingenuity

A modified electric drill plus a little GI ingenuity resulted in a new potato masher, pudding mixer, egg scrambler and backeaser for the K. P. on Okinawa.

Pvt. Barney Brugger of Jackson, Mo., who spent most of his eight months in the army training at Chanute Field, Ill., was found testing the gadget shortly after his arrival in Okinawa. Waiting to be assigned by the Eighth Air Force processing team, he whiled away the hours in the mess hall serving as a "food attendant."

New Targets for AAF

New targets for the Army Air Forces are the mosquito and other disease-bearing insects on AAF bases, camps and stations in the United States. Troop Carriers of the Third Air Force will spray DDT and oil from low-flying C-47s. Headquarters for the spray attacks on these insects is the AAF Committee on Dispersal of Aerial Insecticides at Orlando, Fla.

Maj. B. F. Forester, veteran Troop Carrier pilot in charge of the campaign, said a 20 percent DDT solution in oil will be used in the spray missions. It will be sprayed in swaths 100 yards apart, he explained, from three specially-equipped C-47s. A converted medium-bomber bomb bay tank, with a capacity of 650 gallons of the solution, will be used on each plane, attached midway of the fuselage and operated by gravity flow. The estimated amount of the solution per acre is three-tenths of a pound.

The attack on the insects started with more than 20,000 gallons of DDT. Eventually all Army installations in the US will be covered, Major Forester declared. Individual post commanders must request the mission and furnish adequate data on pests at their installations. Some of the information required includes facts on the abundance of mosquitos, the period covered by the survey, adult resting stations consistently counted, the number of trap lights and biting stations run, larvae collected and the type and frequency of other mosquito collection methods.

GI "IG's"

Eight specially selected enlisted men have been assigned by the Air Transport Command to investigate and report any faulty living conditions of their fellow members within the ATC. Of the eight men selected, one has already attended the Air Inspectors School and six of the others are currently attending the enlisted inspectors school at Orlando, Fla.

The main function of this inspecting team is to investigate and determine the faults and shortcomings of amusements, mess facilities and living conditions in order to improve the treatment and morale of enlisted men. Enlisted inspectors have been chosen because it is believed they will have a better understanding of the problems, and should be more successful than officers in drawing out any complaints that fellow enlisted men may have in regard to their work, living conditions and recreation.

The Helicopter Goes North

The "fly boys" like to try out under all conditions the equipment they use, and the ones who have been working on the various Helicopters are no exception.

Last December a YR-5A Helicopter was shipped to Ladd Field, Alaska, in a C-82. It was re-assembled and a pilot took it up for a trial flight the latter part of January. Cold weather testing did not get under way until late February.

The country around Ladd Field has very few roads, and the Helicopter proved quite useful as a liaison plane between outposts and the base. It also showed its value in rescue work by picking up the pilot of a plane that crashed 12 miles from the field and returning him to the base in a total of 30 minutes. A "Weazel," dispatched at the same time as the Helicopter, spent over

Eggbeater gets a wolf

one and one-half hours reaching the scene of the crash, which was only one mile from a cleared road.

Its possibilities for use by the Territorial Police and Game Wardens are practically unlimited. It will be hard to beat for checking game movements, taking a game census, running trap-lines, and carrying in supplies to spots otherwise accessible on foot only. Almost any ice-covered lake or small clearing would serve as a landing field.

During one flight, wolves were seen attacking a moose. The passenger in the plane succeeded in killing one wolf and scattered the remainder of the pack. The Helicopter was put down within a few hundred feet of the dead wolf, and the carcass was loaded aboard and brought back to the base.

The dense atmosphere encountered at the near sea-level altitudes around the field were ideal for hovering. As comparatively light winds are more critical in landing a Heli-

copter than a conventional type aircraft, it was decided it would be advantageous to carry some type of smoke flares to aid in determining wind direction for landing.

On the whole, the YR-5A showed good results in the tests and proved extremely adaptable for the northern areas. It was determined that some modification would be necessary on the heating equipment, and that application of lubricant on some of the control mechanisms was necessary more frequently than in the more temperate climates. Due to difficulties experienced in judging distance on the flat areas of snow from the pilot's seat in the rear of the cabin, later models will place the pilot in the nose of the aircraft. They will also carry 50 gallons more fuel in jettison-type tanks, extending the range to six hours instead of the four hours maximum endurance of the present YR-5A.

Aerial Fluid Transfer

Plane-to-plane transfer of hydraulic fluid while in flight recently averted a crash-landing. A B-25J, piloted by Capt. Herbert B. Howard, continually circled Aloe Army Air Field, Victoria, Tex., until it was noticed by Majors Charles S. Thompson and Henry W. Weinman who saw that the nose wheel was half extended and the main gear still up. An unsuccessful attempt was made to contact Captain Howard by using a command set in a parked B-25 because the control tower was inoperative. Howard soon buzzed the field and dropped a note tied to a tool kit.

The note stated that the distressed plane had no hydraulic fluid and would circle for two hours, then use the remaining gas to fly to Randolph Field for an emergency belly-landing. It suggested that meanwhile an attempt be made to transfer hydraulic fluid from another plane while in flight.

The two majors took off in a B-25 and performed the aerial fluid transfer. Attached to a 100-foot length of three-inch grass rope were five one-gallon cans of hydraulic fluid. A sharp pocket knife and a pair of pliers were attached by safety wire immediately above the cans. With both planes flying in smooth air at 5,000 feet over open country, Captain Howard salvoed the top escape hatch over the pilot's compartment and waited until the fluid had been lowered from the other plane the full 100 feet. On signal from Major Thompson, the Captain pulled underneath the relief plane which was flying at 160 mph. Lt. Milford D. Boydston, Captain Howard's co-pilot, grabbed the cans and cut the rope with the attached knife. The hydraulic system was filled and the plane came in safely.

AAF in High Schools

Educational and vocational opportunities offered by the AAF are being presented to young high school graduates in a manual with accompanying letter signed by General Spaatz. The manual, "Technical Courses Offered by the Army Air Forces," has gone out to nearly every high school in the country.

AAF DEVELOPMENT CENTER

A disturbing fact arising out of the defeat of Germany is that the United States lagged years behind in some fundamental phases of aeronautics—namely, supersonic aircraft and missiles. According to Maj. Gen. Curtis E. LeMay, Deputy Chief of Air Staff for Research and Development, this lag, caused by the lack of AAF facilities to meet development demands, must not happen again. To be sure that it doesn't, the AAF is promoting plans for a huge Air Engineering and Development Center. Its purpose: to apply the results of research and invention to the development of air weapons for defense.

The proposed Center will be used for the continuous development of all materiel contributing to air power in its broadest sense and will embrace the following fields: (1) Supersonic aircraft, piloted and pilotless, and winged missiles having velocities approaching the meteoric; (2) nuclear energy applications for propulsion of aircraft and missiles, as well as other atomic devices which may evolve in the future; (3) flight and survival equipment for use above the atmosphere, including space vehicles, space bases and devices for use therein; (4) detection, control and destructive apparatus, including utilization of the energies represented by all spectra, which would embrace light, heat, magnetic and all other forms of energy and forces that may exist in the various densities of the several masses or space areas in which men could be concerned; and (5) development of aircraft and missile operating technique and organizational structure. To accomplish these objectives the proposed center would be divided into eight sections:

A Fluid Dynamics Facility will include five wind tunnels covering the entire testing range, plus a Components Laboratory for individually testing the component parts of propulsion systems. Two wind tunnels will permit the testing of full-scale models, with operating propulsive units, under conditions of controlled pressure and temperature in the range of 0-1350 mph. Another tunnel would cover 1350-2250 mph and a fourth 2250-7500 mph. Rocket test stands, some able to handle thrusts up to a million pounds, will permit firing of rockets anchored in place.

A Thermodynamics Facility will be concerned with the study of heat transfer and insulation, the effects of velocity pressure distribution and boundary layers, combustion chamber and nuclear fission phenomena.

A Structure and Materiels Facility will be used to test the structure and component parts of aircraft and missiles. Physical, Chemical and Structures Test Areas will house laboratories with equipment to analyze materiels being developed for extreme temperature and pressure conditions.

A Physiology Facility will be designed to include special test chambers for determining the effect on the human body of acceleration, atmospheric conditions, vibrations, noise and odors under simulated flight conditions. This facility will also require a hospital with special biological and psychological test equipment.

A Fuels and Propellants Facility will determine the octane or cetene number, pour point, flash point and other specification requirements for fuels. Machinery will be required to produce liquid oxygen and to develop rocket and nuclear propellants.

An Instrument Facility is to have five test areas for special analysis of optics, mechanics and electronics. This will also include air conditioned areas with dust-free air, lead-lined areas for the development of instruments using X, gamma, or higher energy radiation, altitude test chambers and instrument vibratory equipment.

A Flight Engineering Facility is planned to include runways, shops, hangars and general installation equipment required for full scale testing of personnel-carrying units. Equipment for launching missiles and other non-personnel carrying units will be required.

Electronics and Wave Phenomena Facility will include equipment for testing and developing radio control telemetering, navigation, radar, loran, television and homing devices.

It is estimated that the housing of these facilities will require a main location encompassing 100 square miles plus additional auxiliary fields and ranges. The site, beyond providing normal facilities for a self-sufficient community, must have electric power available in the range of one million horsepower and cold water at the rate of a quarter of a million gallons per minute.

In outlining the proposed center, General LeMay recommended that it be available to all civilian agencies in the country which are devoted to the development of aviation, and that there be a board, representative of both military and civilian organizations, to determine the priority of projects. The Center will be unique in that it will not encroach on the fields of research or production, but will perform the function between these two fields. In so doing, it will not duplicate or replace existing engineering centers.

Offering a solution to young men who face crowded conditions in colleges and universities and early induction in the armed forces, General Spaatz states: "The knowledge and skills gained at the AAF schools and in working with the equipment in various shops, hangars and laboratories will prepare them well for careers in the Army Air Forces and in civil life. The training will also give them a sound foundation for future professional education in engineering and allied fields."

Rookie Airline

A rookie airline set up at Greenville AAB, Headquarters, Third Air Force (Troop Carrier), is giving new AAF volunteers their first Army plane ride within hours after signing up.

The inaugural flight of this airline was in March, when a Third Air Force transport flew 16 volunteers from Charlotte, N. C., to Fort Bragg in one of the fastest recruiting operations on record. Within one hour after signing registration papers in Charlotte, the 16 volunteers for the AAF were flown to Fort Bragg where they completed their processing.

Maj. Gen. Paul L. Williams, CG Third Air Force (Troop Carrier) said this flight was the first of a regularly scheduled weekly procedure which may be increased to two weekly flights.

Plans for this operation to speed the processing of enlistments were arranged in conjunction with the recruiting service in Charlotte. It is anticipated that other recruiting centers in the Carolinas will enter the schedule soon.

Arctic Pick-Up

The first glider landing and snatch pick-up ever made above the Arctic Circle were accomplished recently by a CG-4A glider and a C-47 during the RCAF's and the Canadian Army's "Exercise Musk Ox." The glider was flown by 1st Lt. Robert A. Hopkins, 9th TCC, of Sturgis, Mich., and Flt. Lt. E. W. Smith, RCAF, of Metic Beach, Quebec. The C-47 tow plane was piloted by 1st Lt. M. G. Brewer, 9th TCC, of Charleston, Ark., and Flt. Lt. L. J. Wilson, RCAF, of Ottawa, Ontario.

Taking off from Norman Wells, Northwest territory advance "Musk Ox" base, the aerial train made the five-hour flight to the village of Coppermine, northernmost settlement of North America. Here the supply-laden glider was released from its tow plane to land on the snow-covered ice of the Arctic Ocean. A 3,000-pound Cadillac V-1 engine and replacement supplies for one of the snowmobiles were quickly unloaded for the ground party, veterans of the 48-day, 3,130-mile experimental trek.

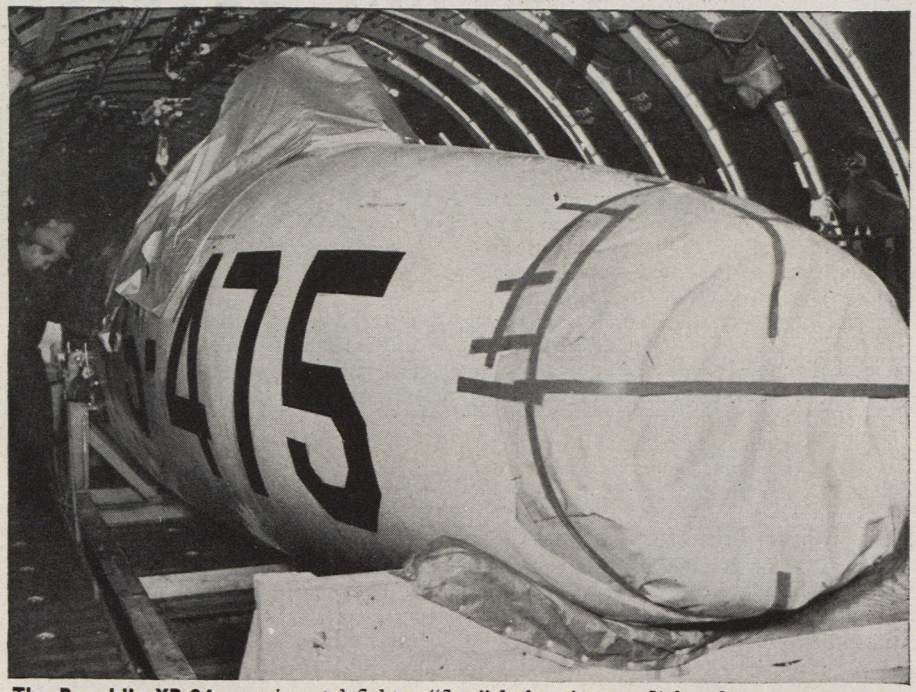
As soon as a "pick-up" station was erected by the two glider pilots, the glider was snatched into the air by the tow plane which had circled overhead during the unloading. Climbing back to 5,000 feet, the plane and the glider made the return trip over ice sheets, snow-capped mountains and frozen forests.

HOW SHARP ARE YOU?

QUESTIONS

1. How many numbers are visible on the jeep?
2. What type of aircraft is it?
3. There is a chin turret on the plane. True or false.
4. How many men are in the picture?
5. The officer is holding a radio sonde, walkie-talkie, or control-stick box? Which?
6. How many blades are in the propeller?
7. Are any antennas visible?
8. Two men are wearing head sets. True or false.
9. Are any wires trailing on the ground?
10. How many nose guns are there?

ANSWERS ON PAGE 47



The Republic XP-84 experimental fighter "flew" before its test flight—but as a passenger in the huge fuselage of Boeing's C-97. Its flight from Farmingdale, L. I., to Muroc Army Air Base, Calif., demonstrated the feasibility of using the C-97, cargo version of the B-29, as a heavy cargo carrier. An integral winch-monorail beam and cargo hoist system made for easy loading of the Thunderjet into the transport through its clamshell belly doors.

Individual Aircraft Assignment

Assignment of AAF aircraft to individuals or individual offices has been discontinued. The sole exception is President Truman's C-54 Skymaster.

During the war, the frequent necessity for important and urgent missions by high-ranking personnel caused assignment of individual aircraft. Now, however, in order to increase the efficiency of essential services and reduce the requirements for manpower and equipment, this practice has been discontinued.

AAF aircraft will be assigned to pools throughout the United States, controlled by the commanding general of the AAF. Request for use of a plane and proper authorization will be required for each flight.

Combat planes assigned to individual pilots at AAF bases will not be affected by the order, nor does it revoke the existing authority of AAF commanders to furnish air transportation in an emergency and to provide aircraft for AAF units or activities.

42-476330A 42-817105A 42-802284C
42-688010A 42-688123A 42- 83346D
42-732835A 42-688288A 42 -47027E
42-817390A 42-688112A 42- 47027E
42-816794A 42-820285A 42-140280E
42-730856A 42-173743A 42-468531F
42-741680A 42-178011A 42-810542G
42-253091A 42-688169A 42-685565G
42-817356A 43- 43982A 42-190842H
43- 44296A 42-173671A 42-486440I
42-178101A 42-177754A
42-177883A 42-537201B

Return to field indicated by letter after number as keyed below

A—Personal Equipment Office, Langley Field, Va.
B—Headquarters, Perrin Field, Sherman, Texas
C—Personal Equipment Section, Scott Field, Ill.
D—Operations Office, Wright Field, Ohio
E—Capt. G. A. Cloward, CAP, Sangamo Club Building, Springfield, Ill.
F—Col. Leon W. Armour, Miami ATSC, Miami, Fla.
G—Lt. R. N. Gardner, Box 102, TAAF, Tuskegee, Ala.
H—Headquarters, Moody Field, Ga.
I—CO, Squadron C, 3706 AAF BU, Sheppard Field, Texas

BATTLE HONORS

Unit Citations of brilliant tactical successes that made Global Victory possible

8th Photo Reconnaissance Squadron
5th, 6th Photo Group

By carrying out high and low altitude photo reconnaissance missions for the Sixth Army and providing Air Force units with necessary photo coverage for current and future operations, the 8th Photo Reconnaissance Squadron was partly responsible for the success of the Leyte campaign. Pilots of the squadron made a total of 120 sorties despite heavy aerial opposition. In the first day of the squadron's work in Leyte, the

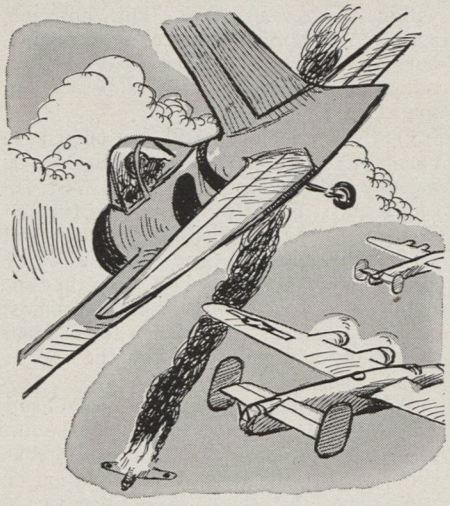


photo lab turned out 12,800 prints, an unprecedented number in comparison with the daily average of 2,000. Operating from Dulag airstrip which was only 3,000 feet long and partly under water, the unarmed aircraft, harassed by anti-aircraft fire and subjected to aerial interception on many of their flights, covered aerial targets ranging from the islands of the Visayan group to Central Luzon. In addition to this, the group flew many low oblique photo missions over areas of concentrated ground action on Leyte.—19 November to 15 December, 1944.

25th Photo Reconnaissance Squadron
5th, 6th Photo Group

Photographs obtained by the 25th Photographic Reconnaissance Squadron, operating in support of the Okinawa-based air offensive against the Jap homeland, were of great value in the assessment of enemy strength. As a result of the successful completion of 14 sorties in a single day of flying unarmed and unescorted F-5 aircraft, six pilots reached Kyushu and completed priority mapping and airdrome photography, while two others made the first photo reconnaissance of Saichu Island, south of Korea. The remaining six aircraft covered all enemy installations on Southern Honshu and Shikoku islands. In one day, pilots photographed 94 enemy targets, including airdromes, harbors, towns and targets which had never been covered by Far East Air Forces because of adverse weather conditions and extreme distances. In order to obtain larger scale photos to insure more accurate interpretations, these pilots made the runs at dangerously low altitudes.—9 August, 1945.

330th Bombardment Group (VH)
20th Air Force

Thirty-six superfortresses heavily loaded with high explosives, participated in a daylight attack on Nakjima-Musashino aircraft plant located in the outskirts of Tokyo. After a 1,500-mile flight and despite heavy flak which tore through every plane in the lead formation and many in the following squadrons, the group dropped its bombs on the target. Seventy-six per cent of the bomb load was pinpointed within 1,000 feet of the designated aiming point, causing great destruction to the vital objective.—8 August, 1945.

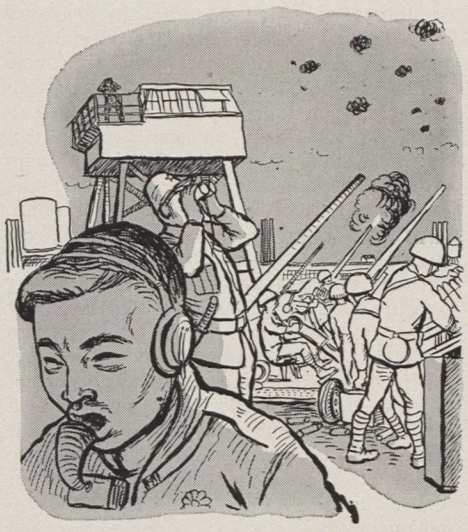
468th Bombardment Group (VH),
20th Air Force

Striking with other units, the 468th contributed materially to the destruction of an additional 22.1 square miles of industrial area in Tokyo on 23 May 1945. A single raid on 29 May, the 468th participating, destroyed 6.9 square miles of Yokohama's industrial area. 23-29 May 1945.

39th Bombardment Group (VH)
20th Air Force

In a devastating strike against the Otake oil refinery and storage area on the Japanese home island of Honshu, 29 bombers of the 39th Bombardment Group (VH) bombed the area so effectively that this

bombardment proved to be one of the most successful precision attacks of the Pacific air war. Despite intense enemy ground and sea anti-aircraft defense that crippled aircraft in the formation, the group completely knocked out of usefulness a vital source of high octane gasoline for the enemy war machine.—10 May, 1945.



345th Bombardment Group (M)
5th Air Force

Handicapped by flying over flat terrain which made it impossible to achieve surprise or avoid anti-aircraft fire, the 345th Bombardment Group (M) carried out the first low-level attacks to be made on Saigon. The group sank a 2,300-ton freighter transport, a 500-ton freighter, a 2,800-ton freighter, a 250-ton tanker, a 200-ton freighter and a 2,900-ton troop transport. In addition they damaged four other vessels totaling 3,000 tons, bombed and destroyed several warehouses and set afire oil storage tanks and barracks in the wharf area. All this was accomplished through heavy enemy opposition.—29 November, 1945.

462nd Bombardment Group (VH),
20th Air Force

As part of an all-out effort to destroy Japanese aircraft production, the 462nd and one other group from the 58th Bombardment Wing were ordered to strike the Kawanishi Aircraft Factory in a daylight precision bombing attack. This plant manufactured components of a Japanese navy fighter plane. Although seven previous July raids had made maintenance requirements high, the ground crews readied 42 planes for the mission. Enemy opposition was so intense that 28 aircraft of the 462nd were hit by antiaircraft fire before the target was reached. Despite this damage the group dropped 205 tons of explosives on the factory area, destroying 85 per cent of the plant. 24 July 1945.

468th Bombardment Group (VH),
20th Air Force

Severely handicapped by enemy fire, the 468th Bombardment Group (VH) dropped 245 tons of explosives on the Kawanishi aircraft plant at Takarazuka. When the groups retired from the target area, the plant was 85 per cent destroyed. 24 July 1945.

Air National Guard

TO maintain American air supremacy until the United Nations can guarantee international security is one of the important problems facing the Army Air Forces today. Demobilization, with its attendant loss of highly-skilled personnel, has weakened the Air Force. Greater importance is being assigned to the Air National Guard in order to have a first line reserve component for the postwar military establishment, capable of rapid expansion to war strength and able to furnish air units fit for immediate service anywhere in the world.

This boost in emphasis becomes apparent when the number of ANG units prior to Pearl Harbor is compared to the number planned by the National Guard Bureau. Twenty-nine National Guard units supplied the AAF with 468 rated pilots at the outbreak of the war. Currently planned are 84 national guard squadrons composed of fighter and light bomber outfits with supporting units.

This new ANG will consist of 12 wings, 24 fighter groups, 3 light bombardment groups, 72 fighter squadrons, 12 light bombardment squadrons and numerous supporting units including Aircraft Warning Control Organizations, anti-aircraft outfits, weather detachments and maintenance units. Fighter squadrons will be in a six-to-one ratio to bomber squadrons. It is proposed that there be some 79 National Guard Air Bases and that they be equipped with approximately 2,664 airplanes.

Eighteen hundred of these planes will be fighters, both P-51s and P-47s. The light bombardment squadrons will be outfitted with A-26s. AT-6s, C-47s and L-5s are also included in the airplane allotments to both types of squadrons. A typical fighter squadron will have 25 P-47s or 51s, four A-26s for tow-target purposes, two AT-6s for instrument checks, one C-47 for transport duties and two L-5s for auxiliary and liaison work. A light bomber squadron will have 20 A-26s, two AT-6s, one C-47 and two L-5s.

Initial procurement of personnel will be limited to those World War II officers and men who have clearly demonstrated their qualifications by actual experience and performance. Enlisted men for the ANG will be limited to voluntary enlistment from among personnel who have completed at least six months active duty in the armed forces since Sept. 16, 1940 and who have been honorably discharged. Officers and men who served with units other than the AAF may select service with the ANG. If qualified, warrant officers, flight officers and enlisted men of the first three grades may be nominated for appointment as second lieutenants.

After reorganization, officers may be obtained from among the graduates of accredited Reserve Training Corps Units, graduate aviation cadets, graduates of Officers Candidate Schools, enlisted men of the ANG who have qualified by means of extension courses or by graduation from an OCS. For those who have served at least one year in time of war or who have completed the required period of universal military training, enlistment will be for two years and for the others it will be three years. Reenlistment will be for one year or three, at the option of the applicant.

The Air National Guard's legal basis for existence stems directly from the Constitution, which states that all able-bodied men between the ages of 18 and 45 are considered to be in the militia, and the ANG is one means of expressing this statement in actual practice. Each of the 48 States is responsible for recruiting. The individual interested in becoming a member of the National Guard applies to his State Adjutant General who then may refer him to officers designated to organize units in the applicant's locality.

At present, the program calls for one night of weekly drill or training for a minimum of two hours, occasional week-end field trips to AAF installations and an annual tour of duty of two weeks. For this service, a member of the ANG will receive full pay and allowances for the period served. This totals more than 60 days pay and allowances per year. In addition to this financial benefit there are liberal promotion policies for both officers and enlisted men which are designed to maintain a roster of young men. The accompanying chart illustrates this program.

Lt. Gen. George E. Stratemeyer, CG Air Defense Command, under whose supervision the ANG and Air Reserve fall, observed that the location of Air National Guard units is of high importance in a speech before the States' Adjutant Generals. The General said, "At the present time, there exists a large supply of potential Air National Guard Officers with World War II experience. Even small communities could, at the present time, man Air National Guard units under existing tables of organization. However, it should be borne in mind that attrition, due to advancement in age, loss of interest, physical disability and change of domicile, will eventually deplete this large reserve of qualified personnel and make it extremely difficult for smaller communities to sustain a unit. It should be established as a general principle that Air National Guard units will be located in the larger centers of population within the several states. This not only assures a continuing source of personnel, but will permit greater selectivity with resultant improvement in the caliber of personnel in all grades."

On-the-job training will be offered to members of the ANG at their weekly meeting and during their two-week encampments. Pilots will receive instruction in map reading, aerodynamics, tactics, and subjects designed to give them a better understanding of their role in the air. Bombardiers, navigators, radio operators, engineers, gunners and others will maintain their skills and proficiency by the use of training aids.

While service with the National Guard is attractive and advantageous to the individual, it is also, as Secretary of War Patterson has said, " . . . one solution of a problem that faces every democracy, namely, how to create an Army strong enough to defend the country, while at the same time making it the kind of an Army that fitted properly into the institutions of democracy."

MAXIMUM AGE FOR SERVICE IN GRADE FOR ANG OFFICERS SHALL BE LESS THAN THE FOLLOWING AGES:

2nd Lt.	1st Lt.	Captain	Major	Lt. Col.	Col.	
31	36	41	44	47	49	
21	24	28	32	35	38	Maximum age for original appointment or promotion
3	4	4	3	3	2	Minimum years service for promotion to next grade

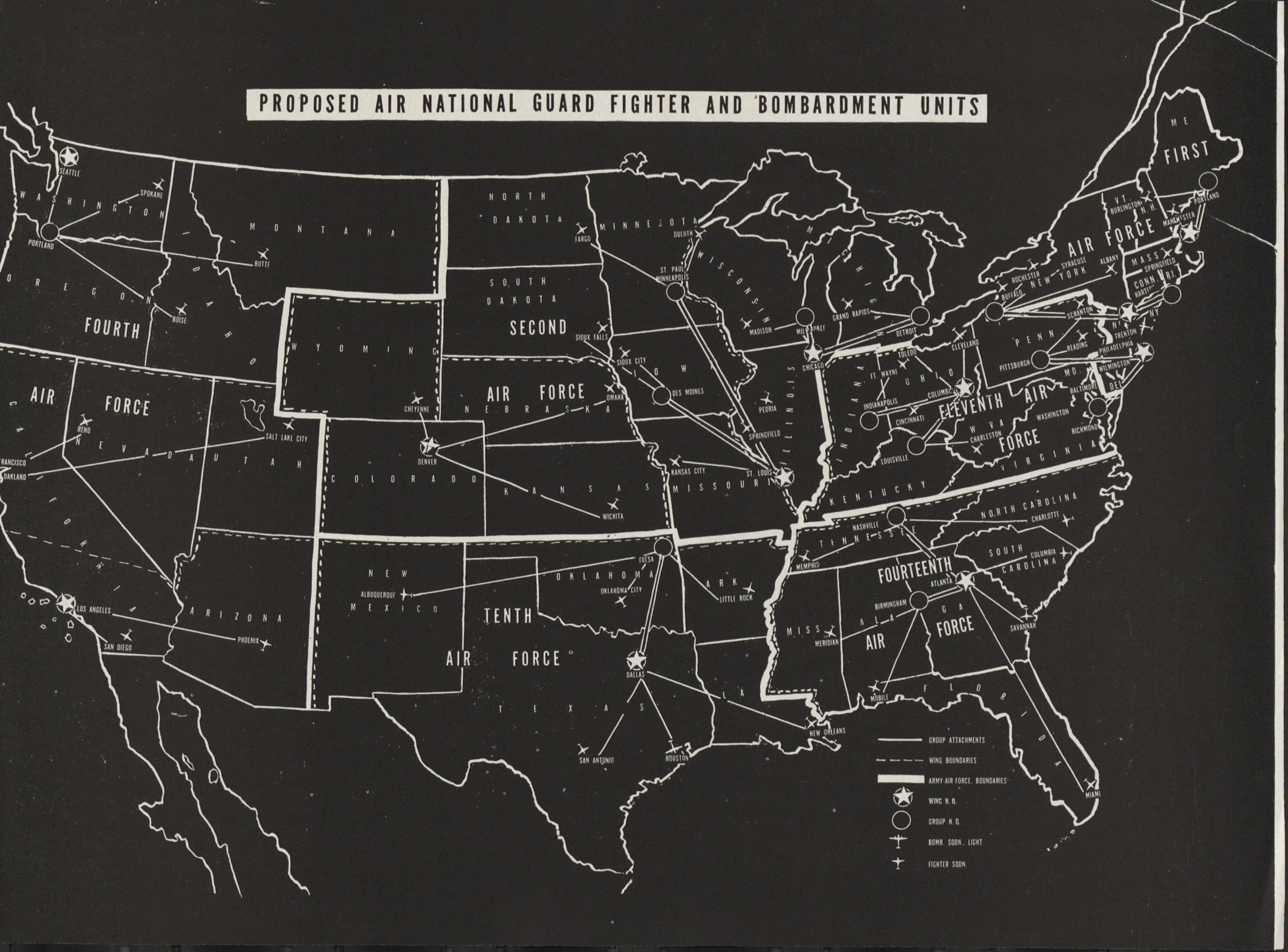
MAXIMUM SERVICE ALLOWED IN GRADE IS TWO YEARS LONGER THAN MINIMUM SERVICE IN SAME GRADE.

MAXIMUM AGE FOR SERVICE IN GRADE FOR ANG ENLISTED MEN SHALL BE LESS THAN THE FOLLOWING AGES:

Pvt/Pfc	Cpl.	Sgt.	S/Sgt.	T/Sgt.	M/Sgt.	
30	32	34	36	38	40	
6	9	12	15	18	22	Maximum service in grade

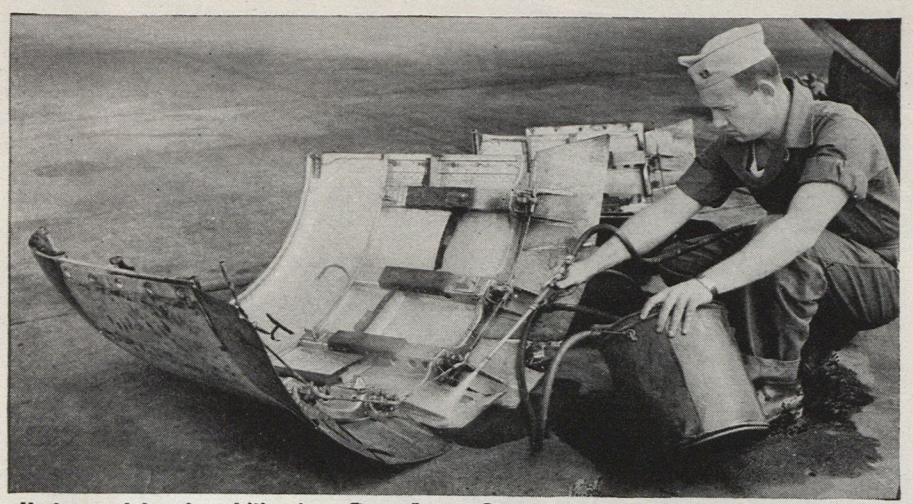
NOTE: War time service counts as time in grade.

PROPOSED AIR NATIONAL GUARD FIGHTER AND BOMBARDMENT UNITS



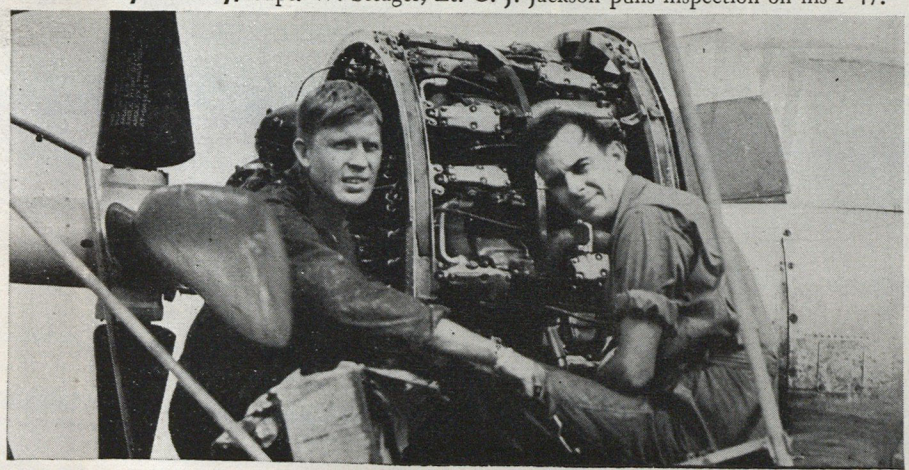
OFFICER MECHANICS

GI instructs Capt. N. R. Smith and Maj. T. A. Personnet on care of P-80.



Undaunted by demobilization, Capt. James Gerwig cleans up a C-47 for inspection.

Assisted by a buddy, Capt. W. Steager, Lt. C. J. Jackson pulls inspection on his P-47.



BY MAJ. C. D. VINSON
Headquarters, AAF

How to do a job formerly requiring a man's size shovel with nothing bigger than a small boy's sand trowel is the current overall problem, figuratively speaking, dogging the postwar AAF. Rapid demobilization, with its crippling loss of highly trained and skilled personnel, has cut the Air Force down in physical size from a formidable giant to a stripling.

It is becoming increasingly evident that in order to perform as a successful David against the present Goliath of limited personnel, the AAF both in this country and overseas will have to replace its losses in numbers with initiative and ingenuity, cooperation and understanding.

At Pinecastle, Fla., the 621st AAFBU, Pinecastle Army Airfield has been exhibiting what can be accomplished by brain in place of "brawn." Under the command of Col. Arthur H. Rogers, former head of the "Jolly Roger" 90th Bomb Group (H), this station's mission is to run tactical suitability tests on aircraft for Eglin Field, TAF demonstrations and projects on the P-80.

A primary requirement for such operations is aircraft maintenance. And when, a little over two months ago, all but two of the field's 139 skilled crew chiefs were lost through due process of separation something had to be done—and done promptly. A solution was found in the assignment of all rated personnel to the maintenance of their own aircraft.

The program called for performance of routine duties in the mornings with afternoons devoted to working on the 15 different types of aircraft flown there. In one squadron, for example, only two enlisted maintenance men were left to help check on 12 P-47s, 12 P-61s, 3 P-80s and 1 AT-6. In this case the planes were kept in flying condition only because of the "bangup job" turned in by officer crew chiefs.

A specific example of the initiative displayed at Pinecastle is found in the way P-80 operations were inaugurated there. The station was notified late in 1945 that it was to handle P-80s, that the first group was to come in the near future, and that prior to this date a mobile unit would be sent to brief the field's personnel on operation and maintenance. The first notice of the P-80s' arrival came the week before Christmas when two of them buzzed the field and came in for a landing. In the next few days a total of six had arrived. In each case, their civilian ferry pilots just left them cold and walked off.

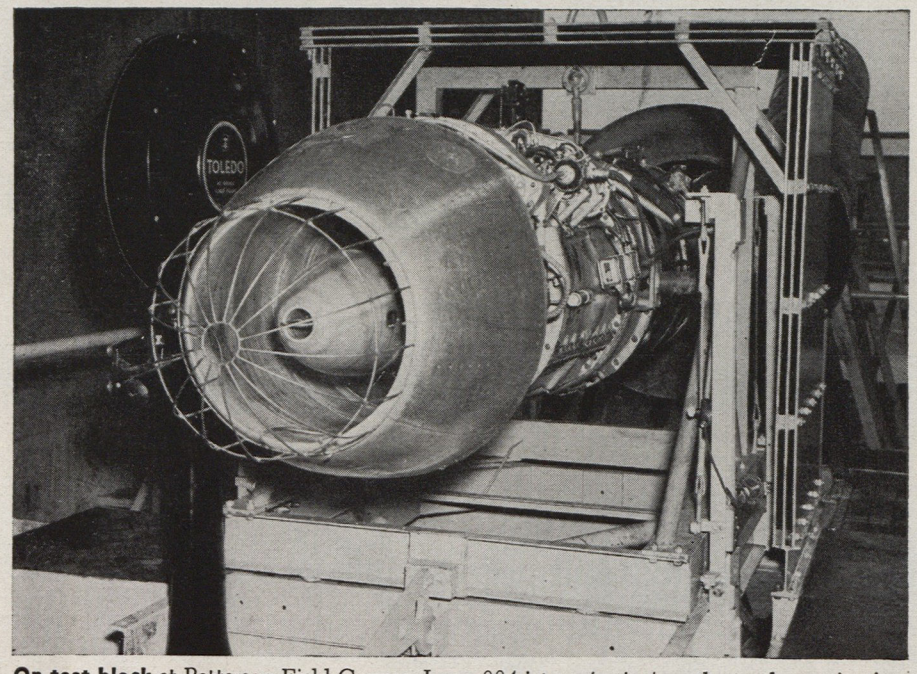
In the absence of the mobile unit which hadn't arrived, nothing could be done with the new planes. Attempts to get help from higher headquarters proved fruitless. Finally, in desperation, the factory was contacted direct. This brought results, and in a few days representatives were on the scene to teach rudiments and fundamentals of the aircraft and to check out rated personnel. Result: This station has already run a number of demonstrations on P-80 flying performance and has conducted various operational tests on the aircraft. In addition, the original number of P-80s assigned to the field has been greatly increased. ☆

Crossroads Maintenance—Page 39

technique

Development, Maintenance and

Supply of Aircraft and Equipment



On test block at Patterson Field German Jumo 004 jet engine is given thorough examination.

German Jet Engine Tested

The German Jumo 004 jet engine is being tested at Patterson Field, Ohio to obtain design and performance information. A special preliminary test block has been constructed to insure proper operation before exhaustive tests are begun. As part of the precautions taken to prevent injury to personnel while tests are in progress, armor plating has been placed around the engine as a safeguard against any possible disconnection of parts, and the intense heat is carried away by a special smoke stack.

Thrust pressure is tested by a scale device which has recorded as much as 1,935 thrust-pounds of pressure at a compressor velocity of 8,700 rpm. A German-made instrument board in a special control room checks fuel pressure, atmospheric pressure, fuel temperature and engine thrust. The fuel flow for operation at maximum rpm is regulated by a device which is in turn limited by atmospheric pressure and the temperature of the barrel portion of the engine.

Patterson Field is also testing German radios, German inverted reciprocating engines and rocket engines. A German 109-509 rocket engine was recently reconstructed and is being used for further tests elsewhere.

P-80 Take-Off Run Cut In Half

Two rocket-assist units fired from beneath the fuselage of a Lockheed P-80 cut the take-off run in half during a recent series of tests. The external units attached directly below the engine on the underside of the fuselage were electrically discharged by a gun trigger on the pilot's control stick.

The shortest take-off achieved from use of the Jato rocket units was 1,185 feet with a P-80 carrying a comparatively light load. This distance is about 40 per cent of the normal take-off distance for the Shooting Star without the rocket units. Although the plane has a short take-off for a jet aircraft, and can operate from any standard airport, the assist units make it possible to use short emergency landing strips during combat operations.

The two rockets used in the tests delivered a total of 2,000 pounds of thrust for 12 to 15 seconds, supplementing the 4,000 pounds of thrust developed by the I-40 jet turbine engine.

The Jato units are heavy steel tubes about eight inches in diameter and three feet long. They burn a solid rocket fuel, and the blast escapes through a five-eighths inch nozzle. The Jato units were used two ways during the tests. For the shortest take-off the pilot fired the units at the start of the forward motion along the runway. For clearing an obstacle at the end of the runway, and climbing at a spectacular angle, the pilot delayed firing the units until the exact moment the plane was ready to leave the ground.

Total weight of the units and mounting hooks was about 400 pounds. The hooks can be installed on any standard Shooting Star in a day's time.

Instrument-Landing Trainer

An instrument-landing trainer, Type B-4, has been developed and tested as a practical aid for training personnel in instrument-landing procedure on air fields or other suitable terrain where standard radio landing equipment is not available.

The trainer consists of a pilot's instrument box and an instructor's control box, each connected by a cable of required length. The pilot's box, made of wood, is fastened to the cockpit of a training plane in full view of the student. Mounted on it are a standard cross-pointer indicator, radio compass indicator, toggle switch marked "Outer-Inner" and a small red bull's-eye lamp. The instructor's box located in the rear cockpit contains controls for operating these instruments—adjusting screws for zero setting, a push-button for the pilot's lamp, a 400-800 cycle oscillator and volume control and a toggle switch marked "On-Off."

Operation is simple: The instructor, with a thorough knowledge of terrain over which instrument landing is to be carried out, selects a landing path and imaginary marker beacons. In the absence of natural landmarks, dry lime is spread on the ground to indicate positions of marker beacons and runway. When in flight, the instructor directs the pilot or student to land by instruments alone and manipulates the controls of the trainer so that instruments in the pilot's box show any off-course deflections. He moves volume control to increase the signal or the imaginary "Outer" beacon. He flashes bull's-eye lamp a signal for the pilot to flip the toggle switch from "Outer to Inner," repeating this operation until "Inner" beacon is passed—when the plane can settle to earth.

Snap-Open Bomb Doors

Snap-opening bomb bay doors are being adopted for B-17s on the AAF Board's recommendation. The new doors can be opened in one second, as compared with the 20 now required. The advantage is to avoid giving enemy fighters early notice of the bombing run by delaying opening of bomb bay doors until approximately three seconds before bomb release point; snap opening doors also reduce the time that the field of fire of the lower ball-turret gunner is obstructed.

Tests at AAFTAC have shown that slight loss of speed in a three-second period has a negligible effect on bombing accuracy.

Crossroads Maintenance

Our Technique cover shows sergeants of the Air Service Unit of Task Group 1.5 which is the AAF organization participating in the Bikini tests in July giving the Crossroads' atom-bombing B-29s last-minute checks before the Big Bang. (See pages 6 and 14.) This unit, under the command of Lt. Col. J. R. Roche, has been charged with supply and maintenance of the Task Group's planes both on Kwajalein and Eniwetok.

Since the problems connected with the dropping of *one* atomic bomb are just as great as those of dropping 100 such bombs, it is only natural that the maintenance headaches were considerable. First of all, there was the matter of special equipment. Many of the planes participating in the tests carry tons of special radio, radar, photographic and other test equipment. Secondly there were the problems of depleted maintenance forces and lack of time to train brand new crews.

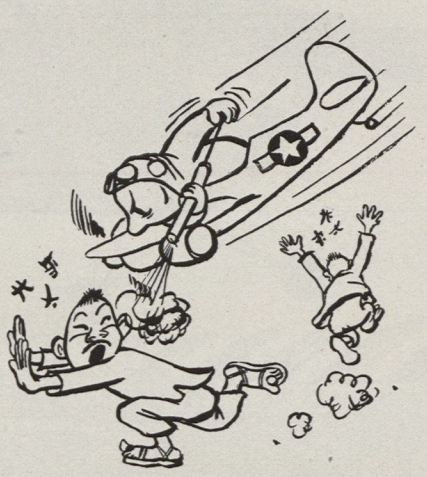
"We owe this accomplishment in very large degree to the maintenance genius of Lt. Col. U. S. "Sam" Nero, said Col. W. H. Blanchard, CO of the 509th (atom-bombing) Group. "Colonel Nero has taken primary A & E mechanics and under the careful supervision of experienced B-29 engineering officers, has kept our airplanes in the air. In order to meet our initial critical target date, we realized early in the game that all our Crossroads' flying units—bomb-dropping, photographic, transport, etc.—would have to pool their specialists and the few well-qualified enlisted men which had been made available.

"Under Colonel Nero, all these men were pooled to operate what the Air Force refers to as specialized maintenance," continued Colonel Blanchard. "Time was not available to round out our crews in all the complicated phases of B-29 maintenance, so this is the system we had to use: special engine crews under one experienced engineering officer change our engines for all the planes; special tire-changing crews soon learned the trick of their particular specialty—and so on.

"As an engine goes bad, the moving crew takes a completely built-up engine off the production line and delivers it to the aircraft. Meantime the engine crew has dropped the bad engine and is ready to hang on the new one. Then a few hours later, an inspection crew inspects the installation, and two hours later a flight test crew arrives to run up the airplane. ☆

tech topics . . . about aircraft and equipment

Prior to the arrival of servicemen's families in Okinawa, a roadside spraying program coupled with airplane fogging of DDT is being conducted to rid the island of insect disease carriers. Almost all the inhabited areas of Okinawa have already been covered and the program has been extended to outlying regions. In the U. S., a similar program is being carried out at army installations by specially-equipped Third Air Force (Troop Carrier) C-47s.



Engineers have long studied the best means for recording flutter vibration on aircraft. It may be as simple as running records on an IBM machine.

Ever-changing demands for new instrumentation in new high-speed airplanes and new air giants have given impetus to numerous developments and experimentation with new instruments including: Instruments that indicate true air-speed for aircraft from 0 to 1,000 mph, and for measuring the speed of missiles up to 4,000 mph; altimeters that measure and indicate true height of aircraft above sea level up to 80,000 feet, and for missiles up to 80 miles; a means for establishing a celestial navigation fix in aircraft by using single observations; a celestial ground position indicator for use in aircraft during night and day; a simple remotely-indicating instrument for engine rpm.

A pilotless P-80 is scheduled for a series of power dive tests at Muroc Dry Lake, Calif., in July. Remotely-controlled from the cockpit of a "mother" P-80, an attempt will be made to determine the maximum speed at which the plane can be safely flown. A ground control unit located in a truck will direct landings and take-offs. By means of a television set, which will show the robot's instrument panel, the ground engineer will be able to inform the pilot of the mother ship of the exact technical operation of the pilotless aircraft. In addition, a telemetering device in the ground control unit will register and record loads imposed on the plane's structure.

Tests have been conducted with a new container arrangement for the one-man life raft. Instead of being carried in a pack attached to the seat-type parachute, the new raft is carried in a separate rectangular container with a small aluminum box for emergency equipment. The pack is used with the conventional seat-type parachute and fits against the back of the wearer, being attached to the harness risers.

A specially equipped, high-altitude B-29 has established what is believed to be the endurance record for stratosphere flight by heavier-than-air craft. The record of three hours and 38 minutes at an altitude of over 40,000 feet was made in conjunction with high altitude flights conducted to test various types of equipment for future stratosphere bombers. Lowest outside temperature recorded in the pressurized flying lab was 86 degrees below zero Fahrenheit. A B-17 used for the same purpose was replaced by the B-29 because it offered better operational conditions.

Quick-donning immersion suits for passengers and crew members on over-water flights are now SOP for the Air Transport Command. Originally designed for Arctic conditions only, the synthetic plastic-coated, high strength cotton material suits can be put on within a fraction of a minute. The suits are entirely watertight and hold body warmth even after initial exposure.

Using only air as a refrigerating medium, a midget three-pound turbine cools air 140 degrees Fahrenheit. An operating speed in excess of 100,000 rpm creates air velocities up to 800 mph in the new airesearch expansion refrigeration turbine. Weighing only one-fiftieth as much as a conventional refrigeration system of similar capacity, the turbine makes possible high speed pressurized flight. A mechanical unit with a self contained lubrication system, it is able to operate at high speeds in a fully maneuverable airplane.

Naw, it ain't Superman, it's just the great controllability of the 'copter that enables our hero to hold it in the palm of his hand.

AAF's Newest "Eggbeater"

Rotor vibration has virtually been eliminated in the Army's new lightweight helicopter, the G & A XR-9B, through the use of a unique rotor head design. In flight, pilot fatigue has been greatly reduced because of this and the excellent controllability of the aircraft.

Easy on the controls and weighing half as much as a new Ford car, its simplified and compact instrument panel has only eight instruments. Preliminary performance data indicate the helicopter will cruise at approximately 80 mph and have a rate of climb at sea level of more than 1,000 feet per minute. Although maximum flight characteristics have not yet been revealed, it is known that the XR-9B has flown faster than 100 mph. Powered by a 135 hp Lycoming four-cylinder, air-cooled engine, the plane has a 28-foot diameter, dual controls, three blade rotor and a tricycle landing gear.

The main rotor is an NACA airfoil. The fuselage is made of welded steel tubing with a nose section of lucite. Fuselage fairing is aluminum alloy and the boom has a balsa core with alcad outside skin. The rotorcycle uses 80 octane fuel and has a maximum fuel capacity of 25 gallons, enough for more than three hours flying.

In flight, directional heading is obtained through torque correction from the tail rotor using conventional rudder pedals. Horizontal travel of the aircraft in any direction is effected by cyclic pitch control from a conventional control stick. Vertical ascent or descent is obtained by simultaneous pitch control in connection with a manual throttle to assure sufficient power and rotor rpm.

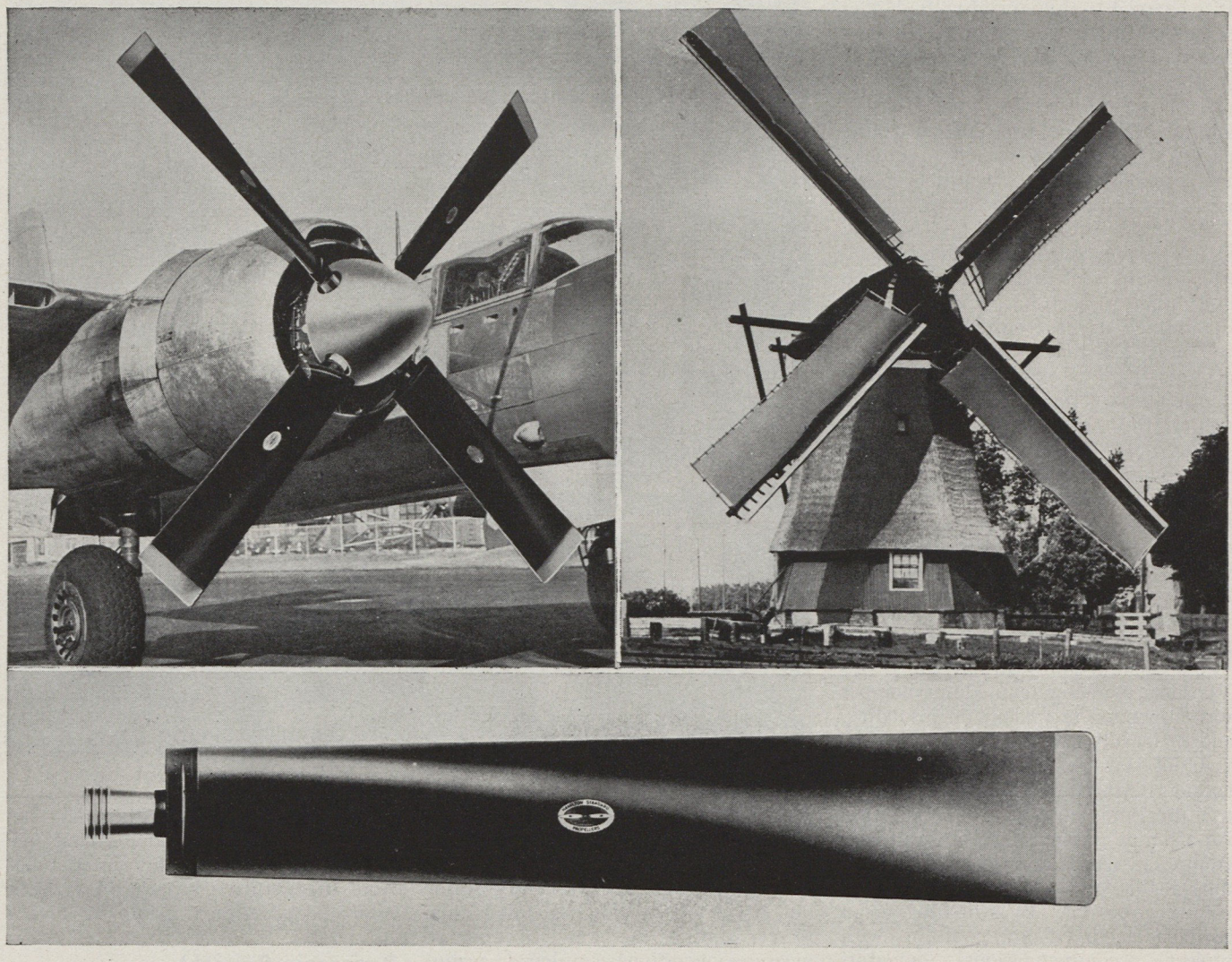
An electric-hydraulic governor, by acting upon the simultaneous pitch control, maintains constant predetermined rotor speed, regardless of throttle conditions or power used. With this arrangement, vertical control is effected entirely by use of the throttle; the governor provides automatic simultaneous pitch control in this case.

22,000-Pound Bomb Test

The AAF's largest untested combat bombs are being dropped on the 30-foot thick concrete submarine pens at Bremen, Germany, in joint AAF-RAF tests known as the "Ruby Project."

Three specially modified B-29s were to carry internally 12,000 and 22,000-pound general purpose and armor piercing bombs. Four B-17s were to drop 4,500-pound rocket-assisted bombs and smaller armor piercing bombs.

Single bombing runs, carrying one type of bomb, were to be made on the target so that Royal Air Force, American Air Force and Ordnance observers may study the effect of the missiles on the pens. If the test proves successful it will be repeated on other targets. Heligoland Island in the North Sea has been tentatively selected.



Told that the latest props resemble a windmill, the photographer had to be convinced. The lower photo is a single blade Hamilton.

Square Tipped Propellers

A new type of propeller blade similar in appearance to old fashioned windmill vanes will soon make its appearance on some of America's newest transport aircraft. Square tipped instead of elliptical and almost rectangular in shape, the propeller is the result of aerodynamic research designed to maintain high propeller efficiencies as airplane speeds approach the supersonic stage.

The new blade and the old windmill vane have square tips and maintain the same width from butt to tip. In addition some variations of both are even wider at the tip than at the butt. Just as the square tip proved to have the most efficiency for absorbing the wind's energy and transforming it into mill power, so has it improved the function of a propeller blade by absorbing high power efficiently for transformation into thrust.

Designed by the Hamilton Standard Propellers division, United Aircraft Corp., the square tipped blade was the answer to three major problems: (1) Efficient absorption of greater horsepowers required for high speeds; (2) reduction of energy losses, resulting from increased blade drag and propeller slipstream momentum; (3) minimizing the compressibility losses, suffered by conventional propeller blades at high speeds, which cut operating efficiencies to below acceptable requirements.

Width added at the tip affords maximum increase in blade power absorption with minimum weight increase, thus permitting the design of lighter blades. Because the square tip carries the airfoil section for the blade's entire length, it is unnecessary to distort the airfoil design at the tip as was required with the round tip blade. This allows for superior blade performance; in addition it permits the use of a thinner, less cambered airfoil at the tip, resulting in substantial reduction of compressibility effects.

Radio Static Greatly Reduced

The problem of precipitation static, the bad weather demon of radio communications in military and civilian aircraft, is being licked as a result of three years of joint research by the Army and Navy. Scientists from Wright Field and the Naval Research Laboratory at Washington, D. C., headed by Dr. Ross Gunn, Technical Director of the Army-Navy Atmospheric Electricity project, revealed the once secret research at a demonstration of the project.

Precipitation static, one of the three great hazards in bad weather flying, is at its worst when radio communications, radio aids to navigation and radar are needed most. Precipitation static is the noise caused in aircraft radio receivers by the static discharge of electricity. When the aircraft flies through particles such as ice, snow and dust, and when it comes into close contact with highly-charged electrical clouds,

it is charged to millions of volts. Under some conditions, voltage on an airplane builds up as fast as 170,000 volts per second. This tremendous charge of electricity soon breaks down the air around the plane and an automatic electrical discharge · called "corona" takes place on the extremities of the airplane to carry away the excess charge.

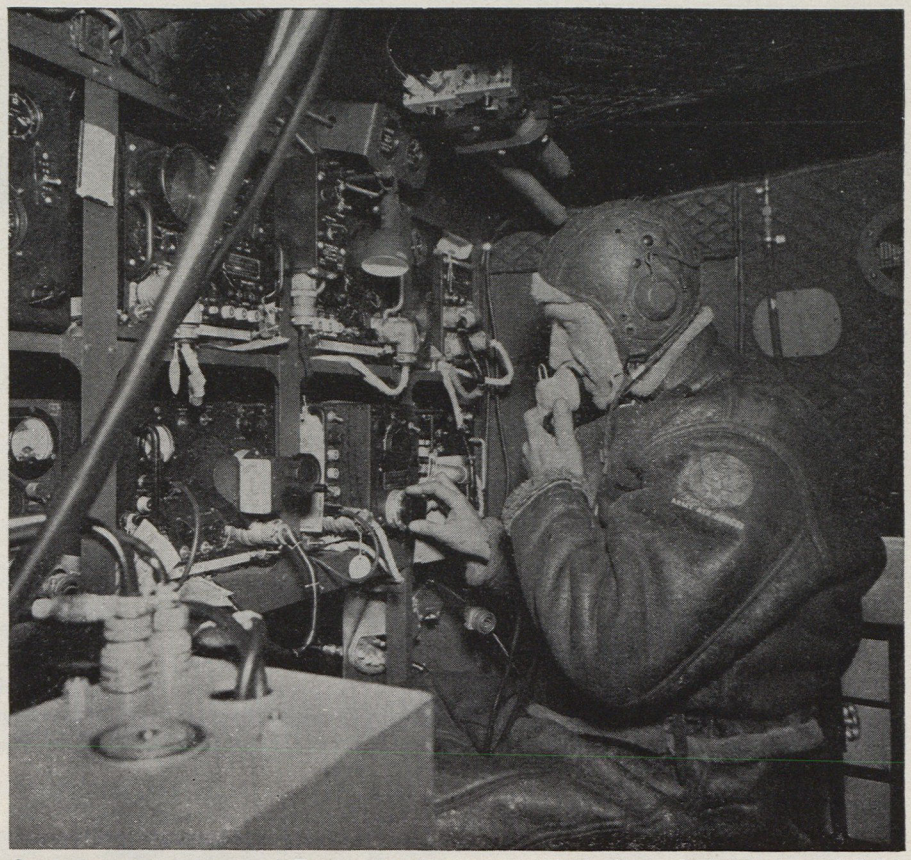
At night this bluish fire is often clearly visible at the propeller tips, on the antenna, antenna masts, wing tips and other projections. Scientists have determined that the current passing off the aircraft in this corona often reaches a rate as high as 500 microamperes, an enormous electrical discharge which renders the airplane's radio useless.

Known as St. Elmo's fire to nearly every pilot, the charge is of no danger in itself to pilots and passengers, but the problem has been the maintenance of clear radio reception through bad weather, especially on long commercial flights.

At the recent demonstration in the project's special laboratory hangar at Wold-Chamberlain Airport, a Vega-Ventura, twin-engine medium bomber was suspended in mid-air on insulators, and artificially charged with 1,200,000 volts of static electricity, so that the corona burst forth at the plane's extremities and along the antenna wire. An attempt was made to operate radio equipment with a conventional antenna during this period, but reception was utterly impossible. By switching to an antenna modified to conform with project recommendations, operators were able to accomplish excellent reception.

The idea of Army-Navy recommendations is to keep the tremendous electrical charges on the airplane from breaking into corona in the area of the radio antenna. This is done in two ways: (1) By draining off about half the electrical charge on the airplane by use of special wick discharges developed by the project, and (2) by insulating and sheltering the radio antenna and connections so that any possible corona will be so remote from the radio system that it won't block out reception. There are other refinements, but these two steps are the principal recommendations.

This proved to be a hair-raising experience, literally, for the bystanders. Engineers in the suspended aircraft and in the hangar at the time of the electrical charging were unaffected, but those standing outside the aircraft and in its vicinity saw that each other's hair actually stood on end as a result of the electrical charge.



Countermeasures room of Ferret aircraft was specially built to fit bomb bay of B-24.

AAF Ferret Aircraft

Flying intelligence centers packed full of electronic devices helped search out the enemy's closely-guarded radar secrets during the war. In countermeasure operations employed against Axis radar, this "ferret" equipment not only received and recorded enemy radar signals but determined their frequency and established the geographic location of their source.

Serving as aerial counter-spies the ferret crews traced enemy radar stations to determine which devices could be used later to make them ineffective by jamming.

Information thus obtained made it possible for allied raiding aircraft eventually to destroy the enemy stations. Laboratories in the United States were notified to develop new devices and rush them to war theatres whenever an enemy radar was found operating on a frequency band not covered by countermeasure devices.

In addition to 15 different devices developed for countermeasure operations, the ferrets carried two receivers familiar to most American radio "hams." These were the Hallicrafters SX-28 and S-27C, both of which were redesigned for aircraft installations. Facilities for interphone communications were devised to enable the radio operator, the navigator and the ferret operators to talk without interference from the normal conversation between pilot and other crew members.

Periscopic Gunsight

One of the latest advances in aircraft fire control is the General Electric periscope sighting system which permits a single gunner to scan the sky in any direction above or below his position. As installed in the A-26, the device consists of a sighting tube which passes vertically through the fuselage, with sighting heads on top and bottom. The sight is linked electrically with the Invader's upper and lower turrets, and as the gunner moves his sight to keep the enemy plane in the line of fire, a remote control mechanism causes the guns to align themselves with the sight line. Location of the firing station permits the gunner to be virtually enclosed in an armor-plated compartment, free from the vibration of locally operated turrets and removed from distracting noise.

Since the gunner cannot see the turrets at all times, a special fire interrupter breaks the trigger circuit when the guns point at parts of his own plane.

This giant transparent "bubble" which forms a smooth and streamlined section of the fuselage affords F-15 pilot 360 degree vision.

F-15 New Photo Recon Plane

A new photo-reconnaissance plane, Northrop's F-15, is a twin-engine, two-place aircraft. Combining outstanding performance characteristics for speed, range and high altitude operation, the F-15 is capable of long range, mapping and reconnaissance tasks formerly restricted to four-engine planes.

Powered by two Pratt and Whitney R2800-C engines equipped with turbo superchargers, the F-15 is capable of speeds in excess of 375 mph. It has a range of more than 4,000 miles and flies higher than 35,000 feet. Retractable ailerons and full span flaps enable the plane to land at low speed. The propellers are two Curtiss electric full-feathering, four-bladed props with specially designed "high activity" blades whose width has been increased to absorb added engine thrust, and the angle can be regulated either manually or automatically. Control pressures and responses are constant at all altitudes because of the substitution of magnesium rods for standard steel cables.

A giant transparent "bubble," largest piece of plexiglas ever blown, closes over the two-man crew, forming a smooth and streamlined section of the fuselage. This affords unlimited 360-degree vision from the tandem cockpit.

The photo equipment consists of six cameras in 24 optional arrangements which make possible the mounting of 11 different types of cameras that can be operated by remote control in several combinations—shooting forward, straight down and obliquely to the side.

Low Level Night Pilotage Trainer

The Low Level Night Pilotage Trainer was developed as a result of the great losses to our invasion forces in Sicily and Normandy. Before V-J Day it was ready for operation "Coronet," the intended invasion of Japan's home islands.

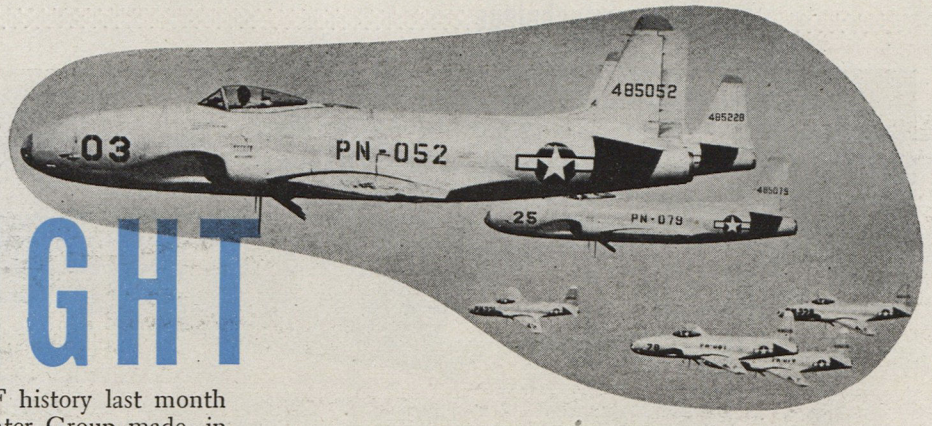
In this new means of Terrain Identification Training, low-level flight is simulated by a moving terrain with all contours, elevations and details complete for identification. Above this moving terrain is suspended a full-scale mockup of a troop carrier's cockpit that moves laterally with the movement of the terrain. This simulates off-course conditions and enables the pilot to correct his flight plans so that he can make a perfect drop at any pre-determined drop zone.

Held by the co-pilot is a small viewer containing an aerial map that matches the terrain unwinding below. This map travels over a fluorescent screen in the same direction as the moving terrain, and can be wound by hand or by a small electric motor that has variable speeds so that it can be synchronized with the passing terrain. In this course of Terrain Identification, the pilot and co-pilot are checked out as a team.

Since such training is usually for night missions when moonlight affords limited visibility, the room light is turned out, leaving only the light of one small lamp to simulate quality of light and a limited amount of movement visibility. In a matter of five or six minutes the eyes of the pilot become accustomed to semi-darkness. Then the map movement can be coordinated with the ground speed. It is not too difficult to identify any point on the terrain after such points have been selected as outstanding landmarks on the map. Having identified several check-points along the route, the pilot can then reduce speed before sighting the drop zone, enabling him to make a more accurate and safe drop of his paratroopers or cargo.

For peacetime use, this device offers day or night identification training for flights over new routes not yet improved with beacons or radar installations.

MASS JET FLIGHT



One more "first" was added to AAF history last month when 29 P-80s of the 412th Fighter Group made, in several stages, a mass jet flight from March Field, Calif., to Washington, D. C. Not just a run for money, this operation tested the practicality of long-distance transportation of jet fighters with maintenance equipment and crews. Led by Col. Bruce Holloway, CO of the 412th and one-time fighter pilot with General Chennault, the Shooting Stars were accompanied by six new Fairchild C-82 Packets.

Across the country, the P-80 route went by way of Tucson, Fort Worth, Memphis, and Smyrna, Tenn. to the National Airport in Washington; then back home by way of Chanute Field, Ill.; Tinker Field, Okla.; Midland, Texas; and Luke Field, Ariz.

At Washington, where the accompanying ground pictures were taken, the Group was the central attraction of an AAF air show. Fifty thousand air enthusiasts heard Maj. Gen. Elwood R. Quesada, Commanding General of the Tactical Air Command, explain the purpose of the flight which was sponsored by his command. Most impressed by the speed of the P-80s were amateur photographers (including two representing AIR FORCE, who complained that they could get pictures only of sky where the P-80s had been). Maneuverability of the C-82 "silver box cars" and high-speed engine changes by P-80 maintenance crews were not less impressive.

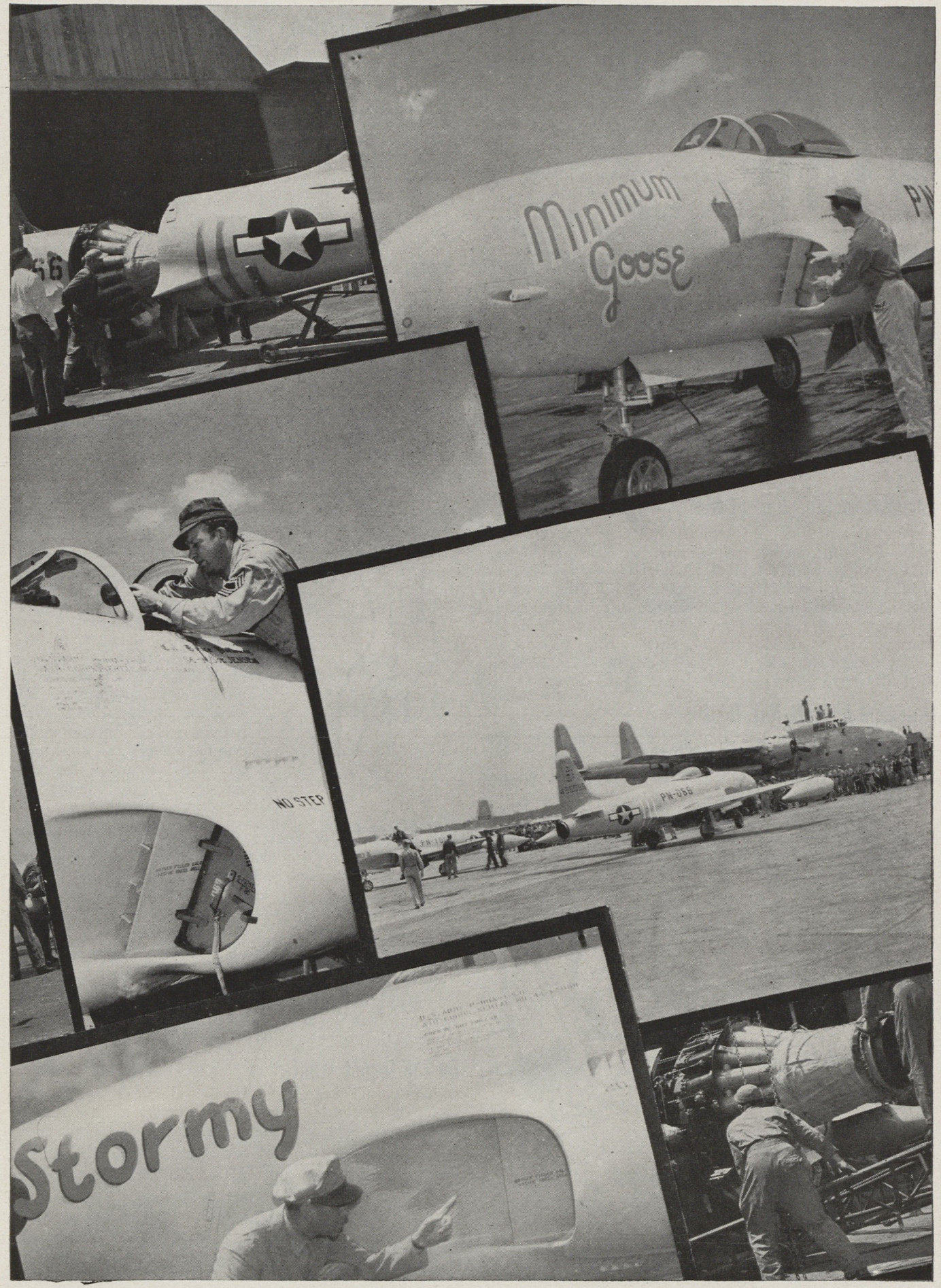
As an experimental operation, the mass flight emphasized performance of the C-82s which hauled maintenance personnel, tools and spare engines. The transports, which preceded the fighters across the continent, are regularly based at Pope Field, N. C., with the 316th Group of the 50th Wing, Troop Carrier, 3rd Air Force. They are part of the new tactical transport organization of the AAF.

Getting the P-80s from coast to coast presented problems. Jet navigation requires VHF and DF navigational aids; pilotage is not practical when flying at usual P-80 speeds and altitudes. So to assist the P-80s, buzzing along at 25,000 feet, the Air Communications Service planted 11 stations at fields where the planes stopped over. In each landing the flights were picked up 100 miles out and brought in to the airfield.

Behind this communications set-up was swift and effective preparation. On May 2, ACS had been notified to provide air-ground radio service and high-frequency DF facilities for the flight. The 1st Wing, ACS, was given the operational job. With the help of the Air Material Command, which rushed equipment to the stations on the route, ACS installed VHF air-ground radio service and DF facilities, checked the system with the aid of ACS aircraft and reported "All Ready" within 12 days. Only a unified communications system, prepared for emergency, could have accomplished that result.

So the historians circled May 19 to mark the first mass jet flight across the U. S., the speed enthusiasts compared adjectives about the jets that left "sound tracks" behind them, and the specialists noted feats of maneuver, maintenance and communications. To the AAF in general all this added up to something simple and important—the fact that the peacetime Air Force was not standing still. ☆

After the P-80s land, ground crews can install new engines and ready the planes for take-off in 32 minutes, as shown on the opposite page.


Minimum
Goose
NO STEP
PN-056
Stormy

. . . in the wind . . .

Project "Mike"

The Adjutant General has allocated 75 enlisted men with the civilian occupation, "bandsman," for assignment to the AAF. Earmarked for "Project Mike," these men will be sent to Keesler Field, Miss., and ultimately will go on duty with the 2d AAF BU, Bolling Field, where the AAF Bandsmen Training School is located.

Soldier Voting

Absentee voting by soldiers under authority of State laws will be continued in primary, special, and general elections. Only state ballots will be used.

Advisers to the Chief of Staff

An advisory group of senior officers, to be concerned primarily with long-range planning, has been established in the office of the Chief of Staff. The group will review studies and projects referred to them and will initiate recommendations and suggestions on matters affecting the Army. Members of the present group are: Lt. Gen. Wade H. Haislip, Maj. Gen. Howard M. Snyder, Maj. Gen. A. B. Surles, Maj. Gen. Gilbert R. Cook, and Brig. Gen. William E. Hall.

First-Line Aircraft Not Taxis

AAF Headquarters has confirmed a policy against modifying first-line aircraft for "administrative purposes." Proposals that A-26 aircraft, for example, be stripped of combat equipment and, with added seats, used as air buses have been disapproved.

PIF Is Sole Survivor

Of the "Information Files" used during the war for training and reference, only the Pilots Information File (PIF) is scheduled for revision and reprinting. Work has stopped on projected files. Material will be retained for possible later editorial use.

SSS Summer Courses Scratched

Instruction at the Special Staff School in Orlando, Fla., has been suspended for the summer. That period will be devoted to selection and training of new instructors and revision of courses.

Winter-Wear Guinea Pigs

The Army is deeply concerned about what soldiers wear in winter. Plans for uniforms to be used in moist, cold climates are being tested on Mt. McKinley and off Point Barrow.

Stunting No Joke

The AAF is not amused when violations of flight regulations are reported. Illegal low flying, "buzzing" crowds, making passes at buildings and at other aircraft in flight are among the violations recently reported. Immediate action is taken on such cases.

Air Force Efficiency Experts

AAF organization and managerial method will undergo scrutiny by Management Associates. Advice of this group of experts has been obtained for critical examination of the AAF program, organization, personnel practices, administrative procedures, budget and fiscal methods, and systems of top management control under the peacetime program.

Exit Glider Pilots

All single-specialty glider pilots will have been separated by June 1. Hereafter, such glider pilots as are required by Troop Carrier and other AAF organizations will be selected from rated personnel who have added glider training to other flying specialties.

Stewart Field to Serve USMA

At Stewart Field it is planned to prepare 300 enlisted candidates for admission to West Point. Although AAF personnel will not be available to administer the field after August, the Air Force will retain jurisdiction of the base.

On the Insect Front

AAF installations can expect widespread DDT operations this summer. Spraying by aircraft has been found an effective offensive against mosquitoes and other insect pests.

French Undergroud and AAF

The Deputy Chief of the French Maquis has written a book called "French People in the AAF." Its theme is the underground assistance given American airmen who went down in France. Royalties will go to the AAF Aid Society.

MUSK-OX

(Continued from Page 5)

and other electronic equipment in the vicinity of the magnetic pole was collected by three specially equipped B-29s based at Edmonton, Alberta. These planes made flights of 1,1500 to 2,000 miles to the region of the magnetic pole—the most northerly point reached by the Musk Ox ground party. Because of the proximity of the operation to the magnetic pole, special instruments were used for navigation. The B-29s were equipped with electric gyros for the pilot and navigator instead of the usual vacuum gyros. An electric gyro stabilizer fluxgate compass was used in addition to the regular magnetic compass. All the latest navigational aids were carried for testing, including the radio altimeter, the AAF instrument approach system, a radar search set and Loran.

Crews of the B-29s were furnished by Air Materiel Command and equipment supplied by the AMC's Electronic subdivision. Four navigators were trained in polar navigation at the Navy School in Quonset Point. In addition, 10 monitoring stations were established to study radio propagation. Two of them were manned by AMC personnel, and according to present plans, several will remain in operation.

Winterization of all planes operating with Musk Ox included many new techniques never before tested. Since temperatures ranged from 40 to 50 degrees below zero all external plumbing had to be specially wrapped. Plastic brackets, which crystallize at extremely low temperatures, were replaced with metal. Special greased switches were installed to prevent congealing. Extra heating units were necessary to defrost the windows in the pilots' compartment. And electrically controlled propellers replaced the usual hydraulic props which are difficult to feather in low temperatures.

Gliders also came in for their part in the Musk Ox operation. After preliminary tests and demonstrations at Churchill, Manitoba, it was concluded that gliders could be effectively used for supply in areas that were snowbound and otherwise confined.

On March 13, a CG4A glider was landed in the Barren Lands as a test for its use in an emergency evacuation. This was the first time a powerless aircraft was set down in the Arctic Circle. The landing and pick-up was a success despite the fact that the desired ground reconnaissance was not used. It was concluded that gliders could be effectively utilized in extremely rough terrain without ground aids.

Continuing the test of gliders a CG4A glider was used to transport a complete engine assembly for a Canadian snowmobile whose engine failed when the expedition was some 900 miles north in the Arctic Circle. The glider, loaded with the V-8 Cadillac engine and hydraulic transmission, was landed beside the stranded snowmobile and the repairs accomplished. It was the only practical way this vehicle could have been repaired.

When the ground force was two months out a CG15A glider was used to transport two M-29 sleds weighing 2,000 pounds to the unit. On April 12, gliders came in for another test of effective use in the Arctic. They transported engineers and engineering equipment to the Black River area for construction of a temporary bridge across the stream and a corduroy road across the swamp area that lies between the Black and Petitot Rivers. In this area the ice was thin and dangerous. Among the equipment transported was an American M-29 Weasel. A powered glider was used to "drag" the area and determine the fitness of specific spots to land the regular gliders. The operation was highly successful. There was no other way to land the engineering personnel and equipment. Snow covered the area to a depth of three feet.

In line with the testing and development of other equipment, the American Quartermaster Corps has been making substantial improvements in American equipment as a result of observing the Musk Ox operation. By invitation of the Canadian Joint Chiefs of Staff, these American observers were able to make on-the-spot observations under winter conditions unparalleled in the United States. Articles ranging from heating and cooking appliances to sleeping gear, footwear, gloves, caps, fuels and lubricants, were developed and flown to the expedition in a matter of days, following recommendations of observers.

It is of great advantage to be able to test equipment in the area which suggests the changes. For example, the expedition was using Yukon-type stoves designed to burn wood. These proved unsuitable for use when the ground party passed the timber line. Modifications of the stoves to use oil were requested by the American observer. The change was made by the Jeffersonville Quartermaster Depot and the stoves were parachuted to the camp 550 miles north of Churchill less than two weeks after the original request. These discoveries are expected to prove valuable not only to the Army but also to civilians living in the extremely cold winter climates in the Northern United States and Canada.

Meteorological data in the Arctic regions are of the utmost importance to the Canadian Army and RCAF as well as to the AAF. A special scientific station was established at Baker Lake because the Dominion weather men wanted observations made there more than anywhere else in Canada. The readings taken there and at other meteorological stations will be used to help predict weather in the settled parts of Canada, and the scientific data collected —such as weather, magnetism, and radio reception—are good for all other parts of Canada.

The movement of the ground party was by the Canadian armored snowmobile which travels on yard-wide rubber and steel tracks over deep snow, swamp, rocks and highways. These vehicles were developed by the Canadians two years ago for the proposed invasion of Norway. For Musk Ox, 15 vehicles were remodeled. The armor was removed and a cab built to protect the four men inside. Performance of the vehicles on the long and exceedingly rough journey, the first time this area had ever been traversed by motored vehicles, was extraordinary.

The Musk Ox expedition may bring lasting benefits to the frozen northland. Miners expect it will advance their knowledge of the icy wastes by 20 years, and foresee a big development of the north's natural resources. Meteorologists are eager for the installation of more Arctic weather stations, to help them in predicting the weather far in advance of current forecasts.

The USAAF is considering an air expedition over the North polar regions at a later date, and it is expected that the use of low frequency Loran for exercise Musk Ox will provide useful information upon which to base a similar employment in connection with the AAF expedition. ☆

Five-in-one Fighter

The Boeing Model 400, single engine "five-in-one fighter" was recently tested at Wright Field. Designated the XF8B-1, the plane was designed as a long range Navy fighter. Engineering Division, AMC, arranged with the Navy Bureau of Aeronautics for use—on a loan basis—of one of three experimental Model 400's already built. Known as the "five-in-one" because it may be utilized with effectiveness as a fighter, torpedo plane, bomber, attack plane and interceptor, or in many combinations of these types, the plane is capable of speeds in excess of 400 mph. Powered by a single-engine 3,000 hp, 28-cylinder Pratt and Whitney Wasp Major engine, the XF8B-1 is designed to carry up to 3,200 pounds of bombs.

Ejection Seat

A modification of the German type rocket-propelled ejection seat found in the Me-262 airplane is being applied to our P-80 for tests. An elongated bubble canopy for the Shooting Star and re-arrangements of the radio antenna hook-up permit the German seat to be installed.

PICTURE CREDITS

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All other photographs in this issue were secured through official Army Air Forces and Signal Corps sources. Requests for prints and photographs for official use and publication should be directed to the AAF Photographic Library, Headquarters, AAF, Washington 25, D. C. All other requests must be forwarded to the original source.

Answers to "How Sharp Are You"

Photo on Page 2

Questions on Page 32

1. Four
2. B-17
3. True
4. Three
5. Control stick box
6. Three
7. Yes
8. False
9. Yes
10. None

BRASS HATTERS

(*Continued from Page 19*)

was met by Russian Foreign Minister Molotov at Saki, where the crew stayed while the conference was in progress at Yalta.

On February 12, flight was resumed—this time to Moscow with Ambassador Harriman, his daughter, Stettinius and three Russian Generals. Upon arrival, the party was greeted by Molotov and the Kremlin Guard. The following evening, arrangements were made for the crew to attend the "Swan Lake" ballet and to visit backstage with Molotov and the cast. From Russia, Major Richmond flew Stettinius to Trinidad via Africa, with certain stops along the South Atlantic route, and accompanied the Secretary on a visit to Haille Selassie in Africa.

At Trinidad, an incident occurred which illustrates the thoughtful treatment Stettinius invariably accorded his crew. He requested that all members be billeted at his hotel. The officer in charge objected to the enlisted men staying there because it was reserved for officers. When Stettinius refused to remain at the hotel unless all crew members were assigned there too, the officer relented.

A member ex-officio of the Brass Hatters is Col. Henry T. Myers. As special aide to General George, the Colonel has skippered the "Sacred Cow," deluxe Presidential C-54 originally designed for President Roosevelt, on many key flights. He has been a familiar figure where presidents and ministers have gathered to make historic decisions. He remembers particularly his flight with Mrs. Roosevelt on a South American tour. She asked no special favors or consideration and at the end of the journey gave each crew member a salad bowl with a silver-plate inscription. The trip finally ended with the crew going to the White House for lunch, and the following day their wives were invited to tea.

These courtesies were the means by which passengers expressed their thanks for the care and comfort given them by Brass Hat crews. According to Maj. Richard "Bromo" Selcer, Secretary of War Stimson enjoyed flying over the area in France where he saw action during the last war. Lt. Col. Fred Kelly circled the pyramids for Donald Nelson on his trip to Chungking. Former Secretary of State Cordell Hull enjoyed the detour over Jerusalem.

More than a dozen special missions that girdled the globe were flown by Brass Hatters before weekly flights around the world were established by ATC. Unpublicized at the time for security reasons, these flights pioneered global air travel. The first around-the-world passenger flight via the north Pacific was accomplished by Col. Richard T. Kight when he piloted Wendell Wilkie on his now famous "One World" mission. In addition, Colonel Kight's was the first American plane to enter China from Russia, the flight was the first to Alaska from China and the first from China to the United States via the north Pacific. Colonel Kight also flew the Shah of Iran on his first airplane trip.

Seventeen years after he had started on the Army's first around-the-world mission as mechanic on the lead plane, Colonel Alva J. Harvey made one of the great aerial trailblazing flights. On his first attempt the Colonel, then a sergeant, crashed into a mountain in Alaska. In September 1941, on the Harriman Mission to Moscow, Colonel Harvey described his journey as routine, a word often found in trip narratives of the Brass Hatters.

"Routine" was what Capt. Paul Mlinar called his trip to Moscow with General Pat Hurley. He had planned to take General Hurley on to Chungking, but on the evening of his arrival in Moscow, Ambassador Harriman told him to be ready to fly Molotov and his aides to Washington the following day. After planning the quickest route via Casablanca and the Azores, Mlinar was informed by the Russians that he could not fly Molotov over water at night. This required preparing a new flight plan via Siberia, Alaska and Canada. Although Captain Mlinar and crew had no experience over that territory the mission was completed safely and on time.

The Brass Hat Squadron has piled up so many records in special missions that only a small history of them is kept. One plane made record time from Moscow to Washington in 35 hours and 35 minutes. Major Dice, with Under-secretary of War for Air Lovett and Harry Hopkins aboard, flew from Washington to Paris and returned with troops and cargo in the elapsed time of 45 hours and 25 minutes. This was the first round trip in less than two days elapsed time. Maj. Ernest Dryer landed the first American plane at Templehof Airfield, Berlin, 18 hours before V-E Day.

Timing was accurate. Maj. William E. Johnson, returning Donald Nelson to the US, arrived at Washington five minutes earlier than the estimated time set for the flight at Novosibirsk, Russia. On this trip, the Russians followed Nelson's plane in one of their own C-47s loaded with cooks and waiters. On the numerous stops in Russia the chef and assistants took over the local kitchen and served Stateside meals for the American VIPs.

While the domestic special missions flown by the Brass Hat Squadron were usually lacking in glamor they represented a large operation in terms of hours and miles flown. These domestic trips normally carried General officers, congressmen, writers and newsmen on inspection tours. Pilots on these trips were younger than those handling foreign missions and received valuable experience. They frequently went as co-pilots on foreign trips. Occasionally an outstanding domestic mission was accomplished. In April, May and June of 1945 a series of domestic flights was completed in connection with the San Francisco conference of the United Nations. One of them carried Molotov from Washington to San Francisco. Major Richmond set up between the Capitol and Golden Gate a shuttle-run that probably holds a record for airlifting world statesmen. In 11 non-stop flights covering 55,880 miles in 287 hours and 50 minutes, Richmond averaged 30 passengers a trip, including Secretary of State Stettinius, the Chinese delegation, Lord and Lady Halifax, Nelson Rockefeller, Judge Rosenman and Archibald MacLeish. Upon termination of the conference he flew the UN charter, locked in a safe and fitted with two parachutes, back to Washington.

Since war's end, the number of special missions has decreased, but the Brass Hat Squadron is still active. There will always be special missions which commercial airlines cannot serve adequately. Recently the Brass Hatters flew Herbert Hoover to Europe and the East on his trip to survey food conditions abroad, and when Secretary of State Byrnes went to Paris for the peace meeting of the Big Four's foreign ministers, he rode in President Truman's "Sacred Cow." ☆

Refused Take-Offs . . . . . B-29 used in tests

A B-29 was equipped with reversible propellers and a series of "refuse take-off" tests were run. From an ordinary start for take-off, a speed of 119 mph was reached before the decision to not take-off was initiated. Tests were run using brakes only, reversible props only, and the combination of the two. The plane at all times was loaded to a gross weight of 130,000 pounds.

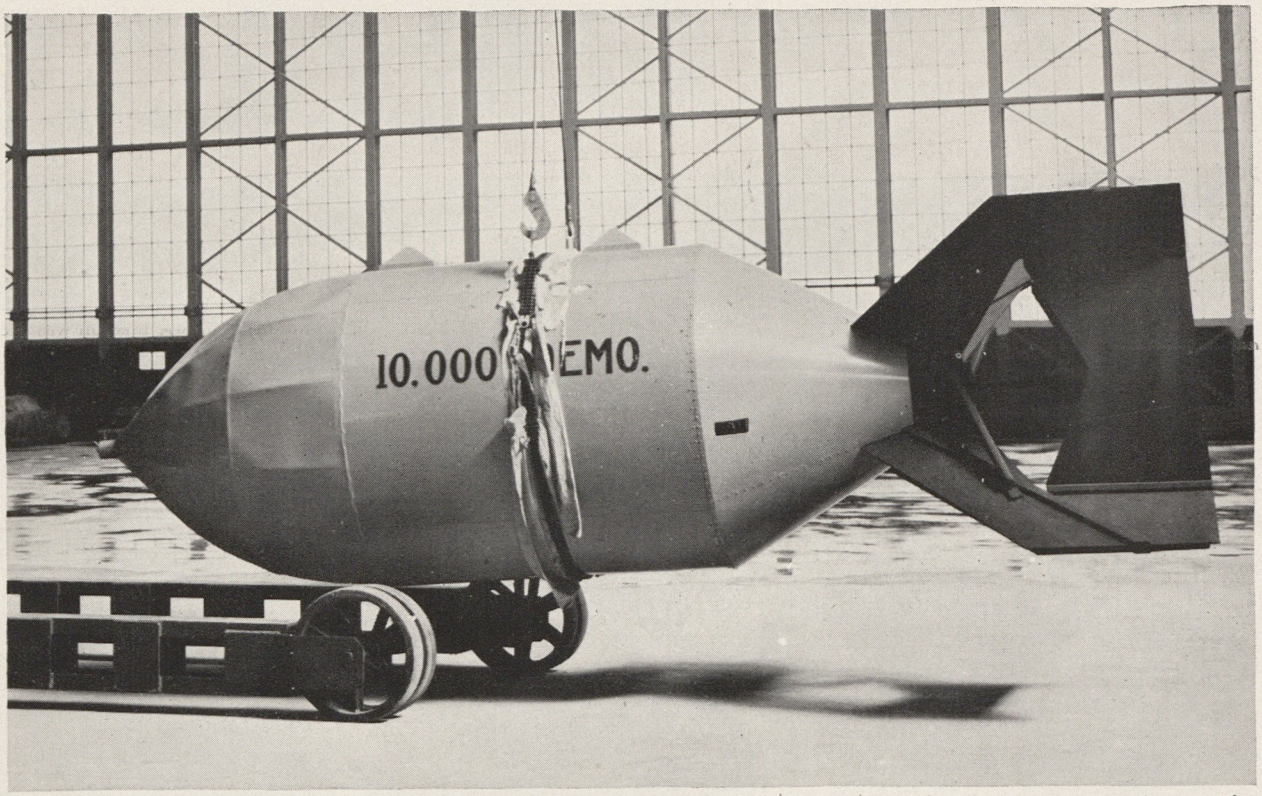
When using brakes only it took 20 seconds to bring the big plane to a complete stop, and a distance of 1,860 feet was covered. The lift created by the 119 mph speed decreased the traction of the tires on the runway, resulting in considerable skidding which caused excessive wear on the tires.

Using the reversible prop alone, the initial slow-down was as fast as with brakes, but after a certain low rate of speed was reached the effect of the reversed props diminished appreciably. Because of this it took 45 seconds over a distance of 3,330 feet to come to a complete stop.

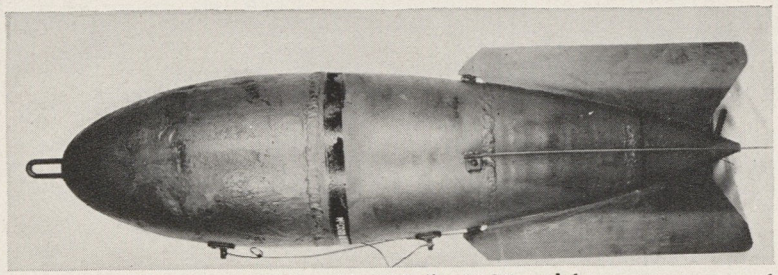
The final test was the combination of the two. From the moment the decision to not take-off was reached, until the plane came to a complete stop, a period of 13 seconds had elapsed and a distance of only 1,260 feet had been covered. By reversing the props first and then applying the brakes, greater traction was afforded and less skidding noted, thereby decreasing wear on the tires.

This margin of 600 feet achieved by the use of the combination of reversible prop and brakes might well mean the difference between a safe stop and a cracked-up plane. ☆

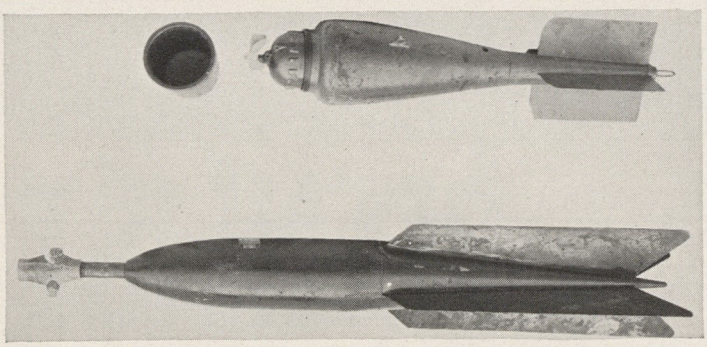
The Album BOMBS



The advent of rockets and guided missiles puts this 10,000 lb. demolition bomb, developed during the past year, in the album.



The cigar shape, illustrated by this 300 lb. 1927 model, was a must at that time but evidently neat welding was not. The fins were permanently attached.



The fashion in "demos" varied very little between 1919 and 1923 but you can see in the elongated fuse that they were toying with the daisy-clutter type.

In 1922 bombs could pass for hot water tanks. Shown here is a 2,000 lb. and a 25 lb. fragmentation bomb beside a 4,000 lb. demolition bomb. Compare it with the 10,000 pounder shown above.

A SUCCESSFUL CAREER . . . .

IS MORE THAN A MATTER OF LUCK . . . **REENLIST** in the **AAF**