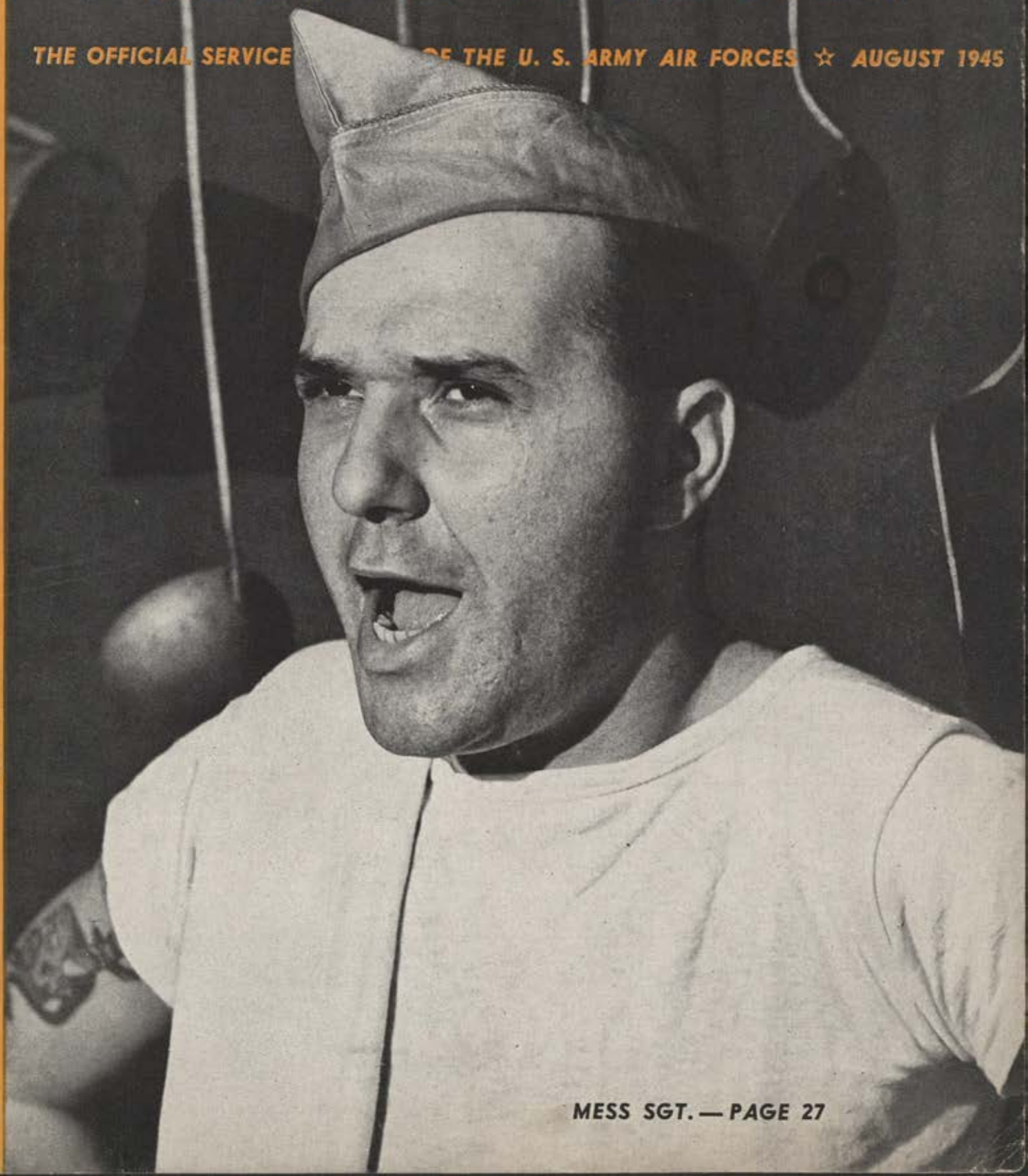
AIR FORCE

THE OFFICIAL SERVICE [illegible] OF THE U. S. ARMY AIR FORCES ☆ AUGUST 1945



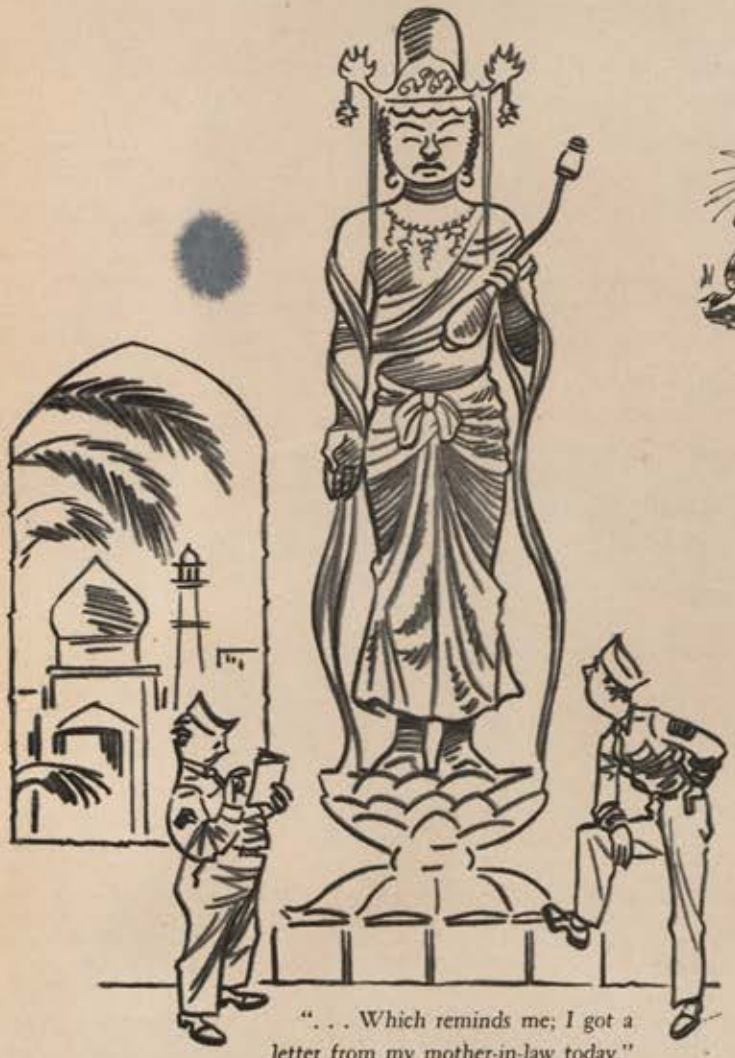
MESS SGT. — PAGE 27

India-Burma Items

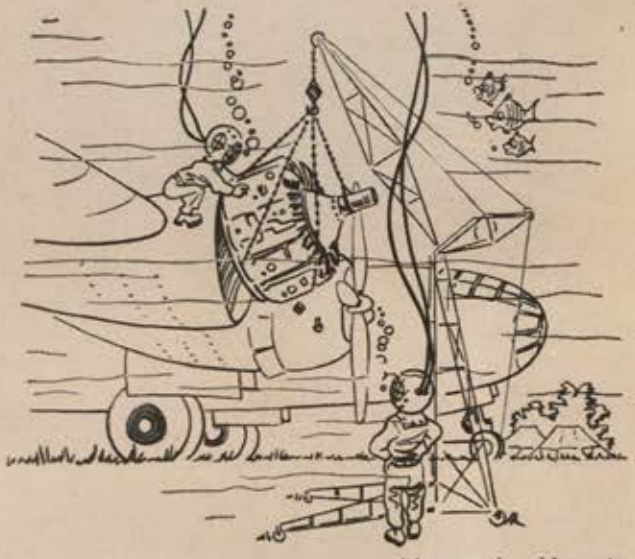
BY CAPT. WM. T. LENT
AIR FORCE Staff

"It's been like this ever since he sent for that USAFI veterinarian course,"

"And I recall how I'd chew out poor old Hung Low back home when there was a button missing."



"... Which reminds me; I got a letter from my mother-in-law today."



"I guess the old man's serious about maintenance during the monsoon."

Rendezvous

On Service Awards

Dear Editor:

Many thanks for your May issue of AIR FORCE which I found up to your usual high standards.

The article "For Service" was especially interesting and apropos in view of the current Adjusted Service Rating system announced by the War Department recently. There is a question about the bronze star for the Air Offensive, Europe which is to be affixed to the European-African-Middle Eastern Theater ribbon and I would greatly appreciate your advices on the qualifications for this star which would clarify the situation considerably. Was service as a combat member necessary for this award or would being a member of the ground crew of a fighter squadron, as it was in my particular case, during the time limitations qualify one for this award?

Lt. Harold A. Seestadt,
Strother Field, Kan.

Dear Editor:

In the May issue of AIR FORCE appeared an article, "For Service." This article listed the areas for three New Guinea campaigns. Could you kindly inform me as to the regulations covering these three campaigns?

S/Sgt. Chester J. Sundstrom,
Stuttgart, Ark.

To readers Seestadt, Sundstrom and many others who have written to us on this subject, we suggest that you see War Department General Orders 33 and 40, of 1945, and AAF Letter 35-240, 23 May 1945. The general orders list all campaigns to date for which participants are entitled to wear battle stars. The subject of the AAF letter is "Provisions for Establishing Combat Credit in Disputed Cases," and was written to help Decorations and Awards officers in determining proper combat credits. This AAF letter also contains a complete list of references on regulations, general orders, circulars and letters which govern the eligibility, authorization and wearing of decorations and awards.—Ed.

Etiquette

Dear Editor:

After much fruitless debate we are still undecided as to which of the following interphone expressions is correct and is now being taught, i.e., "Waist gunner to pilot," or, "Pilot from waist gunner." Could you enlighten us?

Sgt. Emanuel Morris,
Langley Field, Va.

Both are wrong. The correct way is "Pilot, this is Waist Gunner, over." After communication is established, the word pilot need not be repeated with each message. The waist gunner merely says, "This is Waist Gunner," and then goes ahead with his message. See AAF Letter 50-93 dated 6 February 1945.—Ed.

Wrong Instinct

Dear Editor:

Quoting from the article "When In

(Continued on Page 2)

Vol. 28 No. 8 August 1945

AIR FORCE

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

DEPARTMENTS AND FEATURES

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Rendezvous

(Continued from Page 1)

Trouble—Sound Off" as printed on Page 57 of the May issue of AIR FORCE. "No. 157 was a B-24 . . . practicing emergency procedure . . . with No. 3 engine feathered, the No. 4 engine sputtered and quit. The plane swerved suddenly and violently to the right. The pilot instinctively gave her right rudder. . . ."

Either the lad who wrote the article has a misconception of what happens when a B-24 loses two engines on the same side, on the right in this case, or the pilot was trying to snap-roll the plane, a maneuver not recommended in this type aircraft.

In the event of engine failure in flying the B-24 it will be necessary, in order to hold the airplane level on a certain heading, to apply—and hold—opposite rudder. With No. 3 engine feathered, as was the case with No. 157, the pull was to the right, thereby making it necessary to *hold left rudder*. No. 4 goes out—now we have two engines out on the same side. There will be an additional pull to the right; to compensate for this condition, it will probably take every bit of opposite rudder the pilot and copilot can hold, assuming they have an airspeed of 150 mph or greater for a normal load condition.

Lt. Kenneth F. Gallagher,
Lt. Harlan T. Jensen,
Lt. Patrick R. Desmond,
Lt. Richard F. Bohannon,
Capt. Francis T. Hegarty,
Capt. Alex G. Kalinsky,
Courtland AAB,
Courtland, Ala.

Dear Editor:

Regarding your article on Page 57 of the May issue. Pity the crew who must fly with the B-24 pilot who "instinctively gave her right rudder" when the engines 3 and 4 quit. Little wonder "the ship got out of hand," lost 10,500 feet and made a forced-landing. Being stationed at Tonopah, Nev., would be punishment enough.

Lt. Jack W. Chandler,
Langley Field, Va.

Our new B-24 authority agrees. He says that the correct instinct would be to give the plane LEFT rudder. If the pilot had followed any such instinct as mentioned in the story, he points out, the B-24 would have been flying upside down, but quick.—Ed.

New Member

Dear Editor:

Herewith I shall initiate myself into your magazine's large group of correspondents who devote themselves solely to finding errors in your interesting stories and pictures, and with this letter submit the first communication I have ever forwarded to any type of publication, military or civilian.

The error I am referring to is in the June 1945 issue, in which the caption of the second picture from the bottom on

How Sharp are YOU?

Can you look at this photo for 60 seconds and remember what you have seen? A trio of mechs is shown hard at work at an airbase in Italy. From left to right are Pvt. Marshall Hufstetley, Pfc. Delbert McCullough and Sgt. Harry L. Jones. After you've finished, turn to Page 43 where you'll find a batch of 10 questions. Count 10 for each one you get right. If you score 70 you're average; 80, you're on the ball; 90, very sharp, and 100 means you've got a super-eagle eye.

HOW SHARP ARE YOU? . . . . . Turn to Page 43

Page 22 states, "This C-47 fuselage with thatched roof served well as base operations." I think if your identification expert will examine the picture more closely, he will find that it is a C-46 fuselage and *not* a C-47 fuselage. If the misnomer is due only to a typographical error, I shall bow quietly out of the "picture."

Pfc. David M. Sweeney,
Berry Field, Nashville, Tenn.

C-46 it should have been, thus making Pfc. Sweeney a full-fledged member of a large, but we trust not growing fraternity.—Ed.

Unit Citations

Dear Editor:

In reference to the Article "Battle Honors" appearing in the March, 1945, issue of your magazine (a magazine that is awaited eagerly every month by all AAF patients at this hospital), we have had many visits to our office. These patients state that they were with a particular unit at the time their unit was cited and request we secure for them the citation or quote the authority authorizing the award of same.

If it is practicable and does not conflict with regulations, we suggest that when you print in future publications of AIR FORCE a chronology of AAF Units which have been awarded the citation, you also include the General Order and date.

AIR FORCE, by the way, is deemed not only by Air Force personnel but various Ground and Service Force Units as well, as being by far the best serviceman's publication to come out of this war.

1st Lt. Robert E. Wallin,
AAF Hospital Liaison Officer
Bushnell General Hospital

Publication of the GO authorizing each Unit Citation began with the June issue.—Ed.

Whoa, There!

Dear Editor:

In the "Cross Country" section of AIR FORCE for May 1945, there is an article on safety reminders for P-47 trainees at Bradley Field, Conn.

One of the reminders in your article is "7-8000 rpm while taxiing." Although we had some exceptionally good P-47s here none of them would turn up 7-8000 rpm while taxiing, flying, or in any attitude.

Sgt. Alex Seed,
Bradley Field, Conn.

Dear Editor:

Come now, 7-8000 rpm is a bit too fast for taxiing, isn't it?

We certainly enjoy your magazine. Keep up the swell work.

Sgt. Ellis Winikoff,
Sebring, Fla.

Dear Editor:

". . . 7-8000 rpm While Taxiing."

I don't know much about the P-47, but the 40s and 51s I've flown get off the ground with a maximum of 3000 rpm.

The boys must be in quite a hurry to get back to the line!

F/O James F. Rice,
Bartow Field, Fla.

We don't know how that extra zero snuk in, it should have been 7-800 rpm.—Ed. ☆

In This Issue

Meet our cover subject, M/Sgt. Jessie W. Byrd, of Roanoke, Va., who has mastered many a mess from Port Moresby, New Guinea to Macdill Field, Fla. (See "Master of the Mess," Page 27). A veteran of 33 months overseas, Sergeant Byrd left his Bangor, Me., beer garden to enlist in the Army in January, 1937. After serving as an antiaircraft observer in Hawaii prior to the war, he shipped overseas again in January, 1942, this time as a mess sergeant. At Port Moresby, where he served for a year and a half, he set up a huge AAF consolidated mess capable of handling 5,000 men a meal. At that time he flew to Sydney, Australia, twice a week in a B-17 to bring back supplies. On one trip a crash landing resulted in the destruction of approximately 2,800 eggs. Fond of flying, he spent his spare time going on combat missions until one day a flight of Zeros all but shot apart the bomber in which he was along "for the ride." Thereafter he devoted himself to more peaceful pursuits, such as turkey hunting and discovering a gold mine. After other New Guinea assignments, the sergeant returned to the states in September 1945. At present he is in charge of the combat officers' mess at Macdill Field. . . . The cover picture was taken by 2nd Lt. Oscar C. Sweet, a photographic officer with the 3rd Air Force, who writes of his Army life . . . "pretty dull; no crash landings, have never bailed out, and have never been run over by a half-track." . . . Lieutenant Sweet is responsible for other AIR FORCE photographs, including the July WAC Cross Country cover.

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After all the hurrahing for the way Allied airpower performed in the drive across Europe, we thought a down-to-earth appraisal from one of the top U. S. ground commanders would be appropriate. So we invited Lt. Gen. William H. Simpson, commanding general of the U. S. Ninth Army, to prepare an article for us on airpower as it looked from the ground. He agreed, and the result is "Partners in Battle," which appears on Page 4 of this issue. General Simpson was our choice for several reasons. First, his Ninth Army was colorful and highly effective. Second, General Simpson is an infantryman through and through, just the kind we thought should do this appraisal of air performance. He is frequently called the "doughboy general." Third, he has a reputation for saying just what he thinks, no more and no less. Fourth, he is also a student, a "book soldier" who knows military theory as well as military practice. . . . General Simpson is a Texan, bald, tall, lean and hard. He is quiet and determined, all in all just the sort of soldier you like to think of in top U. S. commands. He is 57 years old.

☆

Thirty-eight years of progress in Army aviation began with the memorandum reproduced on this month's back cover. To mark that anniversary, August 1 was observed throughout the country as Air Force Day with appropriate ceremonies not interfering with the main business of carrying on the war. Most AAF installations held "open house," and there was much reminiscing and prognosticating at nearly 1,000 special gatherings of airpower enthusiasts. As the 39th year in Army aviation began, millions of AAF men and women could look backward with pride to the progress of our organization—to its days as a branch of the Signal Corps, then as the Air Service, the Air Corps and, finally, as the U. S. Army Air Forces—and, they could look forward to the day when Japan's air force will be completely humbled in defeat, as was the Luftwaffe.

☆

Recently returned to the States from the chore of setting up our Far East Branch for the production of the Manila edition of AIR FORCE, are Majors John Jenks and Tom Hardman. While on the outskirts of the Filipino capital, they watched P-38s, their wing tanks plainly visible, heading eastward for what they thought were routine low-level bombing missions against the not-too-far-away Japs. It wasn't until sometime later they learned that the wing tanks had been fire bombs and that the mission had been what top commanders called an outstanding example of destruction by fire bombs at Ipo Dam (See "Blanket of Fire," Page 7). . . . Newly arrived in our Manila office from the Marianas where he has been covering B-29 activities is Maj. Milton R. Krims. He arrived minus one hat which was kept by the B-29 crew with which he had flown many missions. Since they couldn't keep the major, whom they considered lucky, the crew members did the next best thing and kept his hat. ☆

Our Major Krims and ATC's Okinawa billboard.

PARTNERS IN BATTLE

BY LT. GEN. WILLIAM H. SIMPSON
Commanding General, Ninth U. S. Army

Air battle north of bulge at Puffendorf: "Tactical airpower . . . gave material assistance in smashing through hard core of enemy resistance."

When General von Harpe, commander of the 5th Panzer Division, was captured by Ninth Army troops in the Ruhr pocket he confessed that superiority of our airpower not only reduced the morale and effectiveness of the German civilian population but was a decisive factor in all our victories. Dittmar, the German official army news commentator who surrendered to our XIX Corps late in April, agreed that overwhelming strength in the air gave the Allies a tremendous advantage in the Normandy landings and prevented the enemy from mounting an immediate and strong counter-attack.

Such admissions by enemy leaders are indeed eloquent testimonials to the achievements of our air forces in the great military campaign that so recently ended in complete victory for the armies of America and her partners on the battlefields of Europe.

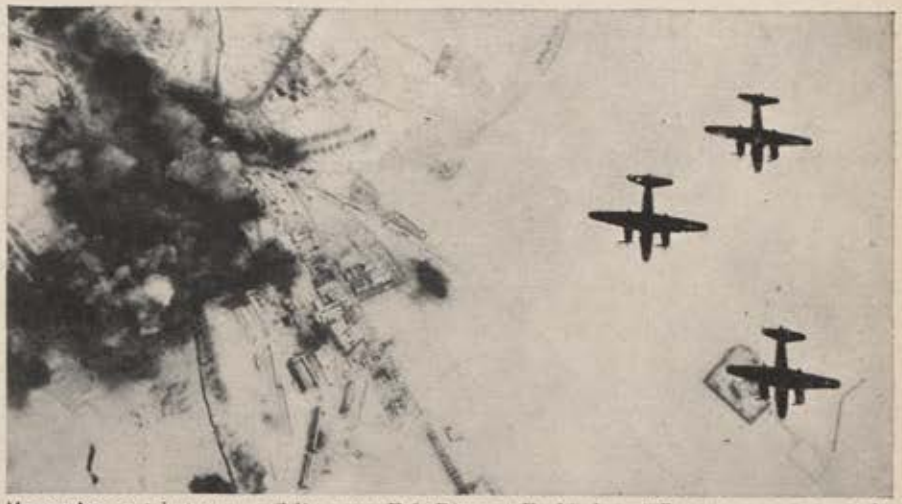
I am certain, however, that by this time the proponents of airpower no longer need anyone to champion their cause; no one can say that air has failed to fulfill the major task assigned it in the grand strategy for Germany's defeat. By overpowering weight of bombs our air forces greatly lessened the enemy's economic capacity to wage war; and when our armies took the field, tactical airpower, skillfully applied, gave material assistance in smashing through the hard core of enemy resistance to ease the path of our advance.

Throughout the American ground campaign on the Continent it was my honor to command the Ninth U. S. Army. This army won many successes starting soon after it established its first command post in the field at St. Sauveur Lendelin, France, on August 30, 1944. Its initial mission was to reduce the fortress of Brest and to contain other German forces on the Brittany peninsula. On September 16 it accepted the surrender of 20,000 Germans at Beaugency and moved on to Belgium to take over the sector extending from St. Vith to Luxembourg. In mid-November, the Ninth Army began the Roer operation and succeeded in driving the enemy across the river. By the end of February, 1945, the Ninth Army was at the Rhine. One month later its troops stormed across and shortly afterward, in coordination with the First U. S. Army, completed the largest double-envelopment in military history—the encirclement of the Ruhr involving the entrapment and eventual reduction of more than 300,000 enemy troops. From the Rhine to the Elbe, the advance of the Ninth Army was speedy and culminated in juncture with our Russian Allies, who had been driving from the east.

The success of these operations has depended primarily on the enthusiasm and splendid courage of the troops and in no small measure on painstaking planning and preparation, coordination of all echelons, and rapid and complete exploitation of the tactical situation.

But much of the credit must go to the strategic and tactical air forces. It is difficult to imagine how these extensive ground operations could have been carried through with

A battle-wise ground force commander looks at airpower: here are some of his conclusions



Marauders cut last open rail line over Erft River at Euskirchen: "By overpowering weight of bombs our air forces greatly lessened the enemy's economic capacity to wage war."

Duren, Germany: "Stunning effect of saturation bombing, destruction of weapons and emplacements, disruption of communications—all go hand in hand with enemy's casualties."

Gen. Eisenhower confers with Gen. Simpson during preparation for Rhine crossing.

German gun knocked out by single bomb: "Generally excellent results have been achieved by air attacks against columns of vehicles, buildings, artillery emplacements."

such rapid success had the enemy hindered our activities through the use of his airpower as we have disrupted his ground operations by our air assault.

Having gained an air superiority so complete as hardly to have been hoped for in pre-invasion planning, it soon became apparent that the needs of the ground forces were being well served.

The enemy's offensive air actions against our installations dwindled in effectiveness and permitted an unexpected freedom of action on the part of all ground force troops in rear of forward elements. Service and supply installations were enabled to operate freely 24 hours a day. This was a condition without which the relatively short battle of France, the extremely rapid advances from the Roer to the Rhine, and again from the Rhine to the Elbe, could not have taken place.

During the Battle of the Bulge major troop movements were made on traffic-jammed highways in broad daylight without serious air interference. Control was maintained without our army being plagued by having important headquarters attacked by enemy air.

On the tactical side, the Ninth Army received direct cooperation from the XXIX Tactical Air Command of the 9th Air Force. This efficient air organization, commanded by Brig. Gen. Richard E. Nugent, worked in closest harmony with our ground commanders throughout the campaign across France, Holland, Luxembourg, Belgium, and Germany. It was a partnership that paid profitable dividends. A good example was the Ninth Army's Rhine offensive.

Demolished bridge over the Seine River: "No one can say that air has failed to fulfill the major task assigned it in the grand strategy for Germany's defeat."

The nature of the enemy's defenses east of the river was such that XXIX TAC was asked to try to isolate the battlefield prior to the actual crossing by our troops. Air strikes were made to the maximum extent possible on communications facilities leading into and within the anticipated battlefield. Very good results were achieved. On D-day and continually thereafter until the bridgehead was secured, 24 aircraft provided continuous daylight close cover for the bridgehead area, with 12 aircraft cooperating with each of the two assaulting divisions. In addition a varying force of from 16 to 32 aircraft flew top cover at 15,000 feet over the same general area.

The air cooperation was adequate and extremely effective. Attacks were made on the front of one infantry division against an armored build-up which was preparing for a counter-attack against the bridgehead. Claims were 29 enemy tanks destroyed and 29 others damaged.

As the bridgehead expanded, antiaircraft artillery assumed full responsibility for protecting the Rhine bridges. This released more aircraft from flying protective bridge cover and allowed their use for close cooperation. When the attack developed its full punch, each of the three army corps had one group flying close cooperation missions.

I do not wish to convey the impression that teamwork of air-ground warfare has reached perfection. There have been mistakes and in some instances a waste of effort. Test of battle has shown us the need for certain improvement both in tactics and equipment. Nevertheless, I share with my commanders the opinion that the overall performance of the tactical air command has been superior and in most instances the quantity of air assistance provided was sufficient to meet our requirements.

From the combat experience of the Ninth Army it is possible to summarize briefly some of the benefits accruing to ground forces that are provided with air assistance. At the same time, I would like to mention some of the shortcomings that have come to light during the course of nearly one year of battle experience.

Generally excellent results have been achieved by air attacks against such targets as columns of vehicles, buildings, artillery emplacements not fitted in concrete bunkers, troop concentrations and forward supply depots. Attacks against individual tanks and single assault guns have been variable. Excellent results were obtained when tanks were hit or when a near miss was scored with 500-pound bombs. Nevertheless, the inaccuracies of the fighter-bomber when employed against a small target have sometimes resulted in air effort being expended which is believed to be disproportionate to the results. Air attacks against pill boxes also have been comparatively ineffective because of the small size of the target.

Villages invariably have been easier to occupy when attacked by air in cooperation with a ground assault which followed immediately.

In regard to saturation bombing, it is believed the bombing itself produces only a small percentage of enemy casualties. If the production of enemy casualties were the only remuneration for saturation bombing, the effort would not be justified. The stunning effect of saturation bombing, the destruction of weapons and emplacements, the disruption of communications—all these go hand in hand with the actual personnel casualties the enemy suffers to weaken his strength and cause him to lose control. For that reason I feel that saturation bombing oftentimes will be of extreme value in the future when our ground forces are faced with the problem of penetrating a well-organized and strongly-defended enemy position.

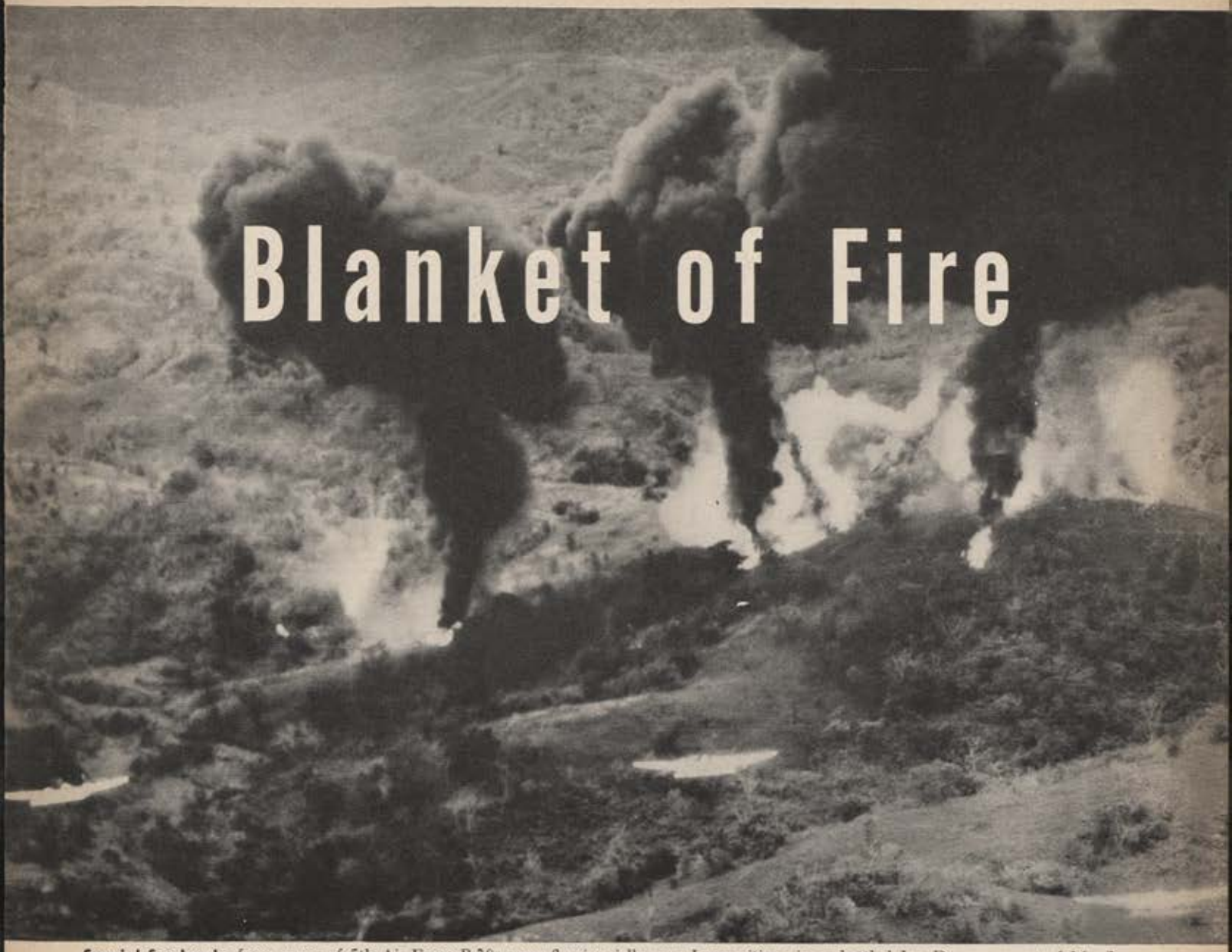
Our commanders also agree that morale was raised materially when our troops witnessed an Allied air attack, and it is almost universal opinion that the presence of Allied aircraft caused the enemy's artillery fire to slacken or cease altogether.

This brings up the question of whether ground units which are depending on air cooperation should make an attack in the event their promised air assistance fails to arrive.

Ninth Army experience indicates that no hard and fast rules should be laid down in this regard. In our advance from the Roer to the Rhine the ground plan was not so dependent on air cooperation. The air attacks in this phase of the campaign were designed primarily to disrupt the enemy's communications and we were prepared to attack

(Continued on Page 34)

Blanket of Fire



Special fire bombs from waves of 5th Air Force P-38s spray flaming jelly over Jap positions in embattled Ipo Dam area east of Manila.

Fighter-borne fire bombs proved themselves on Luzon as a potent new Jap-eradicating air weapon

BY COL. ROY R. BRISCHETTO
5th Fighter Command

This is the story of a bomb and how it grew into a weapon so potent that in its wake American ground forces have been able to walk into fanatically-held Jap positions "standing up" and "without opposition."

When we first tried hanging a special type of fire bomb on wings of 5th Air Force fighters we already knew we had a bomb that carried a new kind of wallop. Extensive experiments at the AAF Proving Ground, Eglin Field, Fla., had proven that. But it was only after a multitude of trials and errors that we began to realize the full extent of the knock-out punch we were carrying on our bombracks.

These bombs were first used to their full effectiveness as ground coordination weapons during the battle for Leyte. Near the island coast north of Ormoc there was a native barrio from which the Japs were offering stubborn resistance. When we received a call for air support we decided to try out fire bombs. Four fighters went over, each carrying a pair of the bombs which would scatter flaming jelly over the Jap positions.

This is the teletype message that came clattering in that evening from the division commander: "Results of today's air strike unbelievable: one half of one house remains in the town. Give us more of same."

That was fine. But we had not yet put our new bombs to the real test. This target had been ideal, wide open with easily inflammable native houses; we knew we still had a great deal to learn. At every opportunity we continued to

push our studies of effective tactics for getting the most out of the bombs.

With our fighter-borne fire bombs we splashed sheets of flame over Corregidor. The Yamashita line got its taste of fire bombs. Every strike taught us new tricks. But it wasn't until late in May when our ground forces took Ipo Dam and the Metropolitan Road, cracking the strongest bastion of the enemy's Shimbu line defenses northeast of Manila, that we felt we had reached the ultimate we had been seeking. At Ipo Dam, and a few days later at Balete Pass, we proved beyond doubt that the special fire bomb treatment administered by a fighter force large enough to saturate the target can cure even the most malignant case of Japanese resistance.

We pulled all the stops on the Ipo show. Instead of the usual squadron or group we massed from 200 to 250 P-38s, P-51s and P-47s representing the 475th, 8th, and 49th P-38 groups; 348th and 35th P-51 groups and the 59th P-47 group for the daily strikes.

These missions, set up by Brig. Gen. Frederick H. Smith, commanding general of the 5th Fighter Command, were worked out in final detail through close cooperation between the command's A-2 and A-3 and the ground forces' G-2 and G-3. It was decided that complete saturation of the enemy-held area was impractical and unnecessary; so targets were limited to the five strongest Jap positions, each averaging about one square mile. Three target areas were established, with one day's total bomb coverage to be concentrated on each. Closest coordination between ground and air parties was an absolute essential. From the ground a support air party maintained continuous radio contact with an air coordinator appointed for each mission. It was SAP's job to have the target marked with a ladder of artillery fired smoke on the air coordinator's request and to notify him of changes and emergencies.

Weather presented another problem. In the eight days prior to the completion of the Ipo strikes the weather station in the Ipo area reported a rainfall of 4.49 inches. We had to prove that even such a thorough soaking of the target area's dense foliage would not put the damper on our fire bomb treatment. To give us a continuous picture of the weather before and during the strikes, a P-61 was orbited over the target from 0545 hours each day, reporting every 15 minutes.

The call for aerial assistance in the area of Ipo Dam, chief reservoir for the Manila water system, came after repeated frontal attacks by American ground forces had been repulsed by entrenched enemy troops with heavy losses. The Japs were throwing out a withering fire from all caliber weapons including heavy mortars, 150 mm artillery and antiaircraft guns used as artillery. Among the wooded knolls, rolling hills and small valleys patched with thick vegetation the enemy had taken advantage of all natural defense barriers, augmenting them with fortified caves and interlocking systems of fire trenches.

On the first day of the scheduled strikes weather closed in over the target and we were forced to take a rain check. But on the following morning, May 16, we got the green light from our recco plane, and the show was on.

Fire bombs burst with great sheets of flame in Ladd Field tests

In combat on Luzon, belly-tank bombs help break Jap resistance

These dead Japs on Tinian were easy victims of our fire specials

From that first day's report we learned plenty. Ground observers told us that the Japs who were not killed in the pattern of fire ran around like a cage full of squirrels. So on the following day something new was added. A-20s of the 312th Bomb Group followed the bomb-carrying fighters, showering the target area with parafrags and finishing off with a thorough strafing. With this strike we learned another lesson.

We learned to send the fighters over at low level in line abreast to make their runs downwind, with the first wave dropping at the far end of the target area and each succeeding wave dropping just short of the flight ahead. In this way we avoided obscuring the target with smoke for succeeding waves; we learned also to send the waves in rapidly at intervals of from 10 to 15 seconds. Another important safeguard we continued to employ was to route the withdrawing fighters over enemy territory to avoid danger to friendly troops from hung bombs.

At the conclusion of the first three days' strikes the teletype brought us the news we had been awaiting. It was the support air party's summary of the action:

"Ipo area: Our troops closely followed strikes and overran all target areas with a bare minimum of friendly casualties. Conservatively estimate at least 650 Nips killed by air action with other casualties caused by Nips running from fire and burning areas and being caught by combined frag bombs, artillery and mortar fire.

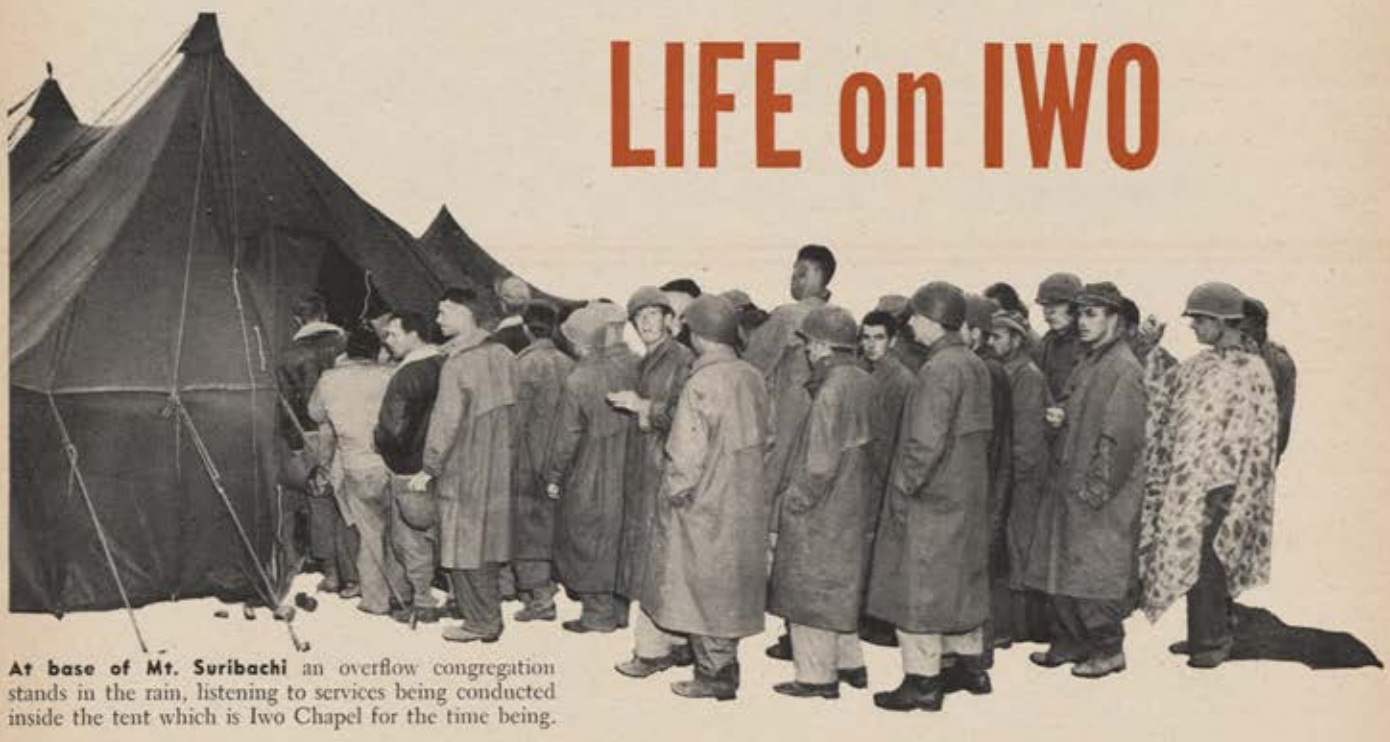
"At least five large gas dumps of unestimated gallonage were destroyed. An estimated 60 to 80 vehicles, including

(Continued on Page 61)

Hot java for a hot pilot. Pvt. J. Barbieri and Pfc. J. Springer, proprietors of Iwo Jima Inn, serve coffee to Maj. Chas. Sutton.

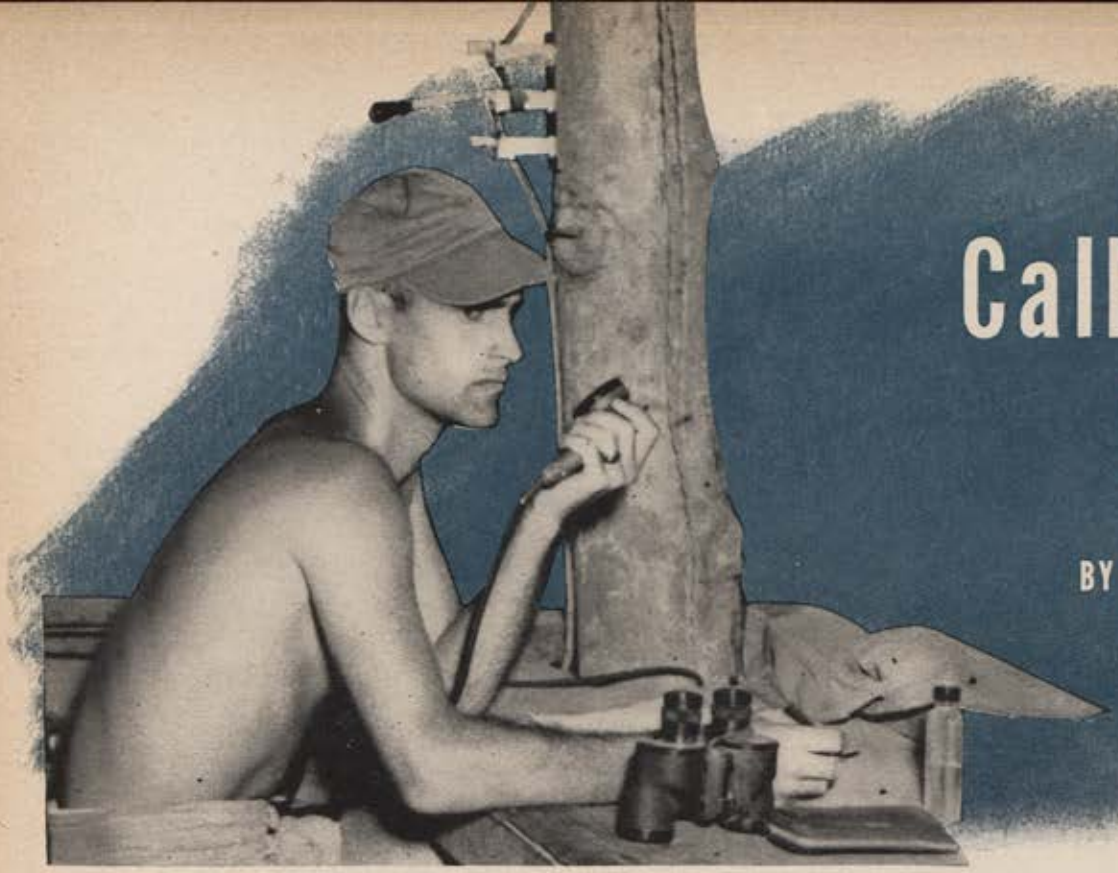
Mustang pilots Bill Fisher and Wes Brown leave their exclusive Iwo manse. In background are Jap plane wreckage and P-51 wing tanks.

LIFE on IWO



At base of Mt. Suribachi an overflow congregation stands in the rain, listening to services being conducted inside the tent which is Iwo Chapel for the time being.

Mechs of a Mobile Service Unit salvage parts of a wrecked P-51. Crater is filled with smashed Jap planes and debris of the Iwo battle.



Calling All Planes

BY S/SGT. WILL CHASAN
AACS, India-Burma

T/Sgt. Burke directs air traffic from control tower at Myitkyina where AACS got its first real lesson in Burma tactical operations.

It was late afternoon when the transport plane landed at an advanced Burma airfield, just five minutes by air from the nearest Japanese base. As soon as the plane braked to a halt, its cargo doors swung open, and unloading began.

A British control officer wanted to know who the men were. He was told that they formed a tactical team of the Army Airways Communications System. Their mission was to install a control tower, navigational aids, and communications facilities, and direct air traffic in and out of the field. Furthermore, he was informed, they would be on the air in less than two hours.

The officer observed that such a job usually took up to a week to complete. But when airfields are needed for air-ground cooperation, a week is much too long a time. And the AACS, which has been running airfields, airways, and radio aids all across Burma for the 10th Air Force, the Combat Cargo Task Force, and elements of the RAF, has reduced the job to a swift and certain routine.

That routine—and the subsequent establishment of communications and navigational aids—has contributed to the safety and success of thousands of flights, saved uncounted numbers of planes from cracking-up, and pushed more traffic through primitive strips than is handled at most Stateside airports. As Lt. Col. Jess R. Guthrie, CO of the group in Burma, said "The value of these tactical teams in the Burma campaign cannot be questioned. They have proved their worth under conditions not encountered in normal operations." And, the commanding general of the Combat Cargo Task Force in the I-B theater, added, "I want my organization to continue to be served by them."

The situation at Momauk, in northeastern Burma, provides a good example of how these tactical teams operate. A strip at Momauk had to be activated immediately to supply the Chinese troops who were besieging Ghamo, several miles to the southeast. On December 2, 1944, an AACS team at the tactical training center in northern Assam was alerted at 1300 hours. At 1530 hours, 10 men and 15,000 pounds of equipment were flown out of an Assam field. The party reached Momauk too late that night to get any work done. But their operations officer in Assam had been told that they would be on the air at 0900 hours the next morning.

At precisely that time—20 hours after the unit had been alerted in India—Sgt. Will Herman adjusted a tower microphone and said, "George Jig tower testing. Any plane or station reading George Jig tower give us a call."

There was an immediate reply "This is 8—reading you R 5, S 5. Give us landing instructions."

Momauk was in business. That day it landed 100 planes on its 2,600-foot strip without an accident.

The AACS got its first real lesson in Burma tactical operations at Myitkyina. There, AACS personnel were under shell fire for two months, yet they handled landings and take-offs which often were made at a rate of more than one every minute. The regular pattern over the field rarely contained less than 20 planes, and on one morning, 55 were counted. In addition, there was a dropping circle off the southwest end of the runway which added to the traffic jam. And the pattern was further complicated by liaison planes buzzing in and out, and by fighters which, after strafing and dive bombing Jap positions a mile away, came roaring over the field out of their dives.

AACS personnel at Myitkyina handled heavy air traffic despite Jap shell fire which lasted for 60 days.

The difficult Burma terrain and treacherous weather made it imperative for AACS units to be installed at new fields before large scale flight operations began. The advanced fields were usually primitive, with soft spots and dangerous rises. There were also dangerous down currents and overcasts which could have been death traps if the planes had no competent direction from the ground. Some fields—actually nothing more than strips mowed across rice paddies—were difficult to find. Without information from AACS, many pilots would have had to crash land their planes.

The need for navigational aids was particularly urgent in the early morning. Then, when flight schedules were heavy, much of Burma was blanketed by thick ground fogs. Due to this weather, an unusual incident took place at an AACS station south of Bhamo.

For tactical reasons, no homing had been installed at the field. One morning, before the fog had lifted, a pilot called for landing instructions. The tower operator heard the plane but could not see it. The instructions were provided, and a few minutes later the pilot asked, "Where do you want me to taxi for unloading?" The tower operator looked down the runway and saw that no plane had landed.

"Where are you?" he asked. Then suddenly, he answered his own question. "Get the hell out," he shouted, "you're on a Jap field." A few minutes later, the plane came barrelling up from the south, over the Jap lines.

The job of establishing an AACS station is relatively simple. Usually, engineers, who precede the AACS men to the field, have already constructed a tower. The first problem is to move a transmitter into the tower, set up a receiver, and plug in the prewired power lines. Then, a generator is kicked over. The transmitter is "zero beat," a microphone is thrown up to the control tower operator, and the tower is ready to go on the air.

Meanwhile, other men put up all the transmitting antennas, using prefabricated masts, trees, or whatever happens to be available. Power is brought to each operating position and final frequency adjustments are made. Then a cryptographer encodes a message to inform the other fields and a new station is set up for traffic.

An example of the speed with which the AACS men work is seen in an incident which took place at a field near the China-Burma border. Orders were received to move to another field closer to the fighting front. The tactical team waited until dark when flight operations had stopped. Then the station was dismantled, the tower equipment loaded into a borrowed truck, and driven to the new field. The next morning, before the first plane arrived, the tower was on the air. Actually, in terms of flight operations, it had never been off the air.

When Burma tactical situation demanded the establishment of airways traffic control on the doublequick, AACS was on the job

AACS tactical teams are usually made up of nine enlisted men and one officer. They begin their training by setting up a complete station with equipment as it actually will be used in the field. Equipment is carried in specially built crates constructed of light wood for easy handling. All plugs, cords, and remote lines used to connect operating positions with transmitters and generators are prepared in advance. Antenna wires are cut to proper length. Receivers and transmitters are tuned on frequency so that only minor adjustments will be necessary when the team lands. Heavy generators are placed on sleds so that, if no transportation is available, the men will be able to move the 1,400 pound generators into position.

Original tower at Tingkawk Sakan. Tent contains radio equipment.

When a team goes into a far advanced airfield guarded only by a tank perimeter, there is no time for fumbling. "Actually," said Capt. Justus Smith, who commanded the AACS detachment at Myitkyina, "a team doesn't install a new station. It just moves an old, pre-tested station."

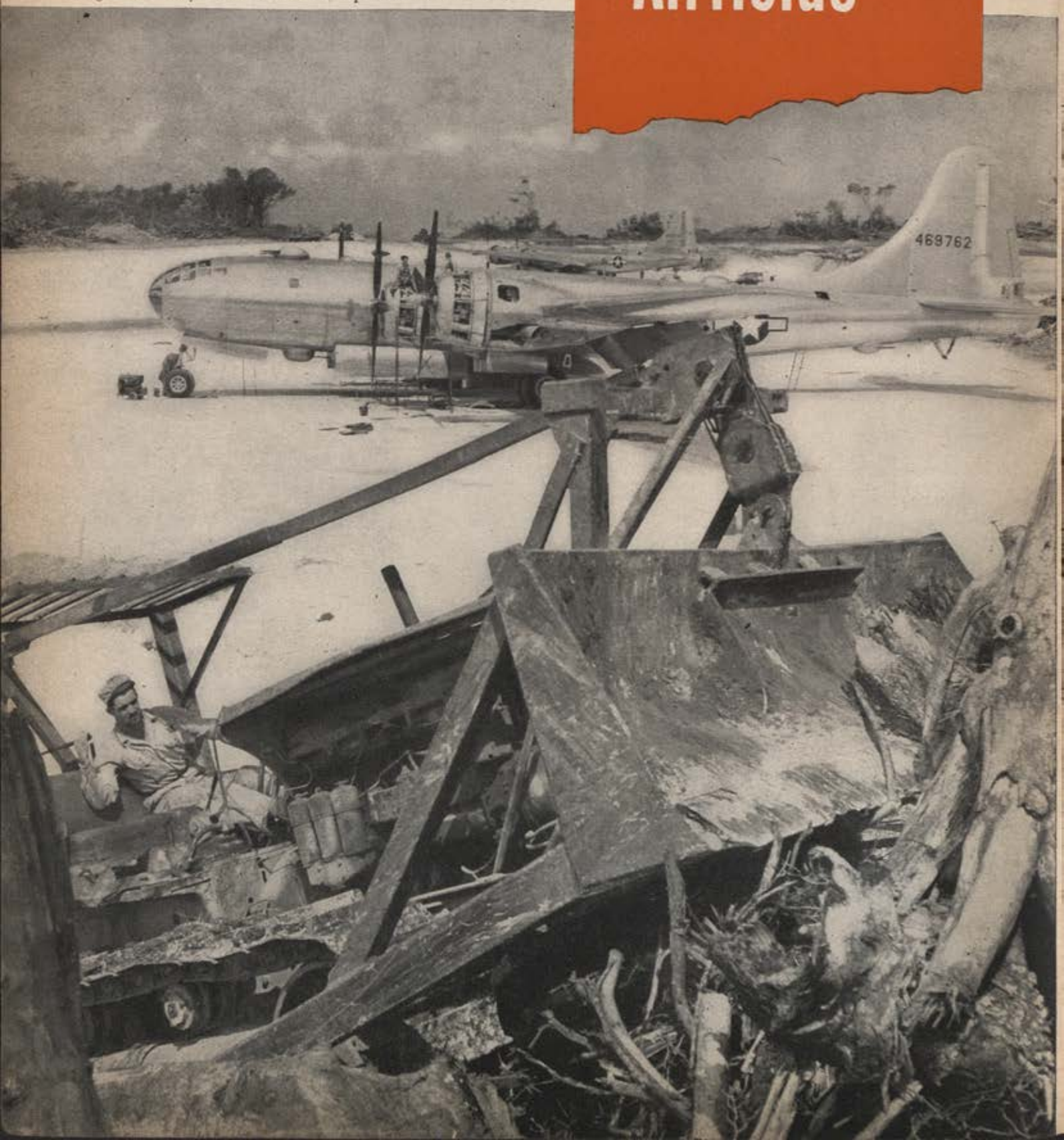
At advanced bases in China, where navigation is extremely difficult, the AACS established navigational aids. In the Philippines, when Navy planes had to make an emergency landing on Tacloban strip, men of the AACS brought them in. And, as we move farther up against the Japs, the AACS will be in business at the same old stand.

"This is George Jig tower calling all planes and stations. Come in." ☆

A vital problem in the air war against Japan is to get enough airbases to park the AAF's planes. Here's an idea of what we are up against

Our Pacific Airfields

Air engineer rides his 20-ton bulldozer into heavy growth and trees being cleared away to make room for Superfort base in Pacific.



BY HERBERT RINGOLD

AIR FORCE *Staff*

Our air force from Europe is on the move to the Pacific. From our production lines and depots airplanes by the thousands—B-29s, B-24s, B-25s, A-26s, P-47s, P-80s—are moving in one direction, to the Pacific.

The wishful thinker translates this mass of airpower into an immediate overwhelming knockout air blow against Japan. It is true that we do have the airpower. We do have properly trained personnel. We do know the technique. But, insofar as the AAF is concerned, the "short war" boys have failed to take into consideration at least one important element: *airfields*.

Good airfields to hold our planes do not come off of a production line. Unlike Topsy, they don't just grow. Seizing, constructing, and supplying airfields from which to attack Japan presents one of the most tremendous problems the combined services have ever faced.

The cost in lives to take a small Pacific island is a sobering figure. Four thousand men were killed to win Iwo Jima. On Okinawa, our casualties mounted to 46,319. And as we move closer to the heart of the Japanese defenses, there is no reason to assume that our casualties will be any lighter. In France and Germany, the ground forces did not attack any given area primarily to secure airbases; in the Pacific, many of the costly amphibious operations are made for no other purpose. To get a site for an island airfield, we have to fight a small war.

In the ETO, the job of getting airbases was a difficult one. While aviation engineers did not have to construct any large B-29 fields, building the smaller strips for fighters was definitely no cinch. Most of the available area had been battered and mined by the retreating Germans; for many months, Cherbourg was the only usable port through which poured all the supplies for the entire European operation; and the engineers worked under the pressure of a fast moving war.

Yet, compared to the problem in the Pacific, the task in Europe was relatively simple. In France, only small fields were needed to hold fighter planes and medium bombers. Any strip, 5,000 feet long, was more than sufficient, and it was not difficult to find a level stretch of ground a mile long and 300 feet wide. Usually, it was necessary to move only 30,000 cubic yards of earth, slap a portable landing mat on it, and be ready for operations within a week or two.

Bases to hold B-29s, however, must be constructed with a firm rock base and a paved surface. When a 135,000-pound airplane lands on an airstrip, three feet of compacted rock base are needed to hold it. To operate successfully under combat conditions the Superfortresses should have a runway approximately two miles long and 500 feet wide. There must be parking facilities, dozens of miles of taxi space, and hundreds of hardstands, all of which also must be paved. The approaches have to be free of mountains and other obstacles for 15 miles at each end of the runway. And, instead of moving 30,000 cubic yards of earth, it is often necessary to move a million cubic yards of ground.

When the AAF aviation engineers went into France to build airfields, their supply problem for the most part had already been licked. Practically everything necessary was available in England. Few permanent warehouses or supply depots were required because the fields were to be used for only a short time. The ground forces advanced rapidly; the fighters providing air-ground cooperation moved up with them. And, in an emergency, there were always more aviation engineers nearby to help.

In the Pacific, the supply problem is staggering. Most of the islands on the road to Japan are barren, devoid of lumber, drinking water, electric power, and almost everything needed for airfield construction. There are no buildings that can be used for hangars or warehouses. The nearest supply depots are thousands of miles away. There are no storage facilities for the millions of gallons of aviation gasoline which are required. Everything necessary—every foot of lumber, every inch of wire, every tractor and bulldozer—must be hauled across thousands of miles of ocean to a central supply center. There it is unloaded, then loaded onto assault boats, unloaded a second time at the point of invasion, and lifted, hoisted, floated, snaked, dragged, and driven through surf and over soft sand to the beachhead. And then, the problem is only begun.

Let us select a hypothetical island somewhere in the vicinity of the Ryukus group and discover what it takes to put a B-29 airfield on it.

Landing mats are rolled ashore.

Engineers under sniper fire work on airstrip with slung rifles.

To build and equip a field, approximately 200,000 tons of supplies, material and equipment are required. That means 40 Liberty ships, and the manpower to load them, the seapower to convoy them, and the airpower to protect them. A minimum of three weeks is needed before the supplies reach island X from the States. Then, after the Marines

(*Continued on Page 60*)

Asphalt-blacktop plant on Saipan manufactures strip topping.

THIS IS YOUR ENEMY

. . . it's your life or his

"The entire Japanese Naval Air Service has become one great suicide squadron."

Harvest Time in Japan. Japanese air prospects are glum. Tokyo propagandists have been summering in the warm hope of sudden returns on the Jap-Nazi exchange of information—especially that about radar, buzz bombs, and jet planes. Suicide attacks have given the Japanese a cold kind of encouragement. Propaganda about increased aircraft manufacture has done little to obscure the fact that front-line air strength is down. Reasons for the dwindling totals are simple—losses in the Okinawa campaign, B-29 punishment of production centers, and fast deterioration of equipment. The last cause has been weighted by poor maintenance; sometimes the availability level of aircraft has sunk very low.

The current first-string among the Jap propellered aircraft runs something like this: George, Sam, Jack, Frank, and Zeke 52. Second string, but on some missions very much in evidence, are Tony, Tojo, Irving, Nick, and Zeke 32. An Allied pilot who has recently flown the George rates it high on take-off, speed, climb, dive, and pilot's vision. He also thinks well of the instrument layout and rudder and elevator control. On the bad side he lists stalling characteristics, heavy ailerons at high speed, inferior brakes and landing gear. On the whole, he concludes, George is inferior to Jack.

In general Jap aircraft equipment has shown improvement this summer. Both caliber and number of guns have increased. The old boiler-plate protection and primitive self-sealing gas tanks have been improved. So have Jap radios in such planes as Frank and Tony, although in general this is a field where the Japanese still lag.

Division of labor between Jap Army and Navy air services has been made more distinct. About half the Army force is based around Tokyo. The rest is scattered in Malaya, Burma, China, Korea, and Manchuria. The Navy, with a much larger rate of monthly replacement, has based a large percentage of its planes in the Empire proper. Most of this strength was focused on the Okinawa campaign. For propaganda purposes the Japanese have announced, "The entire Japanese Naval Air Service has become one great suicide squadron." Maybe so.

Propagandists have also taken up the subject of the Japanese air warning system. That has the man in Tokyo and Nagoya streets worried. "Never fear," the capital assures him, "we know when the American planes are coming." On the side of fact, the Japs have learned something from the Germans and are gradually improving their warning system. As potential targets for each mission increase, Hirohito's fighter control people are going to have to choose where to commit their fighters. Any Luftwaffe experts who may be spending their vacation in Japan will assure the JAF that this is no pipsqueak problem.

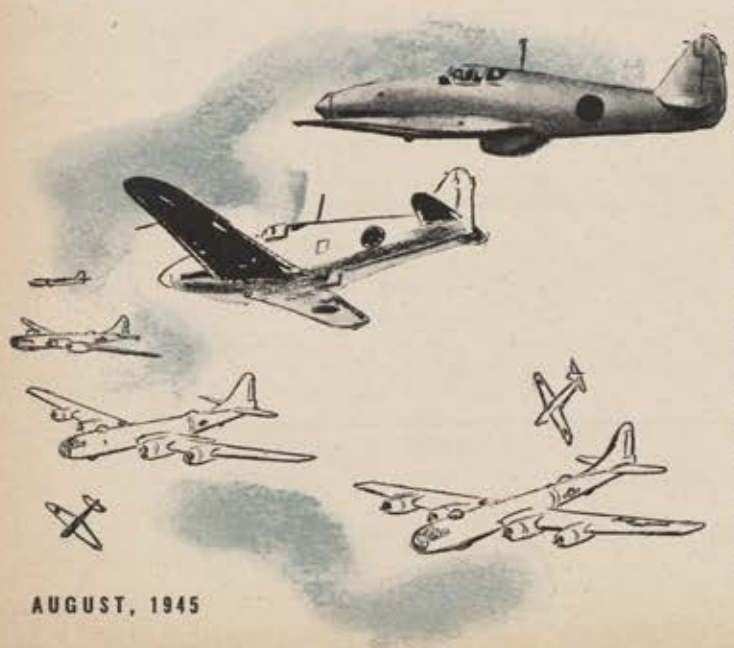
Countermeasures, Air and Ground. In retaliation for B-29 bombing, the Japanese have threatened mass attacks on the United States by bomb-laden balloons. These vengeance weapons—not to be confused with the loose-flying contrap-

tions that have already landed in the U. S.—will cross the Pacific "in about 100 hours at 50,000 feet." At the controls will be "death-defying pilots." In the interim before this kind of operation, Lt. Col. Shozo Makijima, Jap Army spokesman, is irked by the refusal of the United States to confess the havoc already wrought by Jap balloons. "We can surmise," says the Colonel, "that they are wrecking the enemy country." No surmisers are needed to add up B-29 damage in Japanese cities. First-hand witnesses will do. To encourage onlookers, however, the air defense people in Tokyo have pointed out the virtues of old-fashioned running. The idea is to keep on a lookout for bombs. "You can run a great distance," the Japanese are assured, "after sighting the explosive."

Jap Share-the-Work Formations. Cooperation is a fundamental rule of Japanese Interceptor Unit tactics. The unit usually consists of 64 planes, divided functionally into 32 KO (fighter vs. fighter) and 32 OTSU (fighter vs. bomber) planes. Four KO fighters are fitted for two 30 kg. Mk. 3 bombs. In two-plane elements, these planes attack from a head-on position, releasing their air-to-air bombs so as to disrupt the Allied bomber formation as much as possible. Twelve KO fighters provide their cover. The remaining KO fighters fly above the OTSU planes and protect them at the beginning of the interception. After the bombing, the four air-to-air bombers join their cover. The KO's are then ready for Allied fighters, while OTSU planes attack the bomber formation. In two-plane elements, they approach from the front. In a training directive widely distributed to the pilots of these planes, the most emphatic instruction is, *Make the first pass count.*

Other Jap air-to-air routines include attacks made in pairs or singly from the front and two or three thousand feet up. After an easy dive to several hundred feet above the bomber formation, the attacking plane lets its bomb go, and tries a getaway from chandelle to right or left This maneuver is open invitation to a belly shot. And then there is the air-to-air attack that mixes bombing and shooting. Japs in a row come in at 12 o'clock; the first and second plane approach high, let their bombs go, and dive away to right and left. The other planes come in shooting.

"Other Jap air-to-air routines include attacks made in pairs or singly from the front . . ."



"Shanghai has become a city of rumors."

It Says Here. Japanese radio and newspaper commentators have pulled out all the stops. Occasionally the echo sounds sour, but their verbal tactics don't lack variety. Domei, the news agency, announces for the Society of Metallurgy that the B-29 was made possible by the Japanese discovery of duraluminum. . . . About the same day the newspaper Mainichi wipes out all the B-29s with arithmetic. Of 135 Superfortresses manufactured monthly, 30 are lost through wear and tear on the way to places like Saipan. About 10 percent are lost in Japanese bombing raids on American fields. Of the remaining 90 that go into combat, 15 are lost on each of 6 monthly missions. . . . Hsin Shun Pao, organ of the Jap forces in China is not optimistic; "Shanghai has become a city of rumors. Root out the rumors or we have no more hope." . . . In the magazine Taiyo, Captain Yumichi Yamazaki declares, "American aggressive spirit derives from absolute superiority in numbers and power, absolute reliance on scientific weapons, and confidence in defense and rescue appliances. It is vexatious to us Japanese to think that air-sea rescue appliances of their Flying Boats picked up 40 of their airmen and restored their morale" . . . Domei has announced the establishment by the Imperial Government of a Committee - to - Inquire - Into - Measures - for - Improving - the - Political - Treatment - of - the - Chosenese - and - Taiwanese Brethren. . . . Kazunobi Kanokogi, Director of Japan Public Opinion Information Association, concludes, "Our step by step retreat has been due to lack of scientific and industrial techniques, shortages of shipping, and lack of aircraft. . . . Should we perhaps be defeated, it would be the punishment for our sins in not conforming respectfully and sincerely to the Imperial Rescript of War. The greatest battle of 1945 will be within ourselves." . . . Domei has announced that hereafter the military police in Tokyo will "pay attention to speeches, literary works, meetings, organizations, and rumors." . . . From the same source comes this advice: "We must have no joy or sorrow in quick alterations of war. One cannot deny that the enemy's counter-offensive formation has reached our boundaries. Now the battle begins."

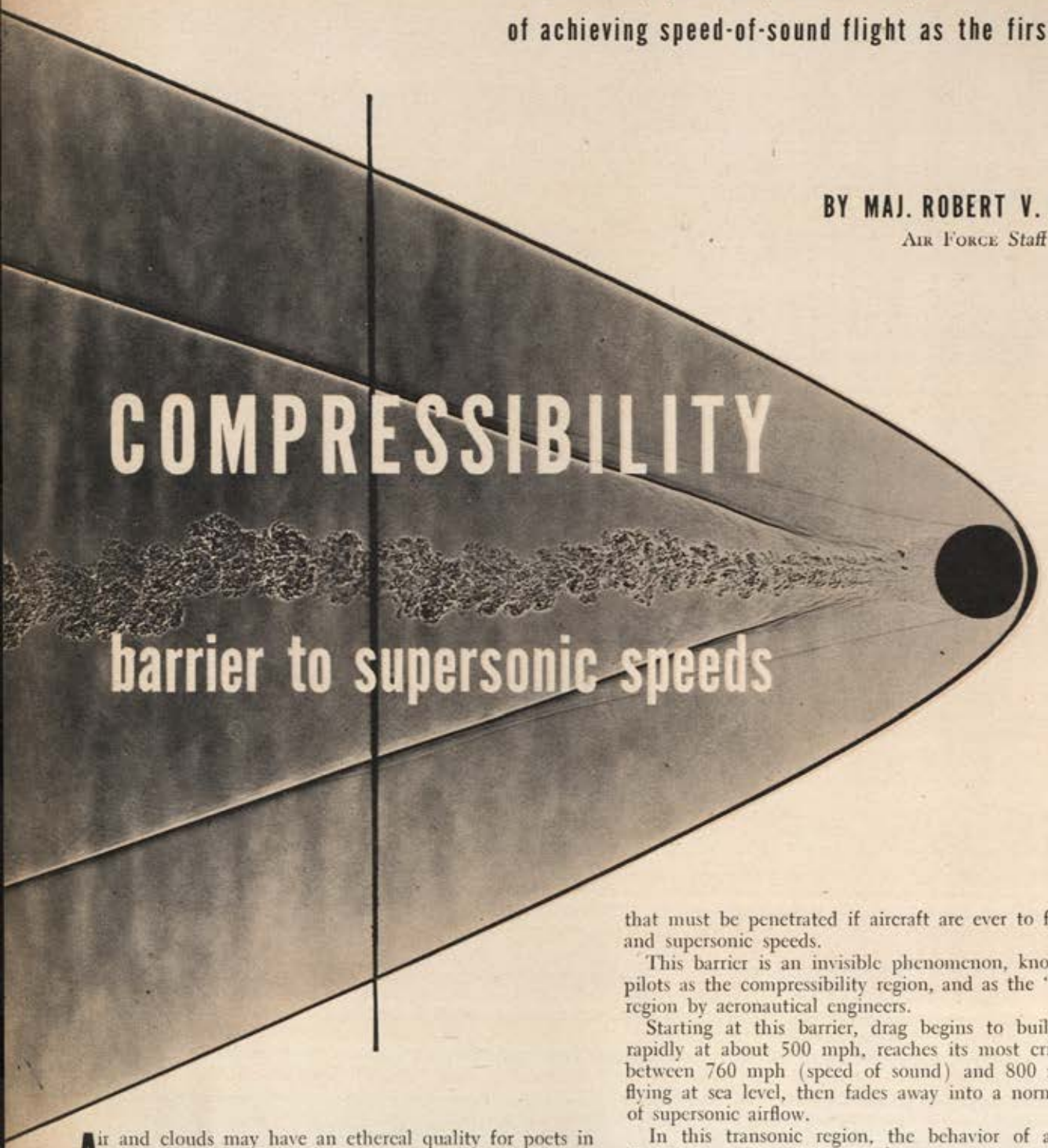
Echo from the Western Front. The Luftwaffe's adaptation of an old recognition story caps the final account of the GAF from the ground. You can always tell the nationality of an airplane, declared the huffy Wehrmacht Leutnant; you can tell just by looking at it. If it's shiny, why it's American. If dark, it's British. But if you can't see the thing at all, it's German. . . . Dr. Kurt Tank, designer of the FW190 and the German planes bearing his own name, has issued his post-surrender prophecy about jet propulsion. Among ultra-high speed jets, says the Doktor, the single-engine types are most promising. Two engines, he thinks, spoil the wing line. . . . As the Wehrmacht scrambled toward defeat, the Germans were about to put into mass production three special antiaircraft devices. ☆

Although flight in excess of 1,000 miles per hour is theoretically possible, we are only on the threshold of achieving speed-of-sound flight as the first hurdle

BY MAJ. ROBERT V. GUELICH
AIR FORCE Staff

COMPRESSIBILITY

barrier to supersonic speeds



Air and clouds may have an ethereal quality for poets in their flights of fancy, but to our more realistic airmen they are mostly a great big pain in the neck.

Every flyer knows that even soft and feathery looking cloud fluffs can be rough as hell and that the invisible air is so un-soft that the faster we fly through it, the more it batters up our planes.

More and more difficulties are being encountered in just getting through the air at high speeds. This is one of the problems being encountered by the AAF's family of new combat planes in the 250-500 mph speed ranges. Above these speeds, there is an even more serious barrier that must be penetrated if aircraft are ever to fly at sonic and supersonic speeds.

This barrier is an invisible phenomenon, known among pilots as the compressibility region, and as the "transonic" region by aeronautical engineers.

Starting at this barrier, drag begins to build up very rapidly at about 500 mph, reaches its most critical point between 760 mph (speed of sound) and 800 mph when flying at sea level, then fades away into a normal pattern of supersonic airflow.

In this transonic region, the behavior of air changes abruptly over any object from a smooth flowing stream to an irregular series of violent waves. This occurs when the air moves so fast over the wing that it reaches or exceeds the speed of sound and generates a "shock wave." By-product of shock waves is severe turbulence that causes serious buffeting of the tail and stalling of aileron control surfaces, recognizable symptoms of compressibility trouble in flight. Such shock waves oscillate so violently at sonic speeds that they destroy normal airflow over the wing, thereby changing lift and increasing drag forces. Such changes destroy the effectiveness of the tail surfaces in

maintaining the normal balance of an airplane, requiring a pilot to exert abnormal forces to maneuver it.

In the absence of an effective tail surface at very high speeds, such as dives, excessive trim tab deflection must be used to maintain balance. But, when the plane slows down enough for shock waves to disappear, tail surfaces regain their effectiveness so suddenly that the pilot must take great care to retrim the airplane to prevent violent flight reactions. It is in this recovery phase from high-speed dives that most structural failures are likely to occur.

Rocket projectiles can be battered about by shock waves and sometimes are diverted from their pre-set trajectories as they pass through the compressibility region. Despite this effect of shock waves at sonic speeds, however, rockets can accelerate through the sonic speed range and resume normal flight characteristics at speeds well above 1,000 mph.

Once beyond the speed of sound, aerodynamicists believe that aircraft can be controlled as precisely as artillery and rocket projectiles at supersonic speeds, providing the basic design of the wing is modified to minimize the effect of shock waves. Such redesigning, however, requires application of theories that can control the formation and eliminate the effects of oscillating shock waves at supersonic speeds. Previous theory for aircraft flying at speeds of 100 to 400 mph treated air as a fluid with a near-constant density and flow-pattern throughout the range of sub-sonic speeds.

Strange though it may seem in our world of science, there is no reliable information on the flow and reactions of compressible fluids on an airfoil at sonic speeds. Not even the long-haired professors have been able to determine a reliable flow pattern for air in the transonic region.

The only generalizations about our knowledge of the transonic region are that there is more unknown than known, and until we learn how to minimize the effect of shock waves or change the flow of air over wings at high speeds it will be extremely difficult for airplanes to exceed the speed of sound.

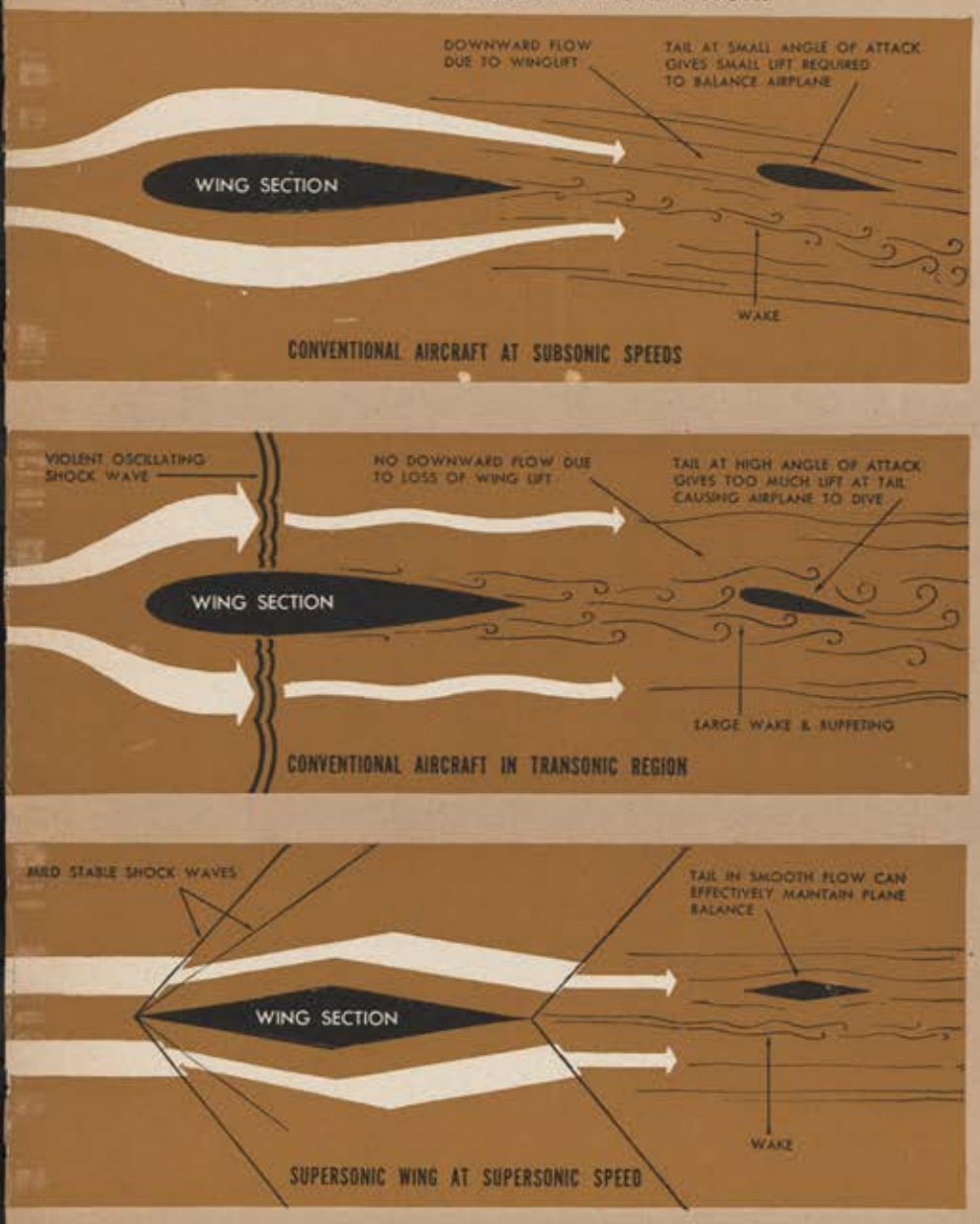
Between 700 and 1,000 mph in sea-level flight, where shock waves exert their most adverse effect on wings, no data from wind tunnels is available. The all-too-simple reason is that no wind tunnels have yet been built that can run accurate tests in this speed range. Some of the tunnels themselves exaggerate compressibility effects while others are so narrow that shock waves bounce back from the walls onto the airfoil being tested, thereby destroying the true airflow that would be encountered by a wing in free flight and invalidating test results.

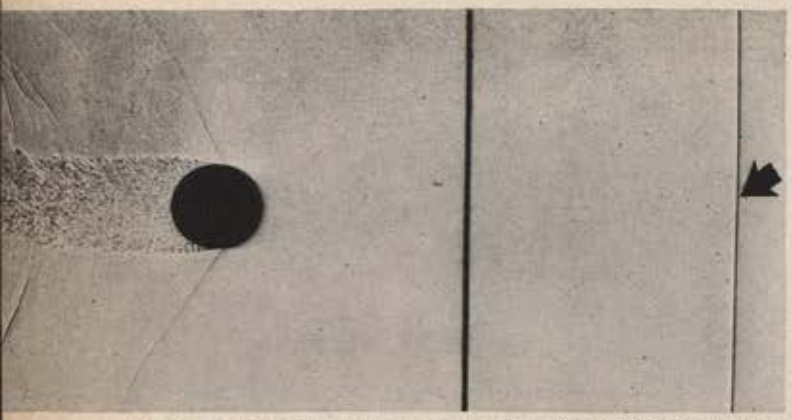
In the absence of wind-tunnel information, test pilots are seeking some of the answers to the phenomena by diving planes at speeds well over 600 mph. Shock waves in these test dives cause such powerful unbalancing forces that inexperienced pilots easily can lose control of their planes. The bending moments on wings in pull-outs from these high speeds have buckled the skin between some rivets and vibrations have cracked coolant radiators. Yet, even these flight tests cannot be relied upon. Carefully instrumented reports of 600 mph dives have such flaws in them as instrument lag and error caused by rapid temperature and altitude changes which must be registered at the rate of 3 degrees Fahrenheit per second and 900 feet per second.

Only recently have airplanes been able to fly in straight-away flight at speeds where very severe shock waves are encountered. The P-80 and an experimental P-47 both have maintained level flight, despite shock waves, at excessive speeds. From continuing tests of these planes, it is hoped that more accurate flight test data can be obtained to influence future designs.

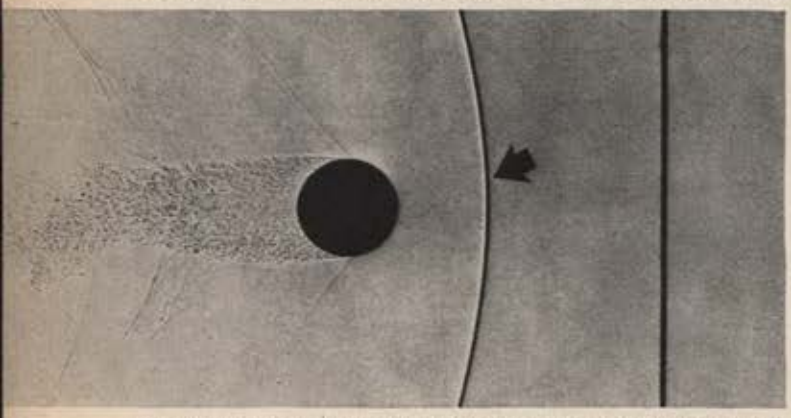
Because conventional propeller-engine type aircraft are limited in performance by propeller efficiency, which falls off rapidly at speeds much over 500 mph, the crystal ball

WHITE LINES INDICATE VELOCITY—THICK SECTION IS HIGHER VELOCITY.

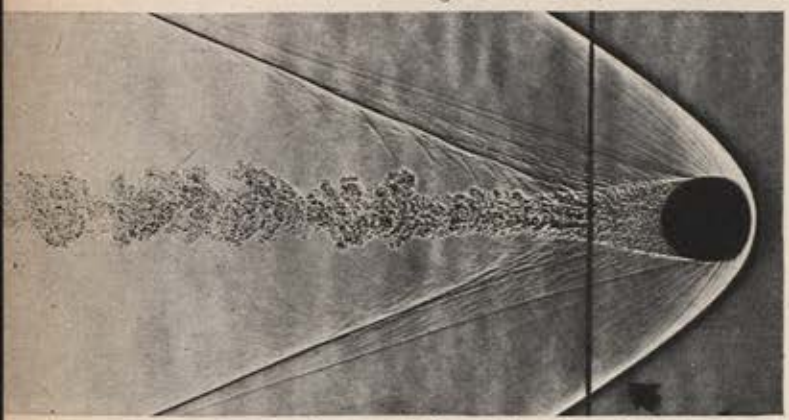




At low supersonic speeds the main drag of sphere is in its wake. Frontal shock waves forming at right (L) contribute little drag.



At higher speeds wake drag is reduced as shock waves build up, become more severe. Total drag coefficient stays about the same.



When sphere reaches very high speeds weight drag is cut more, but very severe shock waves tend to retain same drag coefficient.

of futuristic high-speed planes does not reflect any such aircraft. Instead, sonic and supersonic planes will be jet-propelled because the jet engine increases in efficiency the faster it goes. Besides, it is the only method of propulsion now in existence that can develop enough thrust to hurtle a plane through the air at speeds well over 1,000 miles per hour.

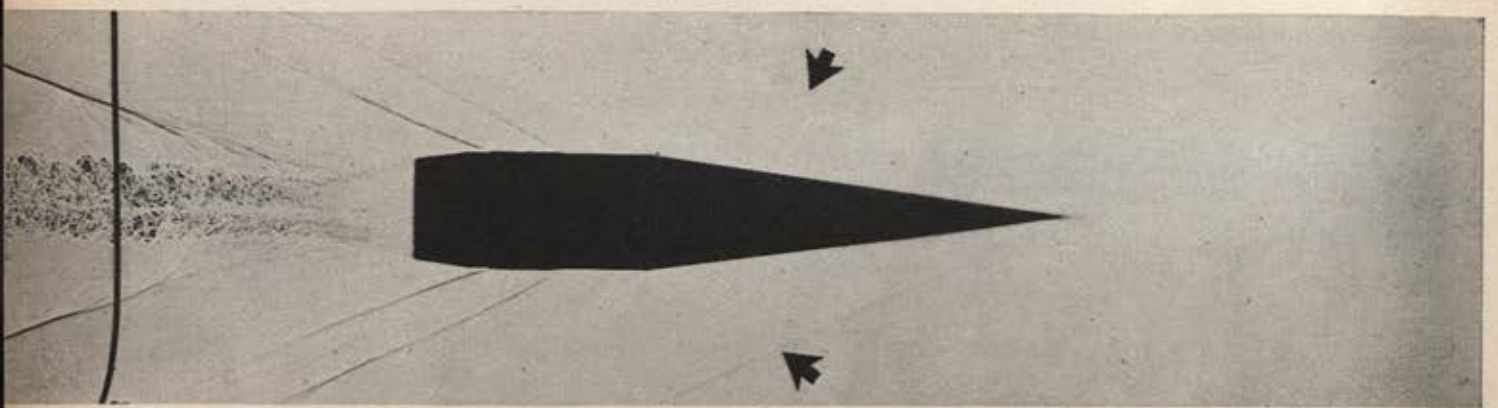
During the past seven years, great strides have been made by our aircraft designers in delaying compressibility difficulties due to the formation of shock waves. Some of the increased speed was gained by simple drag reduction measures such as streamlining antennas, sinking rivets flush with the skin, cutting down on the drag area of coolant ducts and smoothing out angular joints that caused formation of shock waves at low speeds. The rest of the aerodynamic speed increases can be attributed to specially designed high-speed wings that delay formation of the drag producing shock wave. At subsonic speeds, the airfoil increases the speed of the air over the top of the wing. The thicker the wing, the faster the air must flow to get over it; and if the air reaches the speed of sound at any point over the airfoil, a shock wave will form. The thinner the wing, the faster a plane can fly before the shock wave will form. Wing designs for sonic aircraft, therefore, are expected to be very thin.

Supersonic wings also will have very sharp, knife-like leading edges to penetrate the air with disturbance of the smallest possible mass of the surrounding air. This is in contrast to conventional airfoils with blunt leading edges that are efficient at subsonic speeds but unsatisfactory in the sonic-speed range.

Mild shock waves will form on the leading and trailing edges of the supersonic wing, but the flow of air will be smooth over the airfoil. However, when this wing is flown at speeds only slightly above the speed of sound, severe shock waves will form. With enough power, however, a plane can increase its speed until the severe shock wave disappears and the mild ones stabilize on the leading and trailing edges of the wing, permitting normal flight above the sonic-speed range.

Disadvantage of the supersonic wing is that it is not as efficient at low speeds as the conventional airfoil. For this reason, landing and take-off speeds may be very high, so high that some sort of rocket-assist may be required to give such aircraft the initial speed they require to lift themselves into the air.

Theoretically, all of this is possible and aircraft some day will be able to fly well over 1,000 miles per hour. Practically, we are only on the threshold of sonic speed flight, trying to penetrate the barrier of compressibility in the transonic region. ☆



A pointed projectile at same velocity as sphere in photo No. 3 has same wake drag, but sharp nose eliminates the severe shock wave.

Sky Clerks

BY CAPT. JOSEPH D. GUESS
AIR FORCE Staff

Whether it's serving lunch aloft or preparing passengers for a ditching, these ATC flight traffic clerks are ready for the job

"I've got the best job in the Army Air Forces," said the sergeant, an Air Transport Command flight traffic clerk.

The sergeant, red-headed Billy Hughes, had just returned from a 35-day special mission "hop" around the world. His itinerary, from Washington, D. C., included stops at Bermuda, Malta, the Crimea, Iran, India, Burma, Ceylon, Australia, the Admiralties, Leyte, Guam, Saipan, Kwajalein, Honolulu, San Francisco.

While it is true that not many flight clerks get to make globe-girdling missions, FTCs (flight traffic clerks) are the world's most-travelled enlisted men. Most FTCs are in the ATC overseas divisions and have more or less regular runs, such as from Karachi to Kunming, Casablanca to Cairo, San Francisco to Hawaii.

The job of an FTC is highly specialized, with responsibilities such as guarding cargo against damage; maintenance of cabin discipline; proper preparation of customs and border clearance forms; checking, loading and unloading cargo, passengers and mail; carrying important documents; caring for passenger comfort.

The service rendered to ATC passengers is both varied and important. A passenger, without help, might have to work two hours over customs papers; the flight clerk does the detailed work for him, and the passenger merely signs his name. Among his other duties, the FTC serves lunches, awakens sleeping passengers before descent so that they won't be troubled with popping ears, sprays the cabin with insecticides when his plane is in the tropics.

With the ATC's vast air traffic—including frequent unarmed supply missions into combat areas—there's bound to be an occasional mishap. Recently, Pfc. Erman Fountain was on a flight over the Red Sea when some trouble came along. The aircraft had to ditch. Flight Clerk Fountain, under orders from the pilot, took charge of all the cabin passengers. He was the last of 14 people aboard to get out of the ship; all survived. Out over the Atlantic, lightning struck an ATC freight carrier and knocked off the cargo door. Flight Clerk Pvt. Glenn Seaman had to struggle for hours to keep valuable freight from falling out. Sometimes, at isolated bases, the FTC has to pitch in and help the flight engineer and mechanics make quick repairs to engines.

On an average, flight clerks log about 110 hours in the air each month. A large number of the 1,247 ATC flight clerks have logged totals of more than 1,000 flying hours. Two Miami, Fla., brothers, Sgt. Roger Skillman and Pvt. John Skillman have traveled, between them, more than 1,300,000 miles and logged more than 8,000 hours in the air. Sgt. Leland B. Ross has flown across the Atlantic 25 times. Flight clerks are entitled to wear aircrew members' wings after 50 hours of air duty. Of course, they get flight pay. They wear Class A uniforms while flying.

The ATC flight clerk program was inaugurated in August, 1943. The school for training FTCs was recently moved to Morrison Field, Fla. There they take a six weeks' course, then get further training at an ATC port of aerial embarkation.

Because of a shortage of male flight clerks, Wacs may soon be handling the job on some routes. They will fly first on the ATC regular London-Paris run. If the experiment proves successful, there will be WAC FTCs on the other ATC "plush-line" short-haul flights. Men probably will continue to work on the more exacting, longer missions.

Prospective flight clerks are carefully selected; they must quickly absorb a lot of specialized training. To get a chance at the job, an enlisted man or woman in the ATC must make a request through channels for the training. If the applicant appears to have the qualities to make a flight clerk, his CO will take necessary steps. Enlisted men or women not in the ATC have little chance to get FTC training.

Of all the qualifications, the ability to think quickly is probably the most important. Although FTCs are encouraged to be honest in explaining mechanical difficulties to curious passengers, at least one FTC has been known to use his head to allay the fears of an obviously nervous passenger. A plane on a long overwater hop developed engine trouble and the pilot had to feather a prop. One important passenger, on his first flight of any kind, noticed the still propeller and with alarm asked the flight clerk if they were in trouble.

"Why no, sir," replied the quick-witted FTC. "You see, sir, we just noticed there is a very strong tailwind and the pilot decided to cut off an engine to save fuel."

"Oh," said the passenger, relaxing in his seat with vast relief, "Well, that's all right, that's just fine." ☆

Where Weather Is Born

BY CAPT. L. P. BACHMANN
AIR FORCE Overseas Staff

North China-based B-25s are the bellwethers for our very heavy bomber operations

A Chinese soldier stands guard in front of the C-47 used to supply weather stations.

The largest single squadron in the AAF is a weather outfit stationed in China. Its personnel, under the command of Col. Richard E. Ellsworth, numbers more than 2,000 men; its assignment is to provide weather information for the 20th Bomber Command, the 14th Air Force, ATC traffic over the Hump, and for Army and Navy operations in the western Pacific from the Philippines to Japan.

Our weather stations in northern China are located near the areas where Pacific weather is born. Weather for the Pacific, particularly over the islands of Japan, originates in Siberia, Mongolia, and northern China. The findings of the weather squadron definitely established that a high cell which rises and moves across Siberia and the Gobi Desert is one of the most influential factors in determining meteorological conditions throughout the world.

The most important discovery of the weather squadron was the fact that this Siberian high cell did move. Previous information concerning it stated that the high sat in Siberia like a frozen wall and stopped all weather that flowed in from Europe. However, AAF weathermen proved that certain types of fronts, under special conditions, will move across from Europe and affect China in four or five days.

From all this, it has been definitely established that weather moving across Mongolia and northern China affects the Japanese islands and surrounding territory approximately 24 hours later. Bad weather in the Philippines can be forecast when the high cell in northern China moves southward, then to the east. This was the case during the Philippine invasion of October, 1944, when a terrible month of rainstorms hampered our troops on Leyte. Evidence of the far-reaching results of weather starting in this area is the forecast that predicted snow on the U. S. west coast from observations made of a high cell swinging lower than usual through China. The forecast proved to be accurate.

There were many problems to be overcome before weather stations could be established in China. Operations

Predicting the weather for the next day's operations is job of S/Sgt. William Huke, T/Sgt. Robert Clar, and S/Sgt. James McTernan.

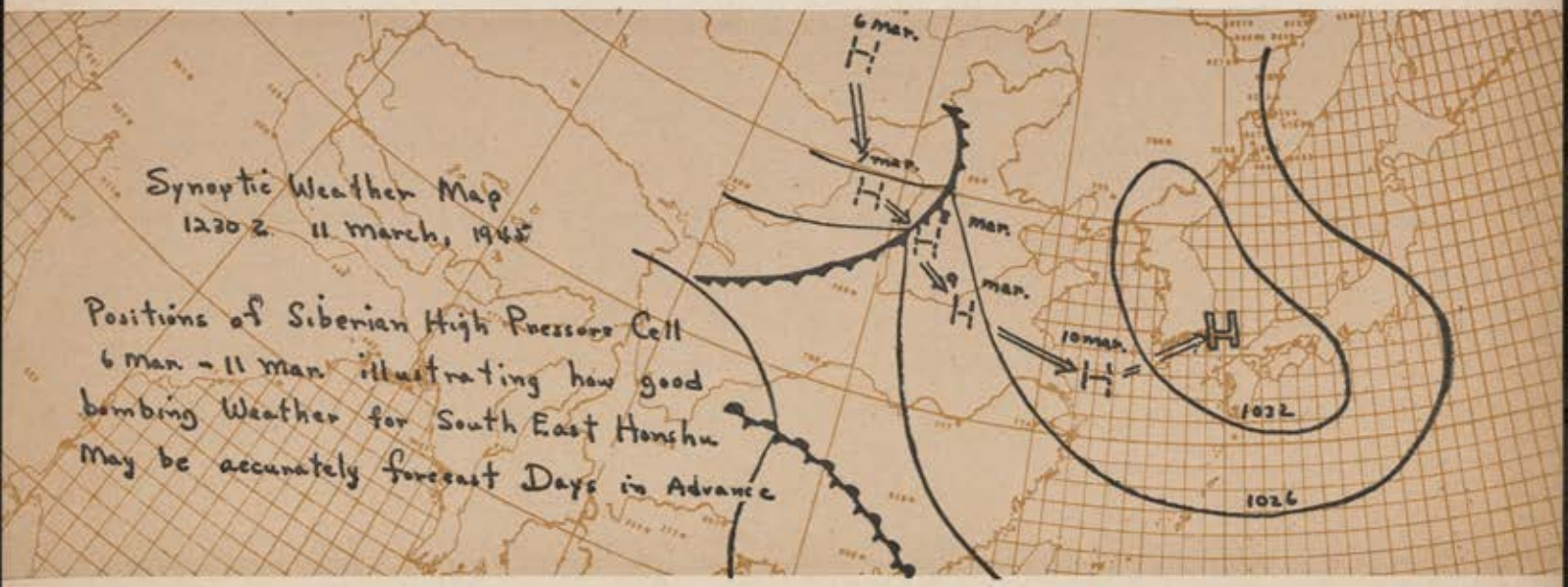
Planes which travel to the weather stations scattered throughout China may land on sun-baked fields in the Gobi Desert or on snow covered strips in northern China. The plane parked next to the two C-47s is a Russian SB-3 used by the Chinese as a medium bomber.

were carried out in extremely remote sections, facilities were few, and the supply line unusually long. Only two C-47s were available to transport materiel to the isolated stations. This resulted in a complex juggling of loads and weights, due to the fact that most of the C-47 cargo space was filled with gas drums for refueling. All missions had to be flown in only CAVU weather because a forced landing meant coming down in strange territory where chances of rescue were slight. Food was scarce and temperatures at some stations, where men would be isolated for months, ranged to 30° below zero. Nevertheless, the job was done. Now, daily weather forecasts are dispatched to Army and Navy combat stations throughout the Pacific area.

To gather the various types of weather information necessary for accurate predictions, three principal methods are employed: visual or surface observations, upper air and wind observation, and observation from aircraft in circumstances where no ground stations exist.

Most weather stations take upper air and wind observations by means of a radiosonde and rawin. In both these operations, a hydrogen-filled balloon, carrying a small transmitter, is set free and tracked up to 60,000 feet by special instruments which interpret the impulses sent out by the transmitter. In the radiosonde, the interpretations are for temperature, pressure, and relative humidity; in the rawin,

(Continued on Page 46)



SOME QUESTIONS AND ANSWERS ON REDEPLOYMENT IN THE AAF AND HOW IT AFFECTS *you*

1. What may an eligible enlisted man do to effect his release on points? He can only wait until he is notified that he is available for release. The AAF intends to release eligible men as rapidly as practicable, but no man in a critically short MOS (military occupational specialty) can be spared until a replacement is available for him. If a man is eligible for release, his organization is aware of it and will make him available as soon as possible.

2. What is a critically short MOS? It is any MOS in which a 15 percent shortage is expected to exist during a four-month projected period. However, individuals may be retained for military necessity in specialties in which the shortage is substantial but less than 15 percent. The AAF list of critically short MOS's for enlisted men numbered 48 on V-E day. The War Department list contained 21.

3. What kind of reporting system has been established to keep Headquarters advised of eligible enlisted personnel? A recapitulation has been made to show the number of enlisted men eligible for release, where they are stationed and what their specialties are. Beginning June 30, the monthly personnel status reports (Form 127) must show the number of personnel in each critical MOS and the number eligible for release. This report begins at unit level and is consolidated at each echelon all the way to Headquarters AAF. Thus, Washington is aware at all times of the number eligible for release and the number available for duty in each specialty.

4. Are enlisted men who are released actually separated from the service or are they, like most released officers, merely placed on inactive status and subject to recall? Enlisted men are actually separated from the service.

5. Is the critical Adjusted Service Rating score the same for AAF ground personnel as for flying personnel? Yes.

6. Which will be higher, the percentage of officers released or the percentage of enlisted men released? The percentage of officers released. As one principal reason for this, the attrition rate for pilots has been considerably lower than anticipated, causing a pilot overstrength.

7. How will redistribution stations take care of the increased load of returnees to be processed and reassigned? As the flow of personnel through redistribution stations increases, the length of the individual's stay at these stations is reduced. Also, additional posts or stations may be used as redistribution stations.

8. What becomes of the rotation program? Rotation, as such, has ceased for ground personnel. As before, war weary aircrews will be returned to the United States as the theater can spare them. Also, at the discretion of the theater commander, eligibles who must be retained, as well as ineligibles with long overseas service, may be returned to the United States on temporary duty for rest and recuperation up to 45 days.

9. What is a returnee? An individual who has been returned to the United States after serving six months or longer overseas.

10. May returnees volunteer for second tours of duty overseas? Yes, and if they are needed they will be sent over. However, except for volunteers, returnees will not be sent overseas again until all others in the same MOS who are physically qualified and ineligible for release have gone overseas. Returnees who are sent over again will go generally in the same order in which they returned to this country.

11. What is the procedure for handling an individual who is eligible for release and is brought back to the United States as a casual? He leaves the theater as a member of a reception station group, organized on the basis of home addresses. From the port of debarkation, he proceeds to the reception station nearest his home. There, his essentiality is determined by the commanding officer of the reception station in collaboration with the AAF liaison officer. If the individual is found non-essential, he goes to the separation center on the same base and is separated from the service. How long this process takes depends upon the extent to which the separation center is overloaded with personnel awaiting separation. If, at the reception station, it is determined that the individual is essential and must be retained in service, he goes home on RR&R (recuperation, rehabilitation and recovery) up to 30 days, at the end of which he reports to a redistribution station for processing, possible reclassification, and assignment to duty in the United States. If necessary, he may go overseas again later. (See Question No. 10).

12. What is the procedure for handling an individual who returns as a member of a unit that is to be demobilized? Here the individual comes back to the U. S. with his own organization rather than as a member of a reception station group. At the port of debarkation, the unit goes to the port staging area. Then each individual member of the unit is placed in a reception station group for movement to the reception station closest to his home. From there on, the procedure is the same as for the individual who returns from overseas as a casual (See Question No. 11).

13. What is the procedure for an individual who returns as a member of a unit to be redeployed through or to the United States? Upon arrival at the port, the unit goes to the port staging area, where its members are divided into geographical groups and are transported to reception stations near their homes. From there, they go home on RR&R, at the end of which they report back to reception stations to be taken to reassembly stations. There units are reassembled, remanned if necessary, and sent to stations for accomplishment of redeployment training.

14. What is the procedure for an individual who is ineligible for release and returns as a casual? From the port of debarkation, he goes with his reception station group to the reception station nearest his home, then home on RR&R, and back to the reception station. Then he proceeds to a redistribution station for processing, possible reclassification and assignment to duty in the United States. (See Question No. 10).

15. Do the procedures described above

(*Continued on Page 62*)

Based on Guam

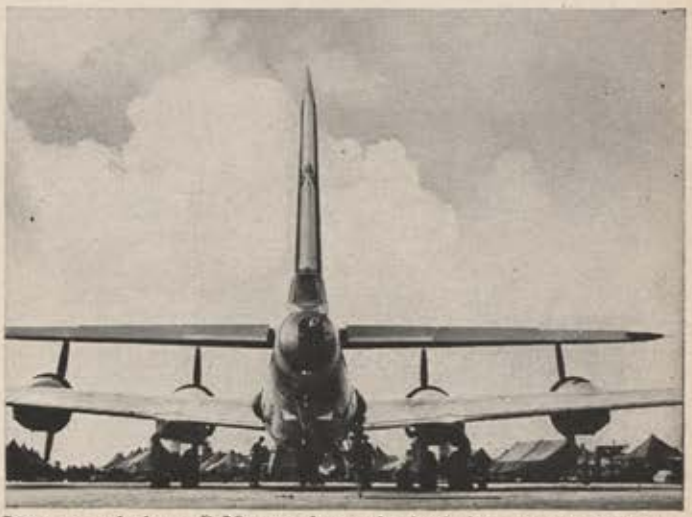
The bitter, bloody campaigns that were fought to wrest tiny, strategic islands from Jap hands are now paying off as our chain of Pacific airbases goes into business on a grand scale

Stacked at field's edge, this reservoir of bombs will be drawn on to load bellies of Guam's Superforts for missions over Jap homeland.

Mech straps Superfort's prop onto carrier.

Refreshments for this crew back from Tokyo raid.

Sergeant heads for processing lab to get results of shots taken on mission that has just been completed.



Between missions, B-29 gets thorough check from its ground crew.

Here's the latest dope on AAF's helicopters, their operation, use in combat theaters and the training of rotary wing pilots and mechanics

AAF YR-6A

progress report on eggbeaters

BY MAJ. LUTHER DAVIS AIR FORCE Staff

They're hard to fly. That's the first fact most of us have to learn about present day helicopters. The contraptions look so light and foolproof that helicopter pilots frequently are badgered by people asking to be "checked out in the things" as if the process were as simple as transition from an L-1 to an L-4.

If you want to fly the AAF's R-4B, R-6A, or R-5 (the "R" stands for "Rotary Wing") you have to go to school again no matter how many pilot hours you have behind you—and you have to work like hell to master new theories and new techniques. All students are volunteers (flight officers, second or first lieutenants who are rated pilots or service pilots on flying status), and all understand that their primary duty after completion of the six weeks' course will be flying helicopters—probably overseas.

The school is at Sheppard Field, Texas, where it comes under the AAF Western Technical Training Command and is headed by Lt. Col. B. F. Witsell. At its present scale it takes a class of 25 pilots every six weeks. Half of the students are returned combat pilots; the rest are either from the continental air forces or men who have had experience as instructors and are slated to teach helicopter flying.

They get a lot of ground school before they're ready for their first ride. The trainer is the Sikorsky R-4B which has been to helicopters approximately the work horse the old Jenny was to fixed-wing aircraft. There are dual controls side-by-side and between the seats is a lever familiarly called the "pitch stick"—the handle of which is a motorcycle-type throttle. The rest of the controls look deceptively like a conventional airplane's—rudder pedals, control stick, plus the basic instruments.

The pilot starts the engine, gets it running smoothly, and then engages the clutch—another lever between the seats. The rotor above and the tail rotor behind begin to move. There's a swish-swish sound from the windmill overhead and considerable racket from the 185-horsepower Warner engine.

After completing the prescribed before take-off checks, the pilot begins to pull up on the pitch stick between the seats while commensurately adjusting the throttle by turning the pitch stick handle. With his other hand he holds the control stick centered, and, as the degree of pitch of the main rotor blades and the rpm increase, the aircraft begins to rise—straight up. At this point the average student on his maiden direct-lift flight usually looks down incredulously at the wheels, motionless a few feet above the take-off point.

Push the control stick a trifle forward—thus tilting the main rotor—and the helicopter begins to move ahead gaining altitude as forward speed is gained. If hovering, move the control stick to the right, and you go squarely sidewise; backward, and, yup, you go straight to the rear at a very good clip.

With the aircraft flying forward at a reasonable speed—indicating between 50 and 75 mph in the R-4B—you can use the control stick almost as in conventional aircraft, except that it is incredibly sensitive and seems to have a will of its own. It vibrates noticeably and revolves in a small circle between your knees, making hands-off flying absolutely impossible. A hairsbreadth back on the stick and you gain altitude, a hairsbreadth forward and you lose it. A slight movement to one side and you bank and turn in that direction. Your rudder pedals are to control the counter-torque rotor on the tail and are used mainly to align the fuselage; to point it in the direction in which you're going—two things which are not necessarily the same in helicopters. You proceed in the direction the main rotor is tilted, while the fuselage has a tendency to weathervane into the wind. Thus with a strong westerly wind a helicopter might be moving due south with the fuselage pointing toward the southwest.

The extreme sensitivity of the controls and the fact that there's a definite time-lag between a control movement and a change in attitude of flight mean that the pilot has to think ahead continually. For instance if a thermal or updraft makes you begin to rise, you must push slightly forward on the stick to correct for it and, almost before this movement of the stick has taken effect, correct for the

Here's a demonstration of one of the more convenient characteristics of the helicopter. Short of gas, some R-4s have landed in an Oklahoma cornfield for fuel, directions — and lunch.

Controls of the R-6 Helicopter. In the pilot's left hand is the joy stick; right hand, pitch stick with throttle handle.

An R-4 with flotation gear attached alights on an AAF airfield on Iwo Jima. Wherever they go helicopters gather a crowd.

initial correction by pulling back slightly on the stick—or you'll find yourself behaving like something on a roller coaster. Should you pull too sharply back on the stick you'll come to a dead stop in midair—stopping, incidentally, more quickly than an automobile could at a similar speed—and begin to go backward. Almost every major change in speed or attitude requires a compensating change in pitch and throttle.

Perhaps you'll see why the AAF Helicopter School has washed out pilots with as much as 4,500 hours of fixed-wing time behind them. Today they average about one washout per class of 25, and it's almost always a guy who simply can't coordinate all five controls sufficiently well.

Many helicopter experts believe that the ability to pilot fixed-wing aircraft is no real advantage in learning the actual control technique of helicopters. However, the AAF works on the theory that once the physical knack of rotary wing flight has been mastered, general pilot ability and air-mindedness pay off in making helicopter pilots more versatile and better able to do the wide variety of jobs that may be required of them. Thus the "eggbeater" boys were all fixed-wing pilots first and they wear the wings of their original pilot rating.

They get between five and eight hours dual before soloing and after that enough solo and dual to bring their total helicopter time to 27 hours or more. Before completion of the helicopter course, pilots must be able to land on a dime (literally), fly the square—meaning to fly an absolutely square pattern using forward, sideward, backward flight—hover precisely over a given point, and accomplish a maneuver called piercing the target. In this, a ring a few inches in diameter is held aloft on a pole. The "eggbeater" has a dowel a foot or so in length attached to the nose. The pilot must inch his plane forward, pierce the ring with the dowel, lift it off the pole, and return it to the hands of the instructor.

After a man has completed his 27 hours in the R-4B and been exposed to 70 hours of ground school he is ready for transition to the R-6 which is a sleeker, faster, longer-range helicopter. Also of Sikorsky design, it is powered with a 245-horsepower Franklin engine, cruises about 100 mph, and has about double the range of the R-4. This seemingly simple transition course requires 10 hours flying and 24 hours ground school.

With that much training behind him a pilot is ready to be assigned to duty. This might be to the Helicopter School as an instructor, to an emergency rescue squadron for work in an active theater or to a variety of special jobs such as flying off an AAF Aircraft Repair Unit (Floating)—a Liberty ship fitted out as a subdepot for roving service in the Pacific—or to an active theater for liaison, observation work and odd chores.

A new helicopter pilot is very apt to become a kind of missionary for direct-lift aircraft. He goes out to duty full of zeal for his eggbeater and for the peculiar capabilities of the craft. He often has to sell the idea that he really can hover in mid-air, that he really can pick up a man by rope ladder without landing at all. Having converted people to an appreciation of the capabilities of helicopters, he frequently then has to unsell them a trifle—convince them that his gadget has definite limitations. Hovering is the most expensive thing a helicopter can do—expensive in terms of fuel and demands on the powerplant—and there are conditions under which the R-4B, which is slightly underpowered, and even the newer types, cannot hover or ascend vertically. Ideal helicopter conditions are a cool day at sea level with a slight (about 10 mph) wind blowing. In still hot (thin) air at an altitude of 1,000 feet or more above sea level, the helicopter hovers with increasing diffi-

culty. Under such conditions the R-4B or an overloaded R-6 might have to indulge in something called a jump take-off. In this operation the pilot takes off by gaining forward speed immediately and without hovering in order to increase lift. Under extremely adverse conditions, the pilot may resort to a running take-off. It's a cinch he'll require less of a run than any known fixed-wing aircraft, but still he may not be able to rise like an elevator as he can at sea level.

It is only the hovering and vertical ascent qualities of helicopters which are thus affected by altitude and extremely hot air. R-4Bs have successfully flown well over 5,000 feet and their service ceilings seem to be limited only by their powerplants which are not yet supercharged. It follows, however, that certain obvious uses of helicopters in mountainous terrain—hovering to pick a man off a crag or cliff, say—might be limited by weather and temperature as well as range.

Recently the Helicopter School ferried 17 helicopters from Illinois to Texas. Here are some of the R-4s giving Tulsa, Okla., a view of the eggbeaters in formation.

The safety factor of the helicopter is something which usually requires explanation to the uninitiated. First, it should be said that the entire history of American helicopters includes very few fatalities—they could be numbered on one hand—but it should be understood that the thing is not yet an old lady's dream method of transportation. If the helicopter has forward speed so that there's sufficient airflow through the main rotor, in the event of engine failure the blades will autorotate if pitch is reduced immediately; in other words reduced lift is available without power and the craft can glide to earth. However, if the helicopter is hovering, altitude must be sacrificed in order to pick up sufficient forward speed to keep the blades moving. Thus the danger altitude for hovering is between 30 and 300 feet above the ground. At under 30, you're not high enough to hurt yourself; at over 300, you have enough height to pick up the forward speed necessary to sustain autorotation.

Another source of popular misunderstanding of helicopters has to do with its ability to fly in bad weather. It is true that the helicopter can hedgehop cross country under a ceiling of less than 100 feet—a ceiling that would ground ordinary planes. It is also true that if a helicopter pilot gets lost in weather he can stop cold, descend slowly and ask directions or read a road sign. He is not forced to keep roaring around in the murk at more than 100 mph until he runs out of gas or crashes into a mountain. However, strong head winds can reduce a helicopter's ground speed to almost zero and, to date, blind flying in a helicopter is an almost unknown art.

Instrument flying in helicopters waits for special helicopter instruments to be developed. If you can't see the ground you have no way of knowing which way you're going—the airspeed meter may indicate zero, while you're proceeding backwards or sideways at a very considerable clip. With no points of ground reference to guide him, a helicopter pilot has very little use for a compass because it will only show him the direction the fuselage is pointing without telling him in which direction he is actually going.

In other words helicopter piloting is full of unsolved questions—which is hardly odd when you consider that Sikorsky flew his VS-300 for the first time on the comparatively recent date of September 14, 1939; that the AAF Helicopter School didn't open for business until June of 1944. No one knows anything about helicopter acrobatics—could you loop it?—and no one has field-tested its theoretical maximum strain points. It's an engineering hypothesis that if an airborne helicopter's rotors are allowed to rotate at too low an rpm the comparative loss of centrifugal force will cause the rotors to fold up like damp feathers and the craft drop like a stone. Conversely, if rpm is allowed to exceed a certain danger point it is a theoretical possibility that centrifugal force would cause the rotor to tear apart—with very unpleasant results.

Which brings us to the AAF Helicopter School's mechanics course. The mechanics school takes about 90 aircraft mechanics per class of nine weeks. The students are mainly overseas returnees who request this training; upon completion of training they will be classified as rotary wing mechanics (SSN 995). They get theoretical and practical instruction in helicopter principles and construction, helicopter inspection and maintenance and such general subjects for about five weeks. Thereafter each man is permitted to take specialized instruction for an additional four weeks in any of several different fields such as rotor assembly, or transmission and powerplant. Many of them contrive to remain on flying status—wearing regular aircrew wings—because it is generally recognized that the problems of helicopter maintenance are so new the mechanic should have the chance of being aboard and actually seeing for himself what's wrong.

At this writing the overseas record of helicopters is already substantial although it was largely established by early field-test models of the 4—the YR-4. Probably the initial combat use of a helicopter was in the spring of 1944 in Burma by the First Air Commando Group which had four YR-4s assigned to it. In April of 1944, a liaison plane was forced down on a Japanese road deep behind enemy lines in Burma; its three occupants were injured and they were miles from a possible landing place.

Another light plane located the party and dropped a message instructing them to burn the plane and climb to the top of a nearby ridge where supplies and food were dropped to them. Shortly thereafter a helicopter rescued the men one by one, ferrying them back to a field where a C-47 could pick them up. After that successful use of the helicopter the process was repeated, the YR-4 flying more than 18 such missions in the next few days. On several occasions

(Continued on Page 56)

Master of the Mess

BY CAPT. HARRY H. RANSOM
AIR FORCE Staff

Chow hounds may love him or curse him, but the man behind the powdered eggs, dehydrated potatoes, the KP pusher and corned willie is—the mess sergeant

There were times when hot cakes on the griddle kept pace with the bombs falling nearby—and once incendiaries scorched the dessert.

Executive, diplomat, chef — with a touch of pirate and psychologist thrown in—make up the recipe for a successful mess sergeant in the AAF. The spirit of the old "come and get it" on the Western range has cropped out in squadron and group kitchens from Europe to the Pacific. On the other extreme, big-city restaurants are no greater business responsibility than an AAF consolidated mess. And as for what the want-ads call "conditions of work"—well, some mess sergeants have kept meals coming while bombs fell; most of them have developed what the trade calls "moonlight requisitioning" to a fine art.

Some services can be postponed, but eating has to start shortly after any operation, even an invasion. First gaps can be filled by K or C rations; pretty soon, though, regular mess must be established. In the Ryukyus, the AAF chuck wagons started rolling almost immediately, each unit turning out three times a day its stint of 200 meals, including homemade biscuits and all. On D-plus-12, Sgt. Delmar Middleton hung up some kind of special culinary record by producing out of a miscellany of boxes, cans, and bottles the most American thing on Okinawa—lemon pie.

Among the earliest Legion of Merit awards given to enlisted men were those recognizing this kind of ability. More recently, M/Sgt. Waldon G. French received the Bronze Star for his accomplishments—which run all the way from French pastry to training of new KPs.

Sergeant French, with an enviable reputation for producing meals that are good to eat, hasn't always had a quiet job. Just before one mess call, incendiary bullets started landing among his desserts. Moved to shelter, his kitchen continued to turn out meals. Such composure is valuable in a mess sergeant, but no more valuable than French's subtle art of frying dehydrated eggs "sunny side up."

Not all mess sergeants' triumphs have been among the military. Visiting dignitaries such as Congressmen have a way of dropping into a seat at GI tables, and many a mess sergeant has done himself and his squadron proud on such occasions. In Italy, one dinner designed primarily to keep the actress Annabella from getting homesick, has gone down

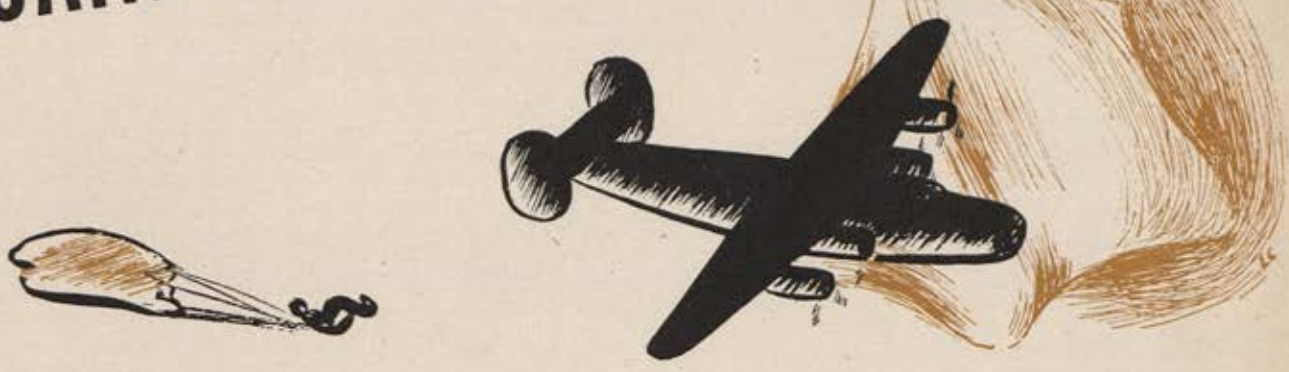
(Continued on Page 57)

Hot food is brought up to flight line in mobile field kitchens.

This is a chow-time scene at a 13th Air Force Pacific island base.

BY CAPT. ERIC FRIEDHEIM
AIR FORCE Overseas Staff

SCANDINAVIAN CARPETBAGGER



An account of the most sought-after and dangerous airline in battle-torn Europe: from Scotland to Sweden, via ATC

Berlin-bound passengers at Bromma Airport near Stockholm were just boarding their JU52 transport when a B-24 sailed down through the early morning fog and rolled to a stop at a far corner of the field. Swedish officials did not seem to pay much attention but the air and press attaches from the German Embassy who happened to be at the airport watched suspiciously. Obviously, this was not another American combat plane making an emergency landing on neutral soil. The Liberator was painted green and there were no identifying markings on its fuselage. The two Nazis also thought it odd that no one stepped from the plane until the JU52 had roared down the runway and headed off in the direction of Germany. And when nine men finally emerged attired in civilian clothes the Germans were convinced this was a case for investigation by the Gestapo.

The date was March 31, 1944, and in neutral Stockholm the arrival of a mysterious airplane could mean many things. In this atmosphere of espionage and intrigue, jittery Nazis were on the alert for any portent of the coming Allied invasion of the West and there was little doubt in their minds that the nine men from the Liberator were linked to events of magnitude.

Enemy suspicion reached fever pitch when one of the civilian passengers was identified as Bernt Balchen, a Norwegian by birth and now a colonel in the American Air Forces. Balchen, the Germans well knew, was one of the world's foremost authorities on Scandinavia and the Arctic. It was Balchen who had been chosen by General Arnold early in the war to establish vitally important outposts in Greenland and along the polar regions so that the AAF could open a new aerial highway to Great Britain. To the Germans, his sudden appearance in Sweden was a matter of great significance.

Nazi undercover agents had no difficulty in trailing the Liberator's crew to a suite at the Grand Hotel in Stockholm. By assiduous surveillance, the Germans learned that Balchen and his men held several meetings with American diplomats and representatives of the Swedish and Norwegian governments. After a week, during which the Gestapo seldom let them out of sight, the Germans deduced generally what was afoot.

Balchen was in Stockholm to evacuate 2,000 Norwegian military trainees from Sweden to Great Britain where they would be absorbed by the great Allied armies that were massing for D-day. He was also canvassing the possibility of repatriating some 1,500 American pilots and crew members who had been interned after making emergency landings in Sweden. Plans for these undertakings had been discussed at the American Embassy in London a month before and Balchen, as an officer of the Air Transport Command, was to establish a secret airline running between the British Isles and Sweden.

General Spaatz already had agreed to turn over a handful of war-weary B-24s and seven bomber crews

who had finished their combat tours with the 8th Air Force. Balchen insisted that the Liberators carry civilian airline markings and that their crews comply with Sweden's commercial air regulations. The Swedes, in turn, promised their AA batteries would not fire on the American planes provided they flew over certain areas reserved for commercial traffic. This would call for exacting navigation since these areas were only 20 miles wide.

For his British terminus, Balchen selected a remote airdrome at Leuchars, near the eastern coast of Scotland. The next problem was to plot the safest route across enemy-occupied Norway.

Allied intelligence knew the Germans had at least 250 night fighters based in southern Norway near Bergen, Stavanger, Oslo, Gossen and Trondheim. The enemy's coastal emplacements were formidable. And it was necessary to assume the Gestapo's intensive sleuthing in Stockholm had given the Nazi defenses ample warning of the impending operations.

Operations got underway in April, 1944, and during this month, Maj. David Schreiner made seven flights between Scotland and Stockholm. First passengers were the Norwegian trainees and Schreiner packed nearly 40 of them into his Liberator on each trip.

"It was anything but a luxury ride for those boys," Schreiner recalled. "I just packed them in like sardines. But nobody complained. They had been waiting for two years to get out."

The Germans, of course, increased their vigilance over Norway and sent up numerous patrols in an effort to intercept the B-24s. On several occasions, British detectors picked up enemy aircraft circling the route but each time the Liberators escaped by taking refuge over the Shetland Islands. The British also provided night fighter escort on some of the runs and during the entire evacuation operation the Germans failed to bag a single American plane.

Word spread to other Allied governments that the Air Transport Command's secret airline was operating into Sweden. Applications for passenger space poured into the American Embassy in London from all parts of Europe. Somehow space was found to fill part of these requests and by the end of June a large assortment of American, British and Russian officials were ferried over the route. Once the airline even transported the entire refugee government of Norway.

Stockholm's Bromma airport from which Col. Bernt Balchen conducted AAF airline into Great Britain. Photo was taken in 1936.

One day in July Balchen received an urgent summons from U. S. officials in London. A desperate plea for help had come from the underground in Norway: unless supplies were furnished immediately the resistance movement in that country would collapse.

Officials explained the situation to Balchen. They told him that for the moment not a single plane could be spared to help the Norwegian patriots. They also hoped to drop Allied spies into Norway because our intelligence about German military movements in the area was far from complete. They asked Balchen if his organization would be willing to use its transports for these operations.

Balchen quickly calculated the risks. It was one thing to parachute men and equipment onto the comparatively rolling terrain of France and the Low Countries during hours of darkness. Norway, however, was something else again. Here there were mountains and rough weather and the missions would have to be carried out in daylight. Moreover, Norway was well patrolled by the Luftwaffe and there would be few spots available for forced landings if anything went wrong.

After a brief consultation with Lt. Col. Keith M. Allen, one of his aides, Schreiner and Capt. Robert C. Durham, another of his veteran pilots, Balchen gave his decision.

"We'll do it," he said.

Work started immediately to prepare one of the Liberators for the new job. In the air forces these sorties to aid the underground were known as carpetbagger missions and some modification in the aircraft was necessary. Into the bomb bays went twelve 350-pound containers packed full with machine guns, ammunition, explosives and other material necessary for sabotage. Packages of food and clothing were stowed in the waist. The aperture normally covered by the belly turret, and known as the Joe Hole, would be used to release the packages and any individuals parachuting down to join the underground.

The first mission to supply the Norwegian patriots was flown on July 17, 1944. In the Liberator were Balchen, Schreiner, Durham and other veterans of the secret airline, including 1st Lt. Robert Withrow and Sgts. Albert Sage, William Jesperson, Joel Williamson, Wilford Bollinger and Neil Richards. Briefing for the mission had been exacting. Courses had been planned painstakingly to avoid interception and flak positions. The route selected was believed the safest one possible and if the Liberator remained on course the chance for success was good.

The run from Scotland to the rendezvous point was negotiated with clocklike precision. The Liberator skirted every ground battery and lookout post. The signal was received from the ground party and the supplies fell squarely on the target. Quickly the Liberator circled and pointed its nose for home. The navigator was just giving the plot when Balchen shouted to Schreiner:

"Go north!"

There was a loud chorus of protests.

"Go north!" Balchen insisted.

Reluctantly, Schreiner swung the Liberator about and headed deeper into Norway.

Ten minutes later, Balchen pointed excitedly at a towering mountain peak.

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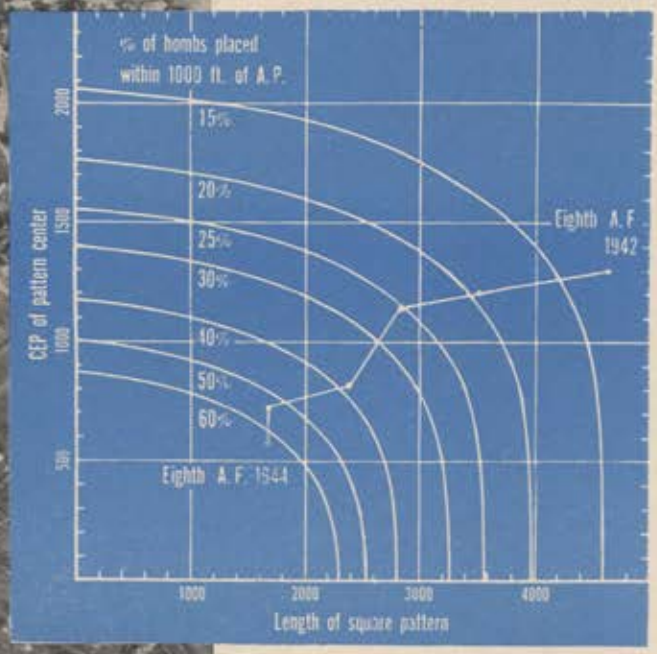
ASK THEM



On this chart, devised by operations analysts, a unit —group, wing, or air force—may trace its progress in bombing effectiveness. The vertical scale shows the aiming error of the pattern center. The horizontal scale shows pattern size. Curved lines show percentage of bombs placed within 1,000 ft. of the aiming point.

Notice the tremendous development of bombing accuracy in the 8th AF—from less than 15% in 1942 to more than 60 in 1944. Reasons for the improvement are clear: first, a marked decrease in pattern size, then a reduction in aiming errors from 1150 ft. to 850 ft., then another marked decrease in pattern.

Using strike photos, such as one at left taken on a mission over Stuttgart, units can draw up similar charts. Plotting their own position on the curve, they can determine at once where their greatest weaknesses lie—in the size of the bomb pattern or in aiming errors, or both.

BY CHARLOTTE KNIGHT

AIR FORCE *Staff*

The note lacked even the formality of an inter-office memo; it was written on a buckslip in the General's scrawl: "Can you figure out some means of devising B-29 formations for maximum defensive firepower? Can you do it without subjecting planes and crews to loss in the process?"

It was addressed not to a major general, not even to a major, but to a man in a blue serge suit called "Mister" whose office, like the General's, was in 20th Air Force headquarters in the Pentagon. Ten thousand miles away, across the Pacific, another "mister" was given another problem: "Bombs from our Snoopers are missing too many surface vessels at night due to quick turns by the enemy ships. Can

ANOTHER

AAF commanders pose the questions; it's the job of these civilian combat operations analysts to come up with the right answers

you dope out tactics and aiming procedure to neutralize this evasive action?"

Elsewhere, in every air force in the AAF, a handful of quiet, unassuming men called "mister" and a few called "doctor" are tackling other posers handed to them by the commanders for whom they work, problems that run the combat gamut from strategic bombing accuracy and enemy fighter tactics to precipitation static and effects of various bomb fuze combinations.

Officially these civilians are designated as "operations analysts." The fighting men with whom they work know them better as "Quiz Kids," "Op Annies," or "Doc." Actually they are groups of hand-picked men representing a wide variety of specialized fields—science, mathematics, law, economics, education, and many others. They are assigned to an air force only if requested by its commanding general. When they report to him they sever all ties with their laboratories, universities and industrial concerns. They are on his staff for one purpose only: to help him answer his $64 questions.

Collectively these answers add up to some of the most important contributions of the war. The analysts' practical, precise studies on flak defense, bombing methods, assessment of target damage, accidents, radar and communications have not only been instrumental in making the AAF a more effective fighting machine but have saved countless lives in the process.

This is the third year of their operation, yet the analysts work so unobtrusively they are still among the least known men in the air forces. One reason is that they take their purely advisory status very seriously. Another is that the matters they deal with are invariably "hot" security-wise. Only now can some of their European achievements be mentioned; their Pacific activities are still classified.

General of the Army Arnold early saw the possibilities of this novel use of brain-power. In 1942 he sent to all air force commanders a message saying, "This may be valuable. Can you use it?" Coincidentally in England Lt. Gen. Ira C. Eaker, then CG of the 8th Bomber Command, had conceived the same idea. "I want a group of civilians as able as my best officers," he said. "I want them free of all operational and administrative duties so that they can go out and investigate a problem and sit down and study it for three days or three months or longer, until they come up with the answer." On the Air Staff the project caught the imagination of Brig. Gen. Byron E. Gates who gave it a home and administrative backing in his Office of Management Control.

Spokesman for operations analysis is Col. W. B. Leach, chief of the Operations Analysis Division at Headquarters. On leave from his chair as professor at Harvard Law School, Colonel Leach considers himself a civilian-analyst-in-uniform. "It is obvious that the top minds of the AAF could solve any problems we've been handed better than any of us civilian outsiders," he says. "The great difficulty is that these officers are so inevitably absorbed with carrying out today's mission and planning tomorrow's they simply don't have the time and uninterrupted attention which most of these matters require. And that's where the Operations Analysis Sections come in."

One of their biggest assignments grew out of a query tossed to them by the commanding general of the 8th Air Force: "What can I do to get twice as many bombs on the target?" The analysts knew the general *didn't* mean the one about sending out twice as many planes, so they had to concentrate on the alternative: increase the bombing accuracy by 100 percent.

Improved rescue methods are among 40 or more different subjects occupying attention of civilian operations analysts assigned to AAF.

They took off their coats and went to work. On the basis of strike photos taken automatically at the time of bomb-release, the analysts plotted bomb patterns after every mission, and drew charts showing the size of pattern and error of pattern center. Weaknesses in the current system began to show up in black and white. For one thing it became obvious that, contrary to expectations, very large numbers of planes — "saturation raids"—placed a smaller percentage of bombs on the target than smaller numbers; for another, that the spread of the bomb pattern on the ground had to be reduced.

Recommendations for improvement were debated with group commanders and submitted to the CG. The bomb pattern was squeezed down by reducing the size of the combat box and directing a single sighting for range for the whole formation. Salvo release or minimum intervalometer settings further restricted bomb dispersion. After these and several other modifications in both training and flying were put into effect, the charts began to tell a different story: finally even the 100-percent increase goal was left far behind.

Laborious and exact strike-photo analyses by all operations analysis sections have tended to make them the score-keepers on effectiveness of combat wings, groups and even lead crews. The squawks have been many, but the loudest voice can't argue with the pictures-don't-lie evidence. In the 9th Air Force, Chief Analyst Lauriston S. Taylor installed a system of mission critiques extending to all phases of an operation. These hand an orchid to success and put the finger on failure; but, more important still, they show how the high performer got that way and what the low performer can do about it. Some remarkable reversals of form can be traced to the OAS combat clinics.

Bombing accuracy studies constituted but one phase of the work assigned to the OAS of the 8th under the successive guidance of Col. John M. Harlan and Lt. Col. Leslie H. Arps. As the danger of flak became a greater threat than the GAF in the final year of the air war against Germany, the analysts' attention shifted to anti-flak tactics. Among other counter-measures, they recommended a formation of squadrons stacked in altitude, designed to present multiple targets to each AA battery and reduce the total

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The Sting of the Scorpion

BY CAPT. L. P. BACHMANN
AIR FORCE Overseas Staff

ILLUSTRATED BY SGT. LOUIS S. GLANZMAN

Paradoxically, it was a shortage of fuel that gave the "Yellow Scorpions," a 14th Air Force P-51 squadron, their opportunity to build up a distinguished record of offensive action against the Japs in northern China.

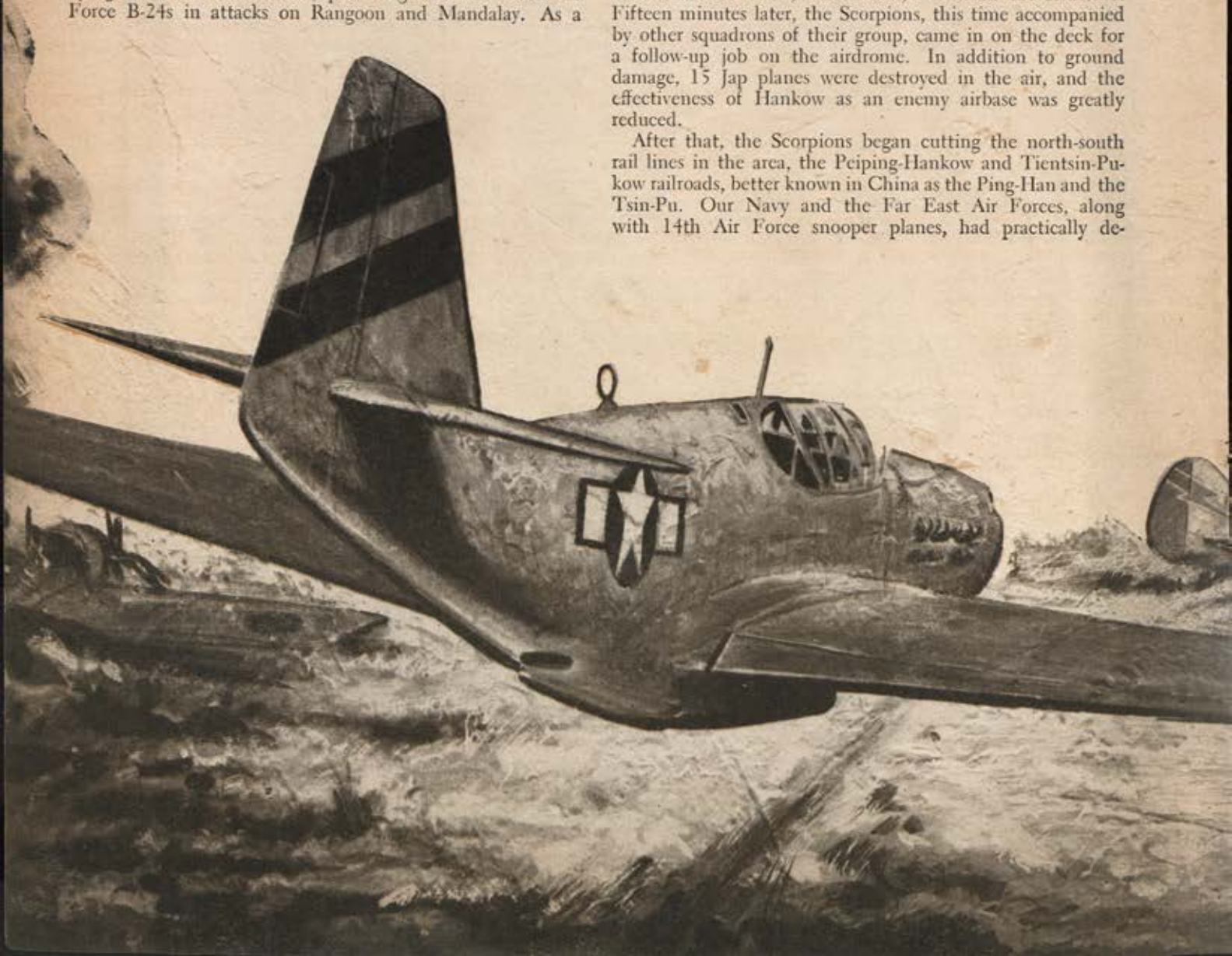
When the time came for the 14th to go on the offensive in northern China, there was only enough gasoline available for one squadron of the fighter wing known as Randall's Raiders to go into action. The Yellow Scorpions drew the coveted assignment while other squadrons marked time.

Another distinction held by the Yellow Scorpions is that they are probably the only squadron that was given its name by the Japanese. That story goes back to the unit's early days, in the middle of 1944, when their fighters were flying in Assam and Burma, providing cover for 10th Air Force B-24s in attacks on Rangoon and Mandalay. As a protection from our own gunners to whom the Mustang was new, they painted their prop spinners yellow.

When, at the start of the monsoon season, the squadron moved to an advanced base in north China, the Japs missed them around Burma. Radio Tokyo's explanation was that these "yellow scorpions" had been wiped out. Major J. J. England, squadron commanding officer, and his men liked the name, adopted it, and started to contradict the Jap radio report from their China bases.

On December 18, 1944, at Hankow, the squadron joined with B-29s, B-24s and B-25s in what was the heaviest air attack in China up to that time. The Superforts, unescorted, hit the dock area with full loads of bombs; then the B-24s and B-25s, with escort, blanketed the airdrome. Fifteen minutes later, the Scorpions, this time accompanied by other squadrons of their group, came in on the deck for a follow-up job on the airdrome. In addition to ground damage, 15 Jap planes were destroyed in the air, and the effectiveness of Hankow as an enemy airbase was greatly reduced.

After that, the Scorpions began cutting the north-south rail lines in the area, the Peiping-Hankow and Tientsin-Pukow railroads, better known in China as the Ping-Han and the Tsin-Pu. Our Navy and the Far East Air Forces, along with 14th Air Force snooper planes, had practically de-



stroyed all coastal shipping, and the Japanese had to use the rails to move men and supplies from north China to positions on the coast where they expect a landing by U. S. forces. After dropping bombs on a bridge, a flight of the Scorpions would then look for targets of opportunity, hoping to combine two tactical functions—isolation of the battlefield and knocking out the enemy's air strength. Since they carried bombs in place of wing tanks, lack of fuel usually stopped the sweeps about 40 miles short of Tsinan, an important and heavily-defended rail junction.

On December 22nd, the pilots, flying at considerable altitude, noticed a great many planes parked on the airfield at Tsinan. Lack of gas forced them to return to base, but two days later the Mustangs, carrying wing tanks, took off for Tsinan. The field was loaded with planes, and the Scorpions went back and forth, low over the field, for half an hour. They left 39 Jap planes burning. One plane blew up underneath Capt. John H. Honeycutt, and he returned to his base with a big chunk of Japanese aluminum in his wing. The day after Christmas, the squadron went back to Tsinan and got 29 more Japs. They went again on January 3, and got 13 more, through ground fire which was so intense that 90 percent of the Scorpions' planes had holes in them when they landed.

They were coming home from that last raid when they were jumped by 12 Oscars and a Tojo. "We were like the guy who has a better class of dreams: we could look but we couldn't touch," Capt. Warren Field, operations officer, said. "All but two of us were out of ammo. Lt. LeRoy D. Fahey was lucky. He had a burst left and got a probable. The whole thing developed into the damndest dog fight I ever saw. It was certainly the biggest camera gunnery practice ever held in China. We made passes at the Japs and got some wonderful pictures. They must have thought we were nuts. The whole mixup broke off after 10 minutes. We went home with nothing hurt except our feelings."

They learned a few days later that the Japanese major general in charge of that area had committed hari-kari because the Scorpion's missions had cost him a lot of face. "The P-51 is a very versatile plane," Captain Field said. "If it doesn't get the Japs one way it gets them another."

They kept right on doing this kind of work, dropping bombs on railroad yards and bridges, working over airfields, knocking Japs down in the air. The two fields at Peiping were loaded with transports, and the Scorpions beat them up. "It was like being in a shooting gallery with a shotgun instead of a .22," Captain Field said. The Japanese got so they drained the gas out of their planes on the ground. Although they couldn't take off after the Scorpions, there was the disappointment that they didn't burn easily either.

Then in February the Scorpions made their last big airfield sweep. There were only a few Japanese planes left in the area, not enough to be worth the gasoline it would take to wipe them out, and the Scorpions stuck to beating up rail lines. Finally in the middle of February, they were called back from their advanced base, and were replaced with another squadron from their group which wanted in on the fun. The Scorpions were assigned the defense of some B-29 fields, and managed to get more Japanese in the air. Occasionally they got an offensive job in, like going over to Nanking, challenging the Japs merely by being there, and then whipping them.

All during their busiest operations, more than 90 percent of the squadron's planes were always in commission. The crew chiefs did an outstanding job. Out in China, they don't worry much about first, second, third and fourth echelons of repair. "We can't pay any attention to what echelon a repair job is," M/Sgt. Dean A. Bushee, the Scorpion line chief, said. "We know we got to fix the planes. If we can't get one in shape, it goes to the junk heap.

"We've always got a stock pile even though we're out at the end of the supply line. It's very simple. We use one plane as a sub-depot. If a Mustang is laid up for major repairs, it immediately becomes available for spare parts for the other planes with troubles. When the ordered parts arrive, the cannibalized job gets everything that's been stripped from it. Of course, it's very rough on the crew chief whose plane is 'it.' Maybe that accounts for the fact that every guy works hard keeping his plane in order." ☆

When the Japs named its P-51s "Yellow Scorpions," this Mustang squadron struck out to earn the title

PARTNERS IN BATTLE

(Continued from Page 6)

with or without air help provided the German defenses did not change materially. The Ninth Army did not participate in the St. Lo offensive but reports show in this instance that the opposing forces were of such strength that it is possible a successful break-through could not have been accomplished without air cooperation.

Generally, I have found it ideal to have continuous air cover for each attacking column of the army. It is especially desirable to provide continuous column cover for each attacking combat command of the armored divisions. During the battle of France this condition generally prevailed because there were fewer armored divisions in the offensive than in the final stages of the war.

Tactical air reconnaissance has been valuable in supplying information of the enemy not available by other means, thus maintaining a check on all types of enemy movement within a distance of 30 to 40 miles from our front lines. The pilots of these airplanes, because of their specialized training, were frequently able to locate suitable fighter-bomber targets and lead the P-47s in for the attack. Sufficient aircraft for tactical air reconnaissance have been available and efforts have been made to locate airfields as close as possible to the enemy area. It is quite important that this be done in order that the weather conditions will be the same at the airport as in the enemy zone of interest.

At times, such as in a rapidly moving situation, it is difficult to disseminate the visually obtained information through normal channels and it is necessary to utilize all forms of communications including direct radio contact between the planes and the corps and divisions.

Inasmuch as the adjustment of heavy and super-heavy artillery by high performance aircraft (the P-51 Mustang) has become essential and practical it is believed that a new type of plane should be developed for this purpose possessing better visibility and providing for a two-man crew, thus permitting an artillery trained officer to conduct enemy installation searches and fire missions.

A material increase in our night photo reconnaissance operations would be an important factor in increasing the effectiveness of air and ground operations inasmuch as information obtained from enemy civilians and high-ranking German officers revealed that major troop and supply movements of the German army were made at night unless absolute military necessity required daylight movement. For instance, by utilizing night movement, the 116th Panzer Division was able to move from Dorsten to the Ruhr pocket unobserved by the air force. In order properly to be informed as to the enemy's intentions it is believed essential to have both night photo and visual reconnaissance on major road junctions, marshalling yards, canals, rivers, key cities, and other points through which troops may pass or assemble. In future campaigns, the Army should have available night reconnaissance on the same basis as daylight reconnaissance.

It might also be well for our air forces to initiate research toward the development of a new "tank destroyer" type of aircraft. This plane should mount a weapon lethal to tanks and should possess a degree of accuracy superior to that of the present dive-bomber.

These suggestions are not offered in any spirit of criticism. They simply reflect the measured judgment of battle-wise observers and commanders. I am putting them forward in the hope that before long the already successful teamwork between air and ground will reach a stage well beyond the hopes of its most ardent supporters. ☆

ASK THEM ANOTHER

(Continued from Page 31)

time of bomber exposure to fire. In the face of doubts that this formation could be flown, the 69th Combat Wing tried it on and flew it, both in training and in combat, with the predicted results. Not the least interesting feature of this particular problem is that the OAS report on the subject was prepared by a mercantile expert from a department store, an investment analyst from Wall Street, and a lawyer who had recently been legal assistant to the Chief Justice of the United States.

"The ideal analyst," says Colonel Leach, "is a genius who hasn't forgotten that the answers to hard questions come by hard work and not by looking into a crystal ball. In picking men that's the standard we shoot at. Sometimes we hit it." Four college presidents, leading scientists and mathematicians, and a sprinkling of prominent lawyers are to be found in OAS ranks. The theory is that if you take a very good man and put him in a brand new field like air warfare, he is bound to bring to a problem—no matter how exclusively military it may be—the same keen intellectual insight that made him successful in his civilian occupation.

The results tend to back up this reasoning. The three operations analysts responsible for developing the position-firing technique in flexible gunnery (see AIR FORCE January 1944) had never fired a machine gun in their lives before being handed this problem by Maj. Gen. U. G. Ent, then commanding general of the 9th Bomber Command. As sound director of MGM in Hollywood, probably the closest Douglas Shearer came to bombsights was in the filming of some aerial screen epic, but as chief of an OAS in the Pacific he was responsible for solving a most acute problem concerning a special aiming device.

Albert W. Arneson, civilian operations analyst, killed at Tarakan studying effects of bomb fuze combinations used in bombing Borneo oil fields.

The "Op Annies" are keenly aware of their great deficiency—lack of combat flying. They remedy this by getting out of headquarters and onto the bases, talking with the men and soaking in experience through the pores. Sometimes this isn't enough. Ed Hewitt, a mathematics instructor at Harvard, holds the Air Medal for flying seven missions over Berlin—as a civilian. And Al Arneson, an architect from St. Louis Park, Minn., lies in a grave on the beach at Tarakan where he was killed in action while studying at first hand the effects of our bomb fuze combinations.

Many of the problems presented to the OAS groups are highly local in nature. The Middle East came up with this puzzle: Early in the game air force units in Libya discovered that abrasive dust from airfields was ruining the engines of their bombers. The OAS was asked to take a hand. In a jeep filled with empty whiskey bottles, the analysts started out to collect samples of the brine from each of the salt lagoons just back of the Mediterranean shore. When they analyzed the contents they discovered a high concentration of magnesium chloride brine in some of the lagoons, and after experimenting with it they issued a report recommending the exact procedure by which this brine could be used to stabilize the quartz-sand dust on

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CROSS COUNTRY

News and Views around the World

Unfinished Business — Page 38

A Stroll on Luzon

Lt. Russell D. Giesy, P-47 pilot with a 5th Air Force Fighter Command group, found himself with a dead engine in the midst of a ground coordination strike against entrenched Japs in the Balete Pass area of northern Luzon. The fanatical resistance by enemy troops in the pass sector made it just about the worst possible place to ditch an airplane, but Giesy had no choice. His personal account follows:

I tried to stretch my glide toward our lines but I was losing altitude so fast I decided to bail out. A brisk wind began carrying me towards the Japs, despite my pulls on the risers to change direction. As I neared the ground I heard snipers' bullets whizzing past me, but I hit tree tops without stopping any bullets.

The chute hung momentarily, then let me drop about 20 feet to the ground. I was dazed for a moment, then got up and started running. Within a few seconds I came to my senses, however, and took out a miniature compass an intelligence clerk had given me a few days before. After checking this and figuring I was east of Highway 5, the main road, I walked across a ravine and up the other side to a wooded ridge. I decided to keep on the ridge, rather than risk being spotted directly on the road.

About this time things started happening. I ran across some enemy foxholes and, as I started down the side of the ridge, I spotted a lone Jap standing nearby. I heard Jap voices behind me. As I started back around the ridge, an artillery barrage cut loose showering shrapnel all over the place. After several moments of indecision, I ran down an incline and smack into a Jap camp which, fortunately, proved to be deserted for the time being. I saw a pistol and belt lying on one equipment pile, and since I had no pistol with me, I was tempted to stop for it, but decided to keep running.

I crawled up the next ridge and found two unmanned Jap machine gun positions directly in front of me, one about 50 feet away and the other some 100 yards farther along. By now, I was so exhausted I rolled about 20 feet into the brush to wait and rest.

Soon two Japs came running up the same trail I had used and stopped within a few feet of my hiding place. One of them went over to the nearest machine gun, but the other stood near me for an hour and a half. I spent the entire time praying. Finally, he moved a little farther away and I decided to take a chance on clearing out. As I got up I saw the other Jap leave the machine gun and head in my direction. Turning quickly and hoping he would think I was his companion, I started walking down the trail.

The ruse worked and he came walking along behind me. Although he was armed with a rifle, I decided to slow down to allow him to catch up with me. I led him to the edge of a cliff, and when he was almost by my side, I wheeled and slugged him in the face with all my strength. He tumbled, screaming, down the cliff.

I turned and ran along the eastern side of the ridge. In my hurry I stumbled into a trench, and looked up to see a very surprised Jap officer two feet away on my right. He wore heavy horn-rimmed glasses and was holding a pair of binoculars. He reached for his pistol, and I struck him as hard a backhand blow as I could manage in my off-balance position. I felt his glasses crunch and he fell over backwards. I dove over the top of the trench and rolled down a steep incline.

At the bottom of the hill I found a creek with about two feet of water. Several times I tried to crawl up the bank to gain the main road, which I could see at times, but I was too exhausted to make the grade. At last I came to a point where the creek bank leveled off and I climbed out to the road.

I had been walking in the center of the highway for some time when I came to a sharp bend. As I rounded the curve, one coldly spoken word broke the stillness of the dark, which had come about an hour before. That word — "Halt!" — made me the happiest I have ever been. I had reached an infantry outpost.

I asked the men why they hadn't shot me when I came stumbling down the road in the dark, and they said they knew I had bailed out and were hoping and praying that I would make it back alive.

The boys found a jeep and rushed me back to the regimental first aid station where I was "wined and dined" and patched up. All in all, I couldn't have received more kind and gentle attention if I had been a newborn babe.

Memorial

One of the first memorials erected by the French in tribute to Americans who died on the soil of France was recently dedicated near St. Cyr de Valorge. Residents of two villages, St. Cyr and Tarare, joined in constructing the monument on a hillside where five American airmen died in a B-24 crash while carrying supplies to resistance forces. They were members of the 492nd Bomb Group of the 8th Air Force. A memorial mass for the dead airmen was held at the village church, followed by ceremonies at the flowerbanked monument.

Plane Luck

This American fighter pilot, shown in an accompanying photograph, walked away from his plane, uninjured, after it had crashed on Mindoro Island in the Philippines. The plane spun down in flames after receiving a burst of fire from a Jap Zero.

Walk-away landing.

Locomotives by Air

Railroad locomotives were needed by Allied ground troops to establish supply routes in forward territory captured from the Japanese. Because of the mountainous territory and lack of good roads between India and Burma, the only way to get switch engines to the points where they were needed was to transport them by air.

Six American-made engines were dismantled and crated at a civilian railroad shop in Calcutta. The heavy parts of the locomotives, some weighing as much as 1,700 pounds, were hauled to a nearby airport and loaded into an AAF C-87 transport plane. The destination was a front line flight-strip which lacked 2,000 feet of the length normally required for four-engine transports.

Everything was against the landing being made with safety, yet the C-87 was brought in without mishap by Lt. Col. Payne Jennings and Lt. Frank L. Gurney of the Eastern Air Command. The heavy locomotives were unloaded by hand by Indian troops,

with the aid of local Burmese. The parts were carried bodily to the nearest railhead and put together again.

The acute shortage of locomotives in Burma had been caused by pilots under Maj. Gen. George E. Stratemeyer's Eastern Air Command in their drive against Jap supply routes. They smashed so many formerly used by the enemy that it was necessary to bring in engines to take over the lines and keep Allied supplies rolling.

Prevent Burns

Air Forces Manual No. 48 does not contain many words, but the pictures carry a powerful wallop for airmen who are careless in protecting themselves from fire.

Designed to counteract fire negligence, this new manual explains its purpose by stating that almost 90 percent of all aircraft burns are on head, face, hands and arms because these parts usually are not covered. A good look at some of the medical photographs in the booklet should cause any flying man to take precautions.

The publication was produced at Headquarters by AC/AS Training, Training Aids Division, and the Office of the Air Surgeon. Routine distribution has been made, but additional limited quantities are available upon request through channels to Training Aids Division, One Park Avenue, New York 16, N. Y.

Man Alive

Back from Death's door—literally—came T/Sgt. George L. Moscovis of Opelousas, La., now a patient at AAF Regional and Convalescent Hospital, Miami District.

It's a strange story the husky young 12th Air Force B-26 engineer-gunner tells, but official records prove that it's true.

Alive, but not kicking.

Moscovis took a 1,000-foot free fall when he bailed out of his burning, stricken bomber during a mission to Southern France. His parachute did not open, and trees or brush broke his fall, saving him from death.

He was found by German soldiers who thought he was dead and stripped his body of all identification and valuables. French Maquis later found him and also thought him lifeless. A French doctor pronounced him dead.

In a deep coma for four hours, Moscovis

QUESTIONS
on Policy and Procedure

Q. May an individual be assessed a money penalty for minor derelictions and omissions without resort to trial by court-martial or action under AW 104?

A. *The assessment of money penalties of any nature whatsoever against military personnel without resort to court-martial, to action under AW 104, or to other prescribed procedures set out in Army regulations is unauthorized. The funds constituted of such illegal fines and forfeitures likewise are without authorization. (Fines under AW 104 may be assessed only by a Brigadier General or higher upon a captain or lower, and then only a maximum of one half of one month's pay.) (AAF Ltr 35-200, 30 March 1945)*

Q. Who is authorized to wear flying instructors wings?

A. *Flying instructors on duty with the AAF during such time as they are assigned to this duty, except that individuals who have satisfactorily performed a total of six months duty as flying instructors since 8 September 1939 are authorized to wear the insignia permanently. A flying instructor is defined as an officer, warrant officer, flight officer, or enlisted man, on flying status whose assignment and principal duty is actually instructing students during aerial flight in the duties of a member of an aircrew, or whose assignment and principal duty is supervising or checking the progress during aerial flight of students undergoing such instruction. (AAF Reg. 35-6 dated 26 August 1943)*

Q. May personnel who are assigned or on TD with an organization wear the Distinguished Unit Badge authorized for the unit to which they are attached or assigned?

A. *Yes. Individuals who were assigned or attached to the unit on the occasion for which the citation was awarded are entitled to wear the badge as a permanent part of the uniform. Persons who are subsequently assigned or attached to a unit which has earned the citation are entitled to wear the badge as a temporary part of the uniform so long as they remain with the unit. (Cir. 333, WD, 1943)*

Q. How is a new tobacco ration card for use in the continental United States obtained when the original is lost?

A. *The individual must obtain a certificate from his superior officer, stating the applicant for a new card is eligible because the card initially issued has been lost and a diligent effort has been made to find it. The certificate will be submitted with the application. A certificate must also be obtained if an individual did not apply for a card during the initial issue period. This is not true of new inductees and returnees. (Cir. 135, WD, 1945)*

Q. What clearances are required of an officer or warrant officer before departure from a post upon change of station?

A. *He will arrange for a clearance from each agency on the post from which clearance is required, in accordance with existing (post) instructions (AAF Manual 5-1, 15 April 1944). These instructions will vary at different stations. Such clearances are for the protection of both the post and the individual. Also note par 1b (1), AR 605-120, which states that "an officer departing from any post, camp, or station, under circumstances which involve a change of status, will report in person to his next superior commanding officer having administrative functions at that place, at the office of such commander, within 24 hours of departure, and will furnish him with the data necessary for notation on the morning report, and a copy of his authority for departure, if required."*

Q. Does the fact that an enlisted man's Service Record is not available constitute a justifiable reason for his non-payment?

A. *No. An affidavit may be obtained from the enlisted person to prepare a temporary Service Record as authorized in AR 345-155, and Sec XXXIV, TM 12-230.*

Q. Do AUS and Reserve Officers get credit for leave which would accrue during their terminal leave?

A. *Yes. For example, if an officer being relieved from active duty under honorable conditions has two months (60 days) leave to his credit, he may be given 65 days terminal leave. An officer accrues 2½ days leave per month while on active duty. He is considered to be on active duty while on leave, and therefore would accrue an additional 5 days on the 60 days of accrued leave. (AR 605-115, as amended)*

PREPARED BY THE OFFICE OF THE AIR INSPECTOR

regained consciousness just in the nick of time. His eyes flicked open just as the Frenchmen were lowering his body from a table into a coffin, preparatory to burial. A weak grin split his tanned features.

"They started to kiss me," he recalls, "then they all began to cry. Then damned if I didn't start to cry, too."

A few days later, the French wrested control of the town from the Germans and turned Moscovis over to Allied hospital authorities where he was examined and given treatment.

"Thanks!"

AIR FORCE MAGAZINE

An act of heroism performed by Moscovis before he left the burning, stricken bomber also won him the Distinguished Flying Cross. Seeing a crewmate pinioned under equipment, Moscovis tore him free, got him into his parachute, helped the dazed gunner to the escape hatch. Part of the way out, the gunner's foot again became caught. Moscovis again freed him, shoved him out, then went out himself.

A Perfect Day

A heavy rain poured down on New York City. At LaGuardia Field, ceiling and visibility were both zero. A thick fog shrouded the field and a strong wind ripped across the bay.

Maj. John W. Adams walked into the office of Lt. Col. E. A. Cutrell, Navigational and Landing Aids Unit, Air Transport Command. "Well," he asked, "how do you like the weather?"

"Beautiful," Cutrell replied as he watched Adams remove his raincoat.

"All fields from here to Presque Isle, Me., are closed in," Adams reported.

"Excellent," the Colonel answered. "Perfect."

"All military and commercial flights have been cancelled," Adams continued.

"This is the weather for us," Cutrell said. "Let's go."

Within an hour, Adams had taken off for Presque Isle in a C-47. Shortly after, Cutrell got into his C-47 and made 17 landing approaches at fields in the New York area.

The two flyers were not trying to end it all. They were taking part in ATC's experiments in all-weather flying, attempting to determine the equipment and procedures necessary to conduct all military and commercial schedules on a year-round all-weather basis.

Major Adams flew up to Presque Isle without incident, but when he neared the field he discovered that he had to let down through 4,000 feet of icing in three-quarters of a mile visibility. He followed the prescribed procedure, using a system of radio beacons and special navigational aids, and landed without difficulty.

Back in New York, Cutrell made approaches at three different fields, and, although he was unable to determine the exact location of the runways, he could have made an emergency landing through the weather if it had been necessary. Rather than take any chance on an unnecessary accident however, he flew to Washington and made a contact landing.

ATC's Navigational and Landing Aids Unit was established at LaGuardia in July, 1944. Its purpose is to fly all-weather conditions in the New York area and the northeast airway between New York and Maine when other flying, both military and commercial, is cancelled. This was successfully accomplished on all but two days, and those postponements were the result of snowdrifts which made take-offs impossible. During a bad season of weather, from February 10, 1945 to March 12, 1945, a daily schedule was maintained between New York and Maine without cancellation.

Experiments are being conducted on a regular basis with various types and combinations of navigational aids and ground equipment. The expected results are summed up by Colonel Cutrell who says, "The day is not far off when most military operations will be conducted on an all-weather year-round basis."

Room Service

Maj. Beryl M. Simpson makes field IG inspections for the AAF, being assigned to an inspecting team which covers the India-Burma theater. The male member of the major's team is the Inspector General, himself, and she is the administrative specialist. During such trips throughout the theater Major Simpson runs up against some rather basic problems. Simply stated, there are stations and outposts which have no facilities for a lady's comfort. But somehow or other the endless ingenuity of the USAAF always manages to arrange for the Major to have some semblance of comfort, wherever night finds her.

Recently a visit was scheduled to an air emergency rescue squadron. When this information grapevined to the men in the lonely outpost, they sent frantic wires that they had no place to keep a Wac. Headquarters got worried, but Major Simpson did not. She packed a pup tent and started off into the back country. Meanwhile the frantic squadron began looking around for a place for her to sleep. After a time they located the palace of a Maharani. When Major Simpson went to bed that night she had a wide choice. The palace attendants offered to show her each of the 300 rooms.

Home Bound Airlines

Pilots and combat crews of the 15th Air Force make no secret of their new destination, Tokyo, via U. S. A., but their heavies will be mediums when they begin shaking the suki yaki out of the Japs. Converted B-17s were used to bring infantrymen to Casablanca, thence to the States. Airmen leaving the mud, dust and cold of sunny Italy have jokingly decided that whatever living conditions they find in the Pacific will be a vast improvement.

The sergeant on Cross Country cover

It's going his way.

takes a long term view of his next job, judging by his supply of overseas stripes he has available for the next theater of operations. He, too, makes no secret of his ultimate destination.

The Wall Came Down

In days of old when knights were bold, but without supporting aircraft—the storming and scaling of castle walls was a difficult and costly task. In this war, however, when the AAF was faced with a modern counterpart of the battle of Jericho, it replaced Joshua's trumpet with a somewhat more efficient method of attack—2,000-pound bombs released from low flying B-25s. The results were the same: the walls came tumbling down.

The locale of the modern Jericho was in Burma where ground troops of the British and Indian 14th Army Forces surrounded Fort Dufferin in Mandalay and were faced with the problem of attacking a strongly defended fort which was protected by towering walls and a wide moat. The 12th Bombardment Group of the Eastern Air Command—known as "the Earthquakers"—was called upon to destroy the north wall of the fort.

Four B-25s started the attack by dropping three 2,000-pounders right on or directly against the 400-year old wall from an altitude of 200 feet. A full squadron of Mitchells followed with a release from 6,000 feet, and the job was ended a few hours later when 35 B-25s assaulted the entire northern area of the fort, dislodged the Japanese emplacements that commanded the approaches, and effectively eliminated a deadly crossfire which had prevented previous ground efforts to cross the moat. The fort was occupied less than 13 hours after the bombing started.

Crewmen of the 12th called upon Kipling for their comments concerning the battle. Lt. Richard M. Clark, pilot, said, "Flying bombs replaced Kipling's flying fishes over Mandalay, and the Japs saw plenty of them." And S/Sgt. Walter C. Smith, combat photographer, added, "I've been wanting to see Mandalay for a long time, ever since I read that poem, and today I got a good look."

The fall of Mandalay, second city of Burma, was another milestone for the 12th Group in helping to chase the Japs out of southeastern Asia.

Postwar AAF Officers

The AAF has initiated a second evaluation survey covering every officer in the AAF to provide information for use in selecting officers for the postwar AAF. For this purpose, revised Officer Evaluation Report blanks, AAF Form 123, have been distributed to all AAF activities by the Office of the Assistant Chief of Air Staff, Personnel.

Useful information has been provided by the first evaluation, recently completed. The second survey has been undertaken to bring previous information up to date, to obtain reports on officers omitted in the

PLANE BONERS

Analyzed by Veteran Pilots

CASPER, WYO.—Having feathered his No. 4 propeller when oil pressure dropped at 10,000 feet, the pilot of a B-24J needed more power when he made his final approach for a three-engine landing. He advanced throttles, but only the No. 1 and No. 2 engines responded. Veering to the right, the plane crashed short of the runway. No one was injured but the Liberator was damaged badly.

Comment: Although from 10,000 feet the pilot had plenty of time to check and recheck his cockpit procedure, investigation disclosed he still had made the error of placing No. 3 engine instead of No. 4 in idle cutoff. Thus, what should have been a fairly routine three-engine landing became, instead, a crack-up.

FORT SUMNER, N. M.—Although warned by the tower that an accident had occurred on the runway, the pilot of a P-40N, who had just landed, continued to taxi without essing. Suddenly he saw the crash directly ahead of him and applied his brakes so abruptly that the plane nosed up. The engine, propeller, spinner and bathtub were damaged badly.

Comment: Taxiing accidents always are inexcusable. Even under ordinary conditions, a single-engine fighter pilot should ess his plane in order to observe what's ahead of him and the pilot in question was doubly negligent in view of the fact that he had been warned of trouble on runway.

DALLAS, TEXAS—Go-around was made in an A-26 because of traffic congestion. On final approach landing gear warning light was green and hydraulic pressure OK. On touching runway the nose gear collapsed. Pilot stated that he lowered gear at approximately 200 mph.

Comment: Relying only on the warning light isn't safe procedure. Check light, gear indicator and hydraulic pressure gage. Cap these precautions with a visual check of nose gear through cockpit floor window. Wheels on A-26 main landing gear extend against and retract with the slipstream. Strict observance of airspeed limitations must therefore be followed in lowering gear. Number one rule is: Do not operate landing gear until airspeed is 160 mph or less. Your nose wheel may not extend at higher speeds and you may cause damage by attempting it.

LAUREL, MISS.—Flying a navigation mission in an A-26, the pilot was instructing the gunner in map reading and use of the E6B computer while at an altitude of 300 feet. Looking up he saw a tree—but not in time to miss it.

Comment: An airplane at 300 feet is a poor place to hold ground school.

8TH AIR FORCE—Crosswind landing was attempted by P-51 pilot. The P-51 fell off on the left wing and swerved off the runway, demolishing two parked gliders.

Comment: A successful crosswind landing isn't difficult if procedure recommended in Pilots' P-51 Training Manual is used:

1. Drop the wing into the wind slightly to counteract drift.

2. Just before touching runway, level your wings.

3. Make a wheel landing if the crosswind is excessive, gusty or otherwise doubtful.

4. Use less flaps for any appreciable crosswind.

BIRMINGHAM, ALA.—Flying a C-47 ferry mission on CFR, the pilot requested an instrument clearance when he ran into bad weather. IFR clearance was granted and the plane continued on its flight. The C-47 encountered extreme turbulence. Several passengers, not using safety belts, were tossing about the rear of the cargo plane. A Wac passenger struck her head on a bucket seat, suffering a brain concussion.

Comment: When he changed to IFR the pilot didn't order all passengers to fasten their safety belts. Protect your crew, passengers, and yourself by insisting on all safety precautions. You are the airplane commander and responsible for all occupants.

APO 493—Bringing back a B-29 from a routine bombing and gunnery training mission, the pilot was giving his copilot instruction in flying and landing technique. Sitting in the copilot's position, the pilot lowered the landing gear. At the end of the landing roll the acting pilot started to turn off the runway, asking for flaps up. The pilot, acting as copilot, pushed a button. The landing gear came up and the Superfort settled on the ground.

Comment: Flaps don't work off the landing gear switch.

HOBBS, N. M.—Pilot in a B-17F, light because all turrets, guns and armor plate had been removed, ran up inboard engines to check magnetos. The combination of running engines and a tailwind brought the tail up far enough for two props to strike the ground.

Comment: Turn your plane into the wind for sure safety on an engine run-up.

PREPARED BY THE OFFICE OF FLYING SAFETY

NEW BOOKS

WAR

MISSION BEYOND DARKNESS. *Joseph Bryan* and *Philip Reed*. The story of the carrier Lexington's Air Group 16 during first Battle of Philippines. DUELL, SLOAN & PEARCE, N. Y., 1945.

THE SUPERFORTRESS IS BORN: THE STORY OF THE BOEING B-29. *Thomas Collison*. An illustrated account of the design, engineering, production and operation in combat of the Superfortress, by its civilian coordinator. DUELL, SLOAN & PEARCE, N. Y., 1945.

HISTORICAL

THE MILITARY STAFF: ITS HISTORY AND DEVELOPMENT. *James D. Hittle*. Staff organizations and functions of modern armies, with their historical backgrounds. MILITARY SERVICE, HARRISBURG, PA., 1944.

POST-WAR

A GUIDE TO THE EVALUATION OF EDUCATIONAL EXPERIENCES IN THE ARMED SERVICES. *American Council on Education*. The outgrowth of recent studies on the relation of service educational experiences to civilian educational institutions in veteran readjustment. AMERICAN COUNCIL ON EDUCATION, WASHINGTON, 1944-1945.

TECHNICAL

AIRCRAFT VIBRATION AND FLUTTER. *C. R. Freberg* and *E. N. Kemler*. Fundamentals and general phases of the subject. WILEY, N. Y., 1944.

PRINCIPLES OF FIREARMS. *Charles E. Balleisen*. Engineering fundamentals for analysis, design and construction of modern firearms. WILEY, N. Y., 1945.

VIBRATION ANALYSIS. *N. O. Myklestad*. Methods for solving vibration problems, particularly in airplanes. MC GRAW-HILL, N. Y., 1944.

YEARBOOKS AND HANDBOOKS

AIRCRAFT ENGINES OF THE WORLD, 1945. *P. H. Wilkinson*. A new edition, revised, of a basic aircraft engine encyclopedia. PAUL H. WILKINSON, N. Y., 1945.

AMERICAN HANDBOOK. *U. S. Office of War Information*. A companion volume to the *United States Government Manual*. PUBLIC AFFAIRS PRESS, WASHINGTON, 1945.

SCIENCE YEARBOOK OF 1945. *J. D. Ratcliff*. Latest developments in aviation, chemistry, physics, medicine, and other sciences. DOUBLEDAY, DORAN, GARDEN CITY, N. Y., 1945.

These books are available to AAF personnel through the AAF Field 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 AAF Headquarters Library.
Personal copies of these books may be obtained from the publishers or retail bookstores.

first evaluation, and to effect a finer screening of officers.

The first evaluation reports showed a surprising number of AUS officers to be interested in and—according to their commanding officers—suitable for the Regular Army. However, there were reports that some individuals expressed interest in Regular Army commissions only because they feared that to do otherwise might prejudice their present positions. In the second survey, it is being made clear to all organizations and all individuals that there will be no discrimination against any officer merely because he is not interested in the postwar AAF as a professional career.

As in the first evaluation, information to be obtained through the new reports will be used at this time for planning purposes only. No definite decisions on officers can be made until Congress determines the organization, character and size of the postwar military establishment, including the air force. The evaluation will enable the AAF, however, to act more intelligently and more expeditiously when the time comes to make decisions on individual applications for commissions in the Regular Army or organized Reserves.

The new Form 123, smaller and simpler than the original one, seeks detailed information on the individual officer. To be filled out in each case by a superior officer, usually the immediate superior, it scores the individual on 13 characteristics: intelligence, judgment and common sense, initiative, force, leadership, moral courage, cooperation and teamwork, loyalty, perserverance, reactions in emergencies, endurance, industry and attention to duty, and personal traits and habits. On each characteristic the officer is scored from 1 to 10.

The officer reported upon also is graded from 1 to 10 on his "relative professional position" in comparison with all other officers of the same grade and military occupational specialty known to the reporting officer. The report shows also what attitude the reporting officer would take toward having the individual in his own outfit in war or peace. The desires of the individual toward being commissioned in the Regular Army or the Reserves is shown, and the reporting officer makes his recommendation.

Generally speaking, grade recommendations are made according to age groups, as follows: brigadier generals, 52 through 56; Colonels, 44 through 51; lieutenant colonels, 41 through 45; majors, 34 through 40; captains, 27 through 33; first lieutenants, 24 through 26; second lieutenants 21 through 23; warrant officers, 21 through 44; flight officers, 19 through 23. Any departures from this age grouping in making grade recommendations must be explained.

At the discretion of the commanders of air forces and commands, selection boards or review boards may be established at appropriate places to handle the reports. Where facilities are available, the forms are recorded in machine records. Then, as completed, the forms and corresponding machine record cards are forwarded to the Assistant Chief of Air Staff, Personnel, in Washington, where they will be processed by the Officer Selection Board established in that office.

Jobs For Veterans

The Air Technical Service Command, largest employer of civilian personnel in the AAF, is now endeavoring to find a job for every discharged veteran who is interested in this type of work.

Col. Ralph Nemo, chief of personnel and base services for the ATSC, has announced that every effort will be made to employ discharged veterans as long as vacancies exist in capacities which will use their skills and experiences. The ATSC has more than 6,000 types of jobs in 137 installations throughout the country.

To reach returned veterans in hospitals in the States, the Personnel Distribution Command will interview men to determine where they would like to be assigned and, if discharged, what type of work they would be interested in. At the same time a brochure outlining the ATSC employment plan is distributed among veterans so they may evaluate its possibilities and compare them with jobs offered in private industries.

It is believed that this is the first concrete program to be offered for reemployment of veteran service men, and while the program will be available to all AAF men being discharged for medical reasons, it is anticipated that most individuals will return to private industry and Civil Service. The program is not designed to compete with industry, but is offered as an assurance to the veteran that he will get a job in the government in the event that he does not obtain one otherwise.

Air Evacuation

A wounded soldier's chance for recovery is much better today than it was at the start of the war. Air evacuation in the Pacific has kept stride with new discoveries in medicine and surgery—as well as the thousand-mile surges of Nimitz and MacArthur. This picture shows only a portion of the personnel and equipment necessary to move 24 litter cases from Okinawa to the United States by air aboard one of

All this and cooks too.

Some of the best people.

the Air Transport Command's big transport planes. A total of 160 men and women are shown in this picture, and an idea of the magnitude of the operation may be gleaned from the fact that ATC's Pacific Division carried 68,312 patients out of forward Pacific areas from January 1, 1944 to April 30, 1945.

Meet the Kachins

For two days a radio team of the 10th Air Force, Eastern Air Command, climbed along game trails which took them to their new post in the wild mountain country of Burma. They were to operate there for nine months, completely isolated. It was Christmas Eve when the 10-man team arrived; three operators, three observers, one mechanic, a cook and the non-com in charge, Sgt. Arthur Mittle of Hachuta, N. M.

All knew they were going into country inhabited by natives called Kachins, but they did not know how they would be received. After the two-day climb they reached their assigned peak on the 4,500-foot mountain, so tired they went immediately to bed.

Along in the night they were awakened by the sounds of native voices, and blinked in amazement when two long lines of Kachins passed them carrying torchlights and singing Christmas carols. Not to be outdone, the radio team returned the compliment by singing, "I'm Dreaming of a White Christmas," and "Silent Night."

In a speech the next day an English-speaking Kachin welcomed them as friends.

Men assigned to these lonely outposts give warning of all aircraft and transmit the information to a central plotting station which follows the movement of all aircraft in Burma. In addition to this, these posts serve as centers of good-will between the Americans and the Burma hill people, some of whom had never seen a white man before the air warning personnel appeared.

The medic of this particular group has given medical service to hundreds of natives, visiting settlements for miles around. In return, the Kachins bring chickens, eggs, venison and bananas to the soldiers.

"The men treat these people with genuine respect," said Sergeant Mittle. "There is no such word as 'steal' in their language, and theft is beyond their understanding. They share their crops and game, elect their leader (head-man), never quarrel, and are neither subservient nor arrogant."

As one of the radio men put it, "We never thought that people could be so good as these Kachins."

CAP Supervision

Supervision of the military activities of the Civil Air Patrol, an auxiliary of the AAF, will be delegated to the three flying commands and two technical commands of the AAF Training Command, it has been announced by Lt. Gen. Barton K. Yount's Training Command Headquarters. Col. Earle L. Johnson, CAP national commander, will continue to supervise the civilian activities of the CAP through the 48 state wing commanders, acting in a dual capacity as an AAF officer and CAP commander. Supervision and responsibility for the activities of the Civil Air Patrol were transferred to the Training Command from AAF headquarters in Washington on April 1. Present activities authorized for the CAP by the AAF include search missions for lost Army aircraft, and providing practical ground and preflight instruction in aviation subjects to youths between 15 and 18 years of age. CAP cadets, selected on a merit basis, will be permitted to visit AAF installations during the summer months for a maximum of two weeks to stimulate interest in aviation.

"Or Else —"

It took a special kind of guts to do what Red Erwin did, but in his own words it was "do it, or else."

S/Sgt. Henry Eugene Erwin, 24-year-old communications chief on a B-29, is now recovering from white phosphorous burns at Northington General Hospital, Tuscaloosa, Ala.

Things have happened fast since a night-marish morning in April when a phosphorous flare Erwin had tossed out of the plane blew back inside the B-29.

"The entire ship was filled with yellow smoke and I knew that if it got into the bomb bay it would blow us all to hell and back." Red explained recently at the hospital.

"I felt around on the floor until I touched it. I don't know how I managed to hold on to it—was like dipping my hand into liquid fire. I crawled up into the cockpit about 30 or 40 feet and managed to hurl it out of the window.

"I remember the colonel yelling 'my God, let's get to Iwo Jima!' and the rest of the crew spraying me with 'freeze' from the fire extinguishers. Then I blacked out."

At Iwo the medics did what they could for his badly burned face, arms and legs. A few hours later Erwin was back at Guam in a Navy hospital. While in this hospital the sergeant had two rather unexpected visitors. The first was Maj. Gen. Willis H. Hale, who presented him with the Medal of Honor. Of this ceremony Erwin says, "I was so full of injections it was all a lot of

TRAINING AIDS

Newly Standardized for Field Use

FILMS

TF 1-3754, B-29 Airplane, Ground Handling—Screening time: 20 minutes.

TF 1-3466, Combat Bombing—Orientation for student bombardiers. Composed of combat-film which shows examples of high, medium and low attacks with various types of bombs. Screening time: 17 minutes.

TF 1-3467, P-47 Combat Operations—Shows the pilot various types of missions being flown in the P-47. Screening time: 15 minutes.

TF 1-3468, The Gun Camera Program for Flexible Gunnery Training—Screening time: 15 minutes.

TF 1-3469, Fixed Gunnery Pursuit Curve Firing, Part I—Illustrates the fundamental training pursuit curve and the correct technique which must be learned by all fighter pilots. Screening time: 8 minutes.

TF 1-3470, Fixed Gunnery Pursuit Curve Firing, Part II—By use of a gun pattern demonstrator, the various factors, such as "G" force, slips, skids, etc., which cause misses in fighter aerial gunnery are clearly outlined. Screening time: 11 minutes.

New Films Catalog—Contains latest information on films and film strips approved for AAF use.

PUBLICATIONS

Guide for Training Aids Offices (AF Manual No. 22)—Revised up-to-date edition of handbook of aid training aids officers in performing their duties. Includes sections on requisitioning training aids, disseminating training aids information, types of training aids available, general functions of the AAF Training Aids Division, etc.

Gun Camera Manual for Flexible Gunnery Training (AF Manual No. 25)—Provides a revised outline for a wide gun camera program. Also gives personnel concerned directly with the program standard procedure for their jobs.

Going Down? (AF Manual No. 70)—Reminder of "50-50 proposition" that if "you take care of your parachute, your parachute will take care of you."

Standard Flexible Gunnery Program for Heavy Bombardment Crews Training Stations (AF Manual No. 51)—Covers gunnery equipment for B-17 and B-24 aircraft.

GRAPHICS

Poster no Longer Available—Stock of "Standard Aircraft Taxi Signals" exhausted. Reprint will not be made, since these signals are included in "Pilots' Information File."

Pre-Flight Oxygen Check—Single poster emphasizing ten points in checking oxygen equipment before flight.

DEVICES

Trainer, Demonstrator, Type Q-22 (Night Vision)—Silhouette projector for demonstrating night vision operations under various conditions.

Trainer, Demonstrator, Type Q-25 (Bullet Drop)—Device to demonstrate to gunnery student the drop of a .50 caliber machine gun bullet at various altitudes and at distances up to 1,600 yards.

Trainer, Mockup, Type 0-61 (Astro-Compass)—To show navigation students procedure in using standard astro-compass.

RECOGNITION

Flak—Set of four posters depicting types of flak and methods of evasive action for each type.

Air-Sea Rescue Boats—Set of eight posters with photographs, silhouettes and data on AAF and British air-sea rescue vessels.

Information on the availability of training aids listed in this column, unless otherwise indicated, may be obtained from the chief, Training Aids Division, Army Air Forces, One Park Avenue, New York 16, N. Y., upon request through channels.

mumbo-jumbo and I could barely see the General with my one good eye."

His next surprise was the sudden appearance of his brother, Walter, a Marine who had been flown from Okinawa in a special plane to be at his bedside a few days before Red returned to the States.

A short time later Sergeant Erwin was flown from Guam as the sole passenger, other than the medical officer and attendants who were responsible for his care during the 5,000-mile flight.

He is now recovering at Northington, just 45 miles from his home at Bessemer, Ala. Of his condition, Maj. John F. Pick, a plastic surgeon, says:

"We have had many burn cases as bad, if not worse, than Sergeant Erwin, and I feel sure that even he will be surprised in a few months."

Fruit Salad Recipe

T/Sgt. Johnnie Able, a 21-year-old gunner from the 5th Air Force, has received so many battle awards that he is forced to carry a list of them in his pocket, and the list officially approved. Otherwise, Johnnie is usually mistaken as a refugee from a war movie. Able has received a chestfull of military awards, including the Distinguished Service Cross, Silver Star with one Oak Leaf Cluster, Distinguished Flying Cross, Air Medal with one Oak Leaf Cluster, the Purple Heart with one Oak Leaf Cluster, Asiatic-Pacific campaign ribbon with four battle stars, the Philippine liberation ribbon with one battle star, and the Distinguished Unit Badge with four Oak Leaf Clusters.

Battle Honors

Two more AAF units have been authorized to wear Distinguished Unit Citation badges. The following are condensed versions of the citations, giving the unit designations, the dates and descriptions of the actions, and the number of the War Department General Orders in which the authorizations were published.

487th Fighter Squadron Jan. 1, '45

Lined up for take-off on an offensive patrol mission when suddenly without warning a superior enemy force came in on the deck at the field, this squadron, flying P-51s, immediately took off down the runway directly into the oncoming Germans. The lead aircraft engaged the lead airplane of the enemy formation before becoming airborne, and half-rolled and crashed near the end of the runway. Other planes got off anyway, and although outnumbered 4 to 1 destroyed 23 enemy fighter craft and damaged another without further loss to themselves. They prevented all but a very few of the enemy from penetrating the airfield, and in the fight of an hour's duration completely disrupted the German mission. (GO 47, '45)

445th Bombardment Group (H) Feb. 24, '44

Unprotected by fighter cover, this unit on a 2d Air Division raid on the Gothaer Waggonfabrik, A. G., Gotha, Germany, was under continuous attack from enemy

fighter aircraft for 2 hours and 20 minutes. Antiaircraft was hurled at the group on the way to and from the target. The target was located and bombed with extreme accuracy and devastating results. Of the 25 aircraft which penetrated enemy territory, 13 were lost to fighter attacks, and 9 of the surviving 12 returned with battle damage. This group flew its assigned course, destroying 21 enemy aircraft, probably destroying 2, and damaging 7. (GO 42, '45)

Master Howard

The fact that Howard Wagner is a master sergeant at 21, is further enhanced by the supporting information that he was a first sergeant at 19, and has spent 42 months in the Pacific theater. He was at Pearl Harbor when Japs attacked, went to the Gilberts with assault forces, was an observer on a B-24 on the first raid on Wake, operated with the Navy on submarine patrol, was assigned as an observer with Marine dive bombers, and served as executive secretary to Brig. Gen. C. S. Thorpe, then in charge of the air command in the Marshalls. Sergeant Wagner, now assigned to the MAAF, has 84 points on overseas service alone.

Flexible Gunnery

The AAF Central School for Flexible Gunnery, Laredo, Texas, will conduct a flexible gunnery officers course for a limited number of pilots who are in or recommended for the Regular Army.

The program will provide a nucleus of post war officers with a knowledge of flexible gunnery and its problems. Training officers in Headquarters point out that the course will be valuable because the broader the training background of an officer the better qualified he is to serve in a key position in the Army Air Forces.

An applicant for the course must hold a heavier-than-air pilot rating and must have completed an operational tour of duty or be scheduled, but not on orders, for such duty. In addition, he must have received an efficiency rating of excellent or superior on the last two ratings, and he must not have been eliminated previously from any phase of flexible gunnery training.

A maximum of 10 officers will enter each class, starting on Monday of each week, for a 12-week course. Applications should be submitted through channels to the headquarters of the command or continental air force to which the applicant is assigned. Applications of officers who are deemed qualified will be forwarded to Headquarters, AAF Training Command, Fort Worth, Texas. A copy of the officer's Form 66-2 should accompany the application.

The Training Command will select the 10 best qualified applicants for each weekly entrance. Applications of those chosen will be returned to the commander or air force concerned, stating the date on which the officer will report for training. Applications of those officers who do not meet minimum requirements will be returned with a statement regarding the lack of qualifications.

Upon completion of the course, officers return to their originally assigned stations. They get the additional rating of Aircraft Observer (Flexible Gunner). For details see AAF Letter 50-31 dated 14 June 1945.

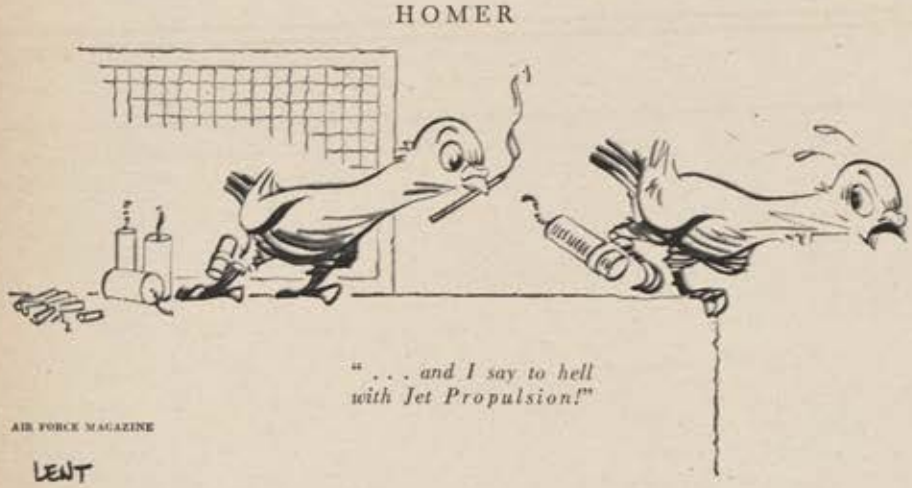
A Day's Work

In 10 months of combat flying, including four major airborne assaults and three operational resupply missions, the 53rd Troop Carrier Wing carried more than 150 million pounds of cargo to the Allies and evacuated 100,000 casualties from the front lines.

According to a report by the statistical control section of the wing, the 53rd carried out 460 effective resupply sorties, evacuated nearly 700 patients and delivered 278,605 gallons of gasoline and oil—in a single day. These figures, for April 5, 1945, were selected at random from the wing's files and do not portray the heaviest day.

Music Notes

Early in the war a team of civil employees was sent out by the British Ministry of Economic Warfare to search music stores and other shops for harmonicas. A large part of the harmonicas on sale at that time had been manufactured in Bavarian factories which had been turned over to the Germans for aircraft production, and on each instrument was embossed an aerial picture of the plant where it was made. Further aerial views of factories were gleaned from the letterheads of pre-war business correspondence from German firms. Models of the factories were made from these sources for the study of bomber crews. Such were some of the means used to bring about the destruction of key plants and workshops in Munich, Rosenheim, Salzburg, Linz, Budejovice, Regensburg, Ingolstadt and other places, including the Skoda works, now 300 acres of total ruin. Also in a sad state of disrepair are 140 Bavarian harmonica factories. ☆



HOW SHARP ARE YOU?

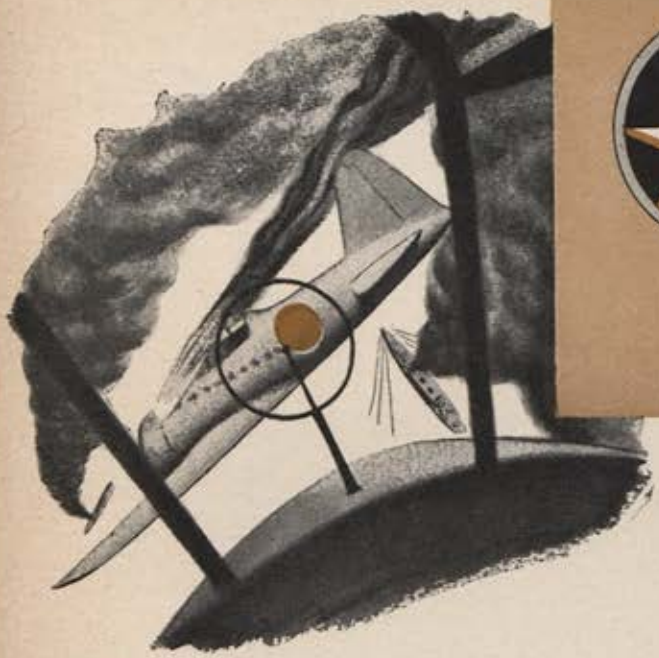
QUESTIONS

1. What are the men in the photo doing?
2. What airplane is shown?
3. Does the driver of the tug have both hands on the wheel?
4. How many guns do you see on the plane?
5. How many cables do you see running from the back of the tug to the top of the boom?
6. All three men are wearing the same type of hat. True or false?
7. Is the tool box on the tug unlatched?
8. How do you spell the name above the little girl on the nose of the plane?
9. What number appears on the hood of the tug?
10. There is an open container on the front of the tug. True or false?

ANSWERS ON PAGE 62.

Units of the Seventh first tangled with the Japs on December 7, 1941. For a while they licked their wounds and became strong. Today their planes are working over Japanese at home

BY T/SGT. DON BROCKELL AIR FORCE Staff Artist

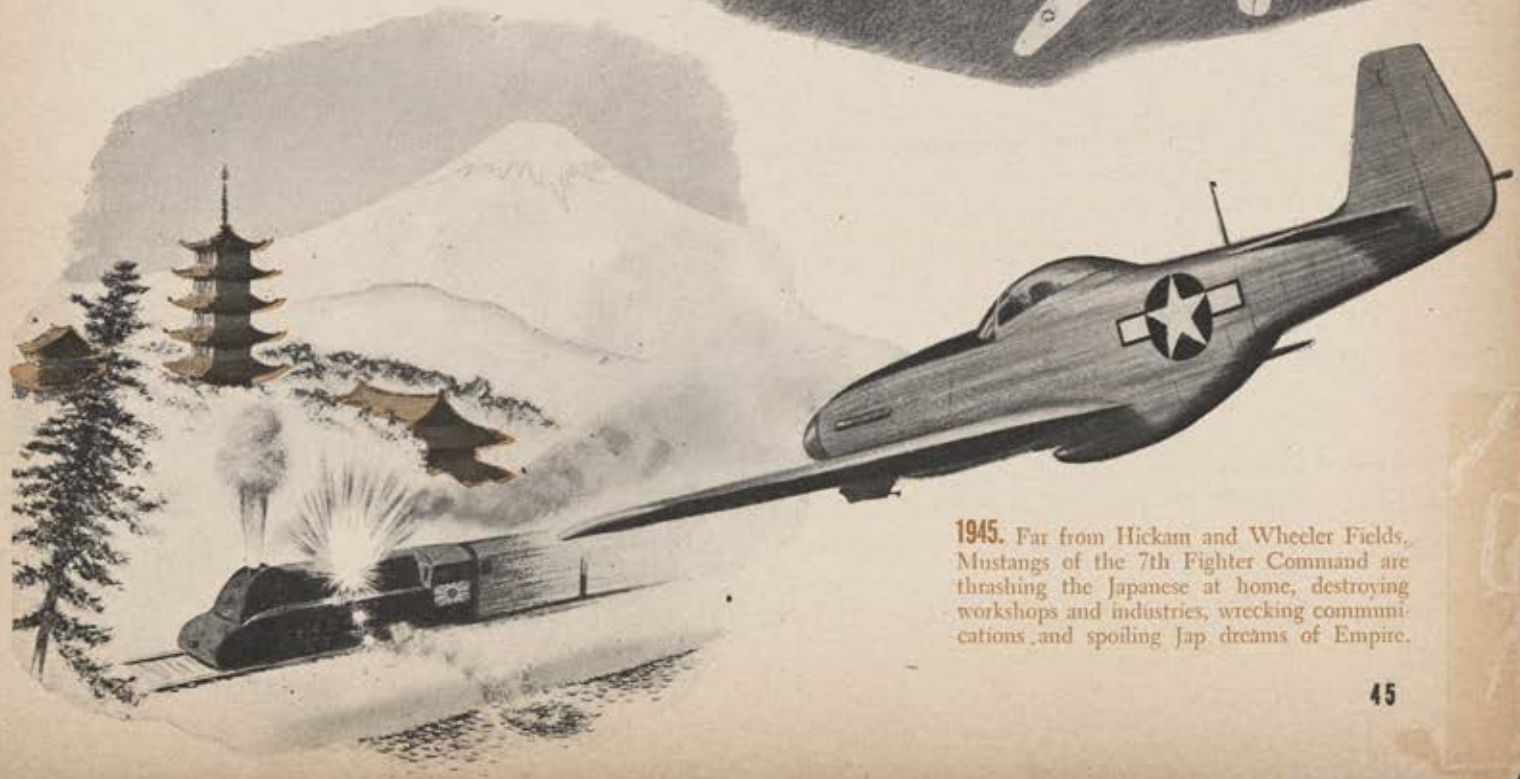


1941. The first fighters of the AAF to knock down Jap aircraft were those that in the spring of 1942 became the nucleus of the 7th. Taking to the air while under bombing and strafing attack at Pearl Harbor, they were outnumbered but they fought with high courage.

1942. A long and bitter year. Squadrons of the 7th hid out and prepared for the days when they would be striking back at the Japanese. They didn't have much equipment and the supply problems were rough. They got in some licks, however. On June 3, some B-17s and a few B-26s went into the Battle of Midway, and in the three-day air action scored 22 direct hits and 6 probables. From July to November, the 7th's 11th Bombardment Group made preliminary attacks on the Solomons, dropping the bulk of its bombs around Guadalcanal. Bases were where you could get them, and the situation was always precarious.

1943. For most of the year, the 7th was preparing for the offensive which would surely come. It started in November and from then on the action was continuous. In that month headquarters was established in the Ellice Islands, 2,200 miles from the "home" base at Oahu. Jap fields were blasted by low-flying Liberators. Bombers based on one island would stage at another, fly over the main target, and instead of turning for home would "ride the wind" on to a third AAF base. Refueling there, they would set out for another target. Eventually they would get home for mail call and the crews would prepare for another trip along the Pacific bombing circuit.

1944. The 7th had gained real strength by now and the Japs were finding it out—B-25s at low-level, fighters and Libs at any height over the Gilberts, the Marshalls and the Marianas. There was little time for making bases comfortable. Inherited from the Japs, they were mixtures of shredded palms, gutted stockades, wrecked runways. "And flies in the day, mosquitoes at night, and dysentery all the time," one CO said.



1945. Far from Hickam and Wheeler Fields, Mustangs of the 7th Fighter Command are thrashing the Japanese at home, destroying workshops and industries, wrecking communications, and spoiling Jap dreams of Empire.

AAF QUIZ

Here is something new in AIR FORCE brain twisters. Beginning this month, every question in the AIR FORCE Quiz will be based on information contained in the preceding 12 issues. If you have been reading AIR FORCE carefully, you should ring the bell on this quiz. See Page 56 for answers.

1. An equiangulator is an instrument used in
   - A. Sighting an aerial camera
   - B. Getting longitude and latitude from the stars
   - C. Measuring angles in making mechanical drawings
   - D. Computing airflow
2. The floating air depot used in the Pacific to speed up maintenance operations is called a
   - A. Floater
   - B. FAD
   - C. Ship Shop
   - D. Sea Hangar
3. Which has the greater wing span, the B-19 or the B-29?
4. The members of which Allied air force wear an orange shoulder strip known as the Orange Flash?
   - A. Brazilian
   - B. South African
   - C. Mexican
   - D. Australian
5. What is the military designation of the famed commercial transport DC-3?
   - A. C-46 B. C-47 C. C-54 D. C-69
6. The first transcontinental crossing within 24 hours was made in 1922 by a young officer named
   - A. James H. Doolittle
   - B. H. H. Arnold
   - C. C. L. Bissell
   - D. J. A. Macready
7. The AAF has a pair of glider giants designated CG-10A and CG-16. Which is larger?
8. The official name of the "Rescue Cat" is
   - A. R-6
   - B. Raft, Life, AAF
   - C. OA-10
   - D. Dumbo
9. In its war against malaria, the AAF has made great headway by spraying from C-47s
   - A. Sulfanilamide
   - B. Quinine phosphate
   - C. DDT
   - D. Powdered alum
10. Glip bombing is a recent wrinkle in bridge busting. It gets the name from
    - A. Glide-flip
    - B. Glide from initial point
    - C. Glide into position
    - D. Glide-skip
11. A member of an aircrew wounded on a mission draws flying pay during the period of hospitalization and convalescence.
    - A. True
    - B. False
12. Officers separated from the service are given accrued leave with full pay and allowances up to
    - A. 30 days
    - B. 45 days
    - C. 90 days
    - D. 120 days
13. First altitude test of the turbosupercharger was conducted in
    - A. 1918 B. 1940 C. 1941 D. 1942
14. The Jap Tony is a
    - A. Single-place Navy plane
    - B. Single-place Army plane
    - C. Twin-place Navy plane
    - D. Twin-place Army plane
15. The five stars on the FEAF shoulder-sleeve insigne symbolize
    - A. The five-star grade of the Commanding General, AAF
    - B. The five-star grade of the Commanding General, USAFFE
    - C. The Fifth Air Force
    - D. The Southern Cross
16. *Kamikaze* is the name the Japs have for their aerial suicide tactics. What does the word mean?
    - A. Sons of Heaven
    - B. Spirit of War
    - C. Divine Wind
    - D. Hail to our fathers
17. When the target P-63 is hit by the new frangible bullets in gunnery practice the gunner knows it because on the target plane
    - A. A white flag appears
    - B. The right wing dips
    - C. A nose light goes on
    - D. A bell rings
18. A silver service star is worn in lieu of how many bronze service stars?
    - A. Three B. Four C. Five D. Six
19. Instead of copper, which was formerly used, radiators of the newer P-51 are made of
    - A. Stainless steel
    - B. Aluminum
    - C. Chromium plated nickel
    - D. Fireproof wood plastic
20. Identify this airplane

WHERE WEATHER IS BORN

(Continued from Page 21)

they are for direction and force of wind.

The need for hydrogen provided an additional problem to the weather men. Shipping space was too limited to ship cylinders containing hydrogen from the States. So just the elements for producing hydrogen, ferrosilicon and sodium hydroxide, were brought in. But these proved to be available in only limited amounts, and, while they took up less space than the bulky hydrogen cylinders, still they were an added strain on the Hump tonnage. The problem was solved by Lt. Lester D. Supiro who remembered that hydrogen could be generated by using scrap aluminum and caustic acid, both of which are abundant in China. Now, in reverse lend-lease, the Chinese are making aluminum shavings and refining caustic acid. This example of shipping economy is being followed at other weather squadrons throughout the world.

In areas where there were no ground stations, the assignment of securing weather information was given to a special weather reconnaissance squadron flying B-25s under the command of Lt. Col. James B. Baker.

Because their missions take them over enemy territory, the Mitchells are fully armed and the crews trained for combat duty. Special weather instruments are installed in the nose of the planes where the weather observer-gunner is stationed. His two primary instruments are the aerograph and the psychrometer. The aerograph continually measures the outside free temperature, humidity, and pressure. The psychrometer gives readings of the moisture content of the air. All of these B-25s are equipped with powerful radios which enable them to send back information to their base.

On nights when the Superforts are scheduled for a mission, weather B-25s take off hours earlier and follow the course to be taken by the B-29s. In this manner, exact weather conditions are relayed to the B-29 bases. On one such mission, with Colonel Baker as pilot and the late Capt. Gene W. Dixon, copilot, ice built up so swiftly that the B-25 went into a sudden dive at 11,000 feet. The plane was righted at 8,000 feet by the use of emergency power in an area where the mountains were known to be 9,000 feet. As a result of the information radioed back by Colonel Baker, the B-29 mission was cancelled.

With the weather squadron operating throughout the Pacific, we have turned the tables on the Japs. Previous to the establishment of our weather stations, the Japs had the advantage of observing the weather as it passed over Japan on its way down to our installations south of the Philippines. They knew before we did what the weather would be over New Guinea. Those circumstances are now reversed. From our stations in northern China, we get reports on meteorological conditions over Jap islands before the weather actually reaches there.

The men of the weather squadron put it like this: "Japanese weather forecasts may very well predict, 'Clear today, probably followed by B-29s'" ☆

Mammoth Tire — Page 50

technique

Development, Maintenance and Supply of Aircraft and Equipment

Pacific Fighter Planes

Just as the manager of a baseball team issues a scorecard listing the name, number and position of his players on the understanding that changes will be made as circumstances require, so too the AAF has announced a tentative line-up of the fighter planes it will probably use in the air war against Japan. Of these, the "stars" of the team may well be the P-47N, the P-51H and a new version of the P-61.

Having felt the sting of the P-51D, both as an escort fighter for B-29s and as a ground strafer, the enemy is due for another package of trouble when the "H" model Mustang makes its appearance in the Pacific. This new version is similar to earlier models in appearance, although only about 10 percent of the plane's original features have been retained. A new airfoil and wing plan give the fighter smoother lines, while a more powerful engine and simplified operation controls serve to improve its high-speed performance. The fuselage has a tapered nose that provides the pilot with greater cockpit vision, and larger horizontal and vertical tail surfaces enhance its maneuverability. Weight, too, has been taken into consideration, and structural changes and new materials have lightened the "H" by 700 pounds without decreasing any of its standard combat equipment. Redesign of the engine mount alone saved fully 40 percent weight over the P-51D mount, besides providing for easier maintenance accessibility. The Packard-built Rolls Royce V-1650-9 liquid-cooled engine, of more than 2,000 hp, drives a four-bladed prop designed to deliver maximum thrust efficiency, and a water injection system, a new carburetor air induction unit and a heat exchanger which uses fluid as a cooling medium instead of air, all serve to give the plane a greater operating range. Extra fuel tanks are built into the "H" and conventional externally hung tanks are also carried. Armament is the same as on the earlier planes, with the P-51H mounting six .50 caliber machine guns in the wings, as well as rocket launchers and bomb racks. The ranging control for the gunsight is on the throttle handle, a novel feature.

The Big Three among the fighter planes selected for Pacific duty are the P-51H, above, the Black Widow, left, and the P-47N, seen below.

The major change in the silhouette of the new Mustang is a one-fifth larger empennage. The horizontal stabilizer has been beefed up to withstand higher speeds, elevators and rudders are covered with metal instead of with fabric, and trim tabs of metal have replaced the molded plastic tabs of the P-51D. Cockpit alterations were dictated by comfort, and the bucket-type chair has been taken out in favor of a hammock-style seat, complete with arm rest. In addition, a combustion gasoline heater with a thermostat control enables the pilot to keep the cockpit at a comfortable temperature at all times during flight.

In the P-47N, American pilots have a weapon of new tactical significance and wide potentialities. The latest

model Thunderbolt is powered by a 2,100 hp P&W engine and carries a more efficient G.E. supercharger which gives it greater speed at higher altitudes. Its combat radius of 1,000 miles indicates a comfortable round-trip range of more than twice that distance, while its top speed is set at better than 450 mph. The internal fuel capacity of the plane has been nearly doubled by the addition of eight more gas tanks in the wing section, and the span of the panel has been increased by 18 inches, adding 22 square feet more area. Armed for combat, the P-47N carries eight .50 caliber machine guns aimed by a compensating sight, ten 5-inch rockets and two 500-pound bombs.

It is in flying ease and maneuverability, however, that this new fighter leaves previous models far behind, and the latest developments in instrument engineering combine to make the P-47N an extremely smooth plane to handle. Fatigue and discomfort on long-range missions are considerably alleviated by an automatic engine control, called the type C-1 regulator, which eliminates the need for repeated manual adjustments of throttle, prop governor and supercharger regulator, while further refinements contributing to the new Thunderbolt's piloting simplicity include an automatic control for cowl flaps and coolant doors, a torque pressure meter that calibrates engine torque reaction in pounds per square inch, and many other devices and controls, including the G.E. autopilot, making for operational ease.

The third member of the AAF's "triple play" combination is the versatile P-61, which can rampage by day as a dive bomber capable of toting a bomb-load equal to that of the B-25 or B-26 for short raids, or which can prowl in the dark as a deadly, long-range night fighter. Two external fuel tanks hung from each wing increase the Black Widow's range by fully 300 percent, while the same wing-rack installations can carry four 1,600 pound bombs or two bombs and two auxiliary tanks. A conventional fighter-bomber release panel located in the pilot's cockpit permits release of the bombs in salvo or individually, while a type LY-3N optical gunsight keeps the plane on its target during dive-bombing attacks.

This "bomber version" of the P-61 also carries complete radar equipment which can pick up any airborne target within a considerable radius. Four fixed 20 mm cannon in the belly and a remotely controlled turret with four .50 caliber machine guns mounted atop the fuselage, provide the plane's armament.

AAF radio operators man their positions in specially equipped C-47 which serves as HQ for Supreme Allied Commander, SE Asia.

Flying Command Post

During most of the successful Burma campaign of 1944-45, a complete airborne headquarters — an entire radio station, set up in a C-47—was generally to be found at the most advanced airfields, enabling the commander of the combined land, sea and air operations to keep in constant touch with forward units and to direct the battle by radio. The moment the C-47 came to a stop after landing, the putt-putts started chugging, the radio operators were at their positions and messages were being transmitted and received. Complete living facilities are carried, and when the plane is on the ground, gas stoves are used for cooking and cots are set up for sleeping accommodations. The communications installation itself is a standard Signal Corps station—the first instance of this type of heavy equipment being permanently installed inside an aircraft for use on the ground.

The idea for the flying command post was developed by Admiral Lord Louis Mountbatten, Supreme Allied Commander, Southeast Asia, and Col. Harold W. Grant, USAAF. The original AAF crew was activated at Wright Field, Ohio, in October of 1943, and with the exception of Col. Grant—who returned to Washington after a tour of duty in the CBI—still remains with the plane. Maj. Jasper Vaughn has moved up from copilot to pilot, and Lt. Norman Boroson is the new copilot. T/Sgt. Herbert H. Carr is flight engineer and is charged with the plane's maintenance, while T/Sgt. Bernard W. Mellen is the radio station chief, and takes over when the craft is on the ground. The radio operators are S/Sgt. George S. Wade and S/Sgt. Arthur J. Fitzgerald.

During the recent engagement at Rangoon on May 2, 1945, Lord Mountbatten was more than 1,500 miles away at an emergency airfield, yet was able to direct operations from SEAC headquarters at Kandy, Ceylon, via radio. Even on his trips to England, he has been able to maintain contact with his troops while parked at an airdrome outside of London.

The project has proved so successful that a number of similarly equipped C-47s have been ordered for use in the distant theaters of operations in the Pacific.

'Turn Around' to China

The planes of the India-China Division, Air Transport Command, must fly every pound of freight to China that can be airlifted, and every minute that is saved by a fast reloading for another flight when the plane has returned to its base, is a minute more that the plane can fly.

"Turn around," as the process of overhaul, refueling and loading is termed, has been worked out to a fine art. Every detail of the operation is planned in advance, scheduled and reduced to its minimum possible expenditure in time.

The procedure begins even before a plane reaches its base. A radio call from the aircraft winging its way back from China sets the machinery in motion. When the tower operator gets the call and assigns an altitude at which the plane may enter the flight pattern over the station, he also receives a report on the ship's status—affirmative

Men of the India-China Division, ATC, load a Skymaster for turnaround trip to China over Hump. Sketch was made in the plane by Capt. James P. Scott.

tech topics . . . about aircraft and equipment

Sea-rescue technicians are running tests with a small outboard motor which has been specially designed to withstand rough treatment as a droppable-by-air piece of equipment. The motor is for life rafts

dropped to personnel near enemy shores to furnish a propellent means for quick escape to waters where they can be picked up without too much danger to rescuers. . . . A new vertical flotation life vest has been developed which keeps personnel in the water in an upright position. This keeps the face of the individual out of water even in heavy waves. New harness offers increased comfort and is easy to adjust both in and out of the water. . . . Rescue experts are also concerned with a small snap fastener similar to the type used on the B-4 life vest to be attached on the carrying case of the Anti-Exposure Suit. The fastener permits crew members to attach the suit to a D-Ring on the life vest thus making sure they have the suit with them during ditching when sometimes there is insufficient donning time.

A 250-watt electrical heater for sterilizing dental equipment used in the field is under development. At present sterilization is accomplished with alcohol lamps.

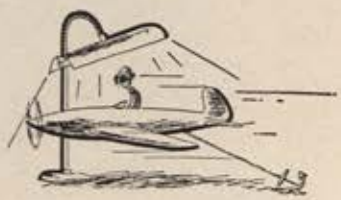
All types of aircraft have factory-furnished microphone switches which means that different types can be found in various planes, making it confusing for pilots and crewmen. Now, specifications have been drafted for a standard microphone switch which will be the same on all types of aircraft, thereby facilitating stock and maintenance problems as well as operational techniques.

A portable test kit has been developed for checking turbo-supercharger regulators and automatic engine controls permitting routine checks without raking the regulator or control unit out of the airplane. The kit, designated Type EE-2 Test Kit, can be wheeled out to the airplane and a convenient check of the regulator and control can be made in several minutes. Previously this was an arduous task that required removing the units, a procedure that took several hours.

The standard Pilot's Winter Flying Shoe is being redesigned for issue to Flight Nurses. The Nurse's shoe will be lighter, more comfortable and still retain thermo insulation properties. . . . Nylon fabrics may be used as a substitute for Byrd Cloth and Boat Cloth in the lightweight Flying Suit. . . . Use of undrawn nylon which stretches like a rubber band may permit pick-ups of heavy gliders without use of mechanical reels and cables. . . . To eliminate bulkiness of parachute seat packs and back packs engineers are studying the possibilities of making the coverall or flying suit itself into a parachute container. The silk canopy would be stowed in the lining of the suit to maintain a low-bulk feature.

Several experimental canopy covers have been devised having special resistant properties to render mustard gas ineffective. Cotton base cloth and glass cloth coated with butyl rubber compound have been tried. . . . Bubble canopies that have excellent visibility features have necessitated the redesign of rear-view mirrors to take full advantage of their improved visibility characteristics. The new mirror offers better demagnification and reflectivity.

For studying effects of sunlight on AAF personnel on the ground, particularly in cockpits of high-speed fighters during simulated low-level flight, engineers have designed a powerful sun lamp whose light source will simulate noonday tropical sun.



. . . To keep the sun out of airmen's eyes two new type visors have been made for standard flying helmets. One is a stationary headband type, the other is an attachable eye shade.

Another transition training program has been born to teach pilots the hidden tricks of the B-32s. At Fort Worth, Texas an operational B-32 used as a "Captivair Trainer" has been mounted on stationary piers in normal flight attitude. Instruments, controls, engines and landing gear operate the same as though the big plane was in actual flight. Instructors in a booth near the plane can simulate various phases of abnormal operation so pilots can familiarize themselves with the plane's peculiarities without risks of actual flight training. . . . A similar ground-bound trainer for P-47N pilots also has been devised and perfected. . . . Another new training aid is a mock-up of the C-69's Engineer's Panel. Complete with enlarged instruments that detail the function of each gadget, this demonstrator will be used for training flight engineers in the location, manipulation, reading and correlation of all controls and instruments.

or negative. An affirmative report means that the plane is ready to go back out over the Hump again with only minor mechanical attention, if any, and in most instances this will be the reply received.

As the plane comes in, Tower notifies Operations and a dispersal area for the cargo carrier is assigned. Meanwhile, Operations has alerted the various sections of the field, including Priorities, Traffic and Engineering, and if there is incoming cargo aboard, Space Control will have informed Air Freight and the latter will meet the plane with trucks, ready to begin unloading by the time it has taxied to a full stop. Even while the unloading is in progress, gas will be pumped into the aircraft's tanks from a giant tractor-trailer unit, while oil will be added as needed and the oxygen supply restored. The necessary minor mechanical adjustments will be made by the ground crew after they have conferred with the men who brought the plane in.

During this time, a new load for China has approached in trucks, and work begins to place it aboard the transport. Distribution of weight is scientifically calculated and the four-ton cargo is carefully tied down. The Maintenance Dispatcher, who has kept track of the functions performed by sub-sections of the engineering department, checks his list to see that all jobs have been accomplished, and at the proper moment, a complete crew arrives ready to board the plane for take-off.

Mammoth Airplane Tire

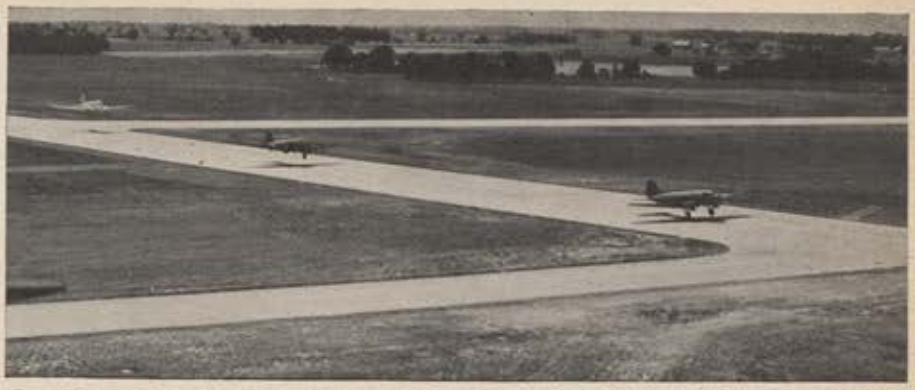
A huge Goodyear tire has been constructed out of 36-ply nylon and rubber, measuring 110 inches in outside diameter and 44 inches in cross-section. It scales at 1,500 pounds and one-third of its weight is nylon—about 4,000 pairs of hose worth.

Under hydro-static test the tire has been able to withstand water pressures up to 375 pounds per square inch, or three times the air pressures it would be subjected to under normal operating conditions. Only one of these tires would be required to support the weight of a fully loaded B-29.

Miniature Test Chamber

AAF radio experts are now studying the effects of high altitudes on small pieces of radio equipment in a "baby" pressure chamber—said to be the smallest of its type in the world. No larger than a custard cup, the chamber is able to simulate in less than four seconds any altitude pressure from sea-

Smallest pressure chamber yet devised is used by AAF to simulate wide range of altitudes, temperatures in testing radio parts.



Two C-47s in tandem, with an XCG-17 (glider version of the Skymaster) towed behind them, take off in aerial version of freight train. When a safe altitude is reached, the leading plane will detach itself and return to the field for another such double-header take-off.

level up to 58,000 feet. Inside its airtight glass bowl, tiny switches, condensers, transformers and other radio components may be placed for test, while the enclosure itself may be put inside a temperature chamber for combined altitude and temperature reaction.

Designed and built by the Aircraft Radio Laboratories at Wright Field, the chamber comprises a duralumin base for mounting test objects, a Pyrex cup or glass bowl, vacuum sealed to permit pressurization, and a series of valves and control switches for regulating pressure changes. Variations in pressure are achieved by attaching a large vacuum tank to the apparatus, while delicate needle valves control rates of climb and descent. Altitude is registered on a conventional type altimeter.

Three-Plane Skytrain

A C-47, stripped of its engine and accessories and designated as the XCG-17 Glider, has proved, during flight tests at Wright Field, that a literal "Skytrain" is plausible, using two C-47s and one XCG-17 in tandem. After take-off and a climb to a safe altitude, the leading C-47 unhitches and flies back to its home airfield for another double-header take-off, while the remaining C-47 tows the glider on to its destination.

Fog Dispersal System

When heavy fog banks close in on airfields, it is difficult for returning planes to land safely. But with a series of special burners to convert aviation fuel into vapor gas and thus evaporate excess moisture in the air, low-lying clouds are effectively broken up and normal flight operations may continue even with weather zero-zero. On one occasion during the European air war, twelve Mosquito bombers, returning to climatically foggy England from a raid over the continent were temporarily stranded because their base field and all auxiliaries were closed in. The fog dispersal equipment was turned on and all the planes were able to land safely.

The system was first introduced by the British in early 1943, although a similar arrangement has been perfected by ATSC Equipment Laboratory engineers. In the AAF system, several large tanks store the fuel to be used, a pumping system pressures the gasoline through the pipelines that border the runway, and a series of burners consume the gas with a clear flame while automatic valves regulate and control the heat. A pre-heating system vaporizes the gasoline and ejects it through small jets.

During one test at Wright Field, the system lifted a heavy ground fog in ten minutes. At 0900 hours the ceiling was zero and visibility was limited to 1/16 mile. At 0910 hours, with the burners going full blast, the ceiling had lifted to 500 feet with one-mile visibility, making landings possible.

Magnetic Voice Recorders

A sound-on-wire magnetic voice recording device has now been installed in certain types of aircraft and is turned on to record enemy radio conversations and other radio transmissions which later can be interpreted by AAF intelligence officers.

Specially treated wire, six thousandths of an inch in diameter, is

Grounded Cargo Plane is Reassigned as Tech Supply Warehouse

In India, a damaged C-46 cargo carrier, while withdrawn from service upstairs, still does its bit down below as a supply room for aircraft parts. Carpenters, electricians and other specialists did it, converting interior into neat shelves and bins as shown at right.

maintenance tips . . .

from the crew chief's stand

A "mechanical arm" to help you penetrate deep into airplanes and engines without unnecessary dismantling, can be made from a piece of flexible metal tubing or cable sheathing, according to Captain Joe Brady, sub-depot supply officer at Majors Army Air Field, Texas. As pictured, the device can be attached to a standard electric drill or operated manually, and can be bent to reach virtually any nook or cranny of an airplane without the removal of a large number of parts. It is equipped with more than a half-dozen nozzles, including bores and a screwdriver.

You can muzzle the muzzles of .50 cal. machine guns at the outboard and center positions of P-51Ds, by using a piece of old gasoline hose, 1" in diameter and 1¼" long. A wooden plug, ½" in length is fitted tightly into one end of the hose. These covers will keep moisture out of the barrels, will remain fixed in flight and will fall off when the gun is charged. Suggestion somes from Sgt. C. J. Wold, Fighter Armament Dept., Eglin Field, Fla.

Landing gear difficulties on B-17s have resulted in a great many URs reporting failure of drag links. Pilot error, maladjustment, poor maintenance, rough fields and high gross weights have all been contributing factors, and while these conditions cannot be entirely eliminated, numerous steps have been taken to reduce the sources of trouble by preventive maintenance and changes in basic design, both in service and production aircraft. Consult TO 01-20E-111, therefore, on reinforcement of main landing gear drag links, part numbers ALGI00006-10, or 75-4801-609.

To satisfy the demand for interchangeability data on AAF ground equipment, facilities have been expanded to cover this field in the same manner as for aircraft parts, and TO 00-45G-1 is now available on general purpose, special purpose, special equipment and materials handling vehicles. Three phases (engine, power train and vehicle) are covered for each of the four types of conveyance mentioned above.

Semi-monthly inspection of life rafts are required under TO 04-15-2, and although it is common and approved practice to use a vacuum cleaner for inflating and deflating these rubber boats, an adapter is suggested by WO/JG Willard Guerin and Cpl. Robert Finger of an overseas Air Service Group, to make the system more efficient. Materials required are: an AAF vacuum cleaner, Magic Air model 380, Universal Current, 110 v. Stock No. 7900-101470; 1½ feet of 2" O.D. rubber hose and 5 feet of ⅜" dia. hose, as well as two 2" hose clamps, Stock No. 6600-380812; six inches of 2" I.D. pipe with one end sealed off by welding on an air hose nipple, and two threaded hose pipe nipples, one ¼" O.D. Stock No. 6500-454820, and the other ⅜" I.D. Stock No. 6500-454825. This method may be used, along with several others, with equal results to comply with TO 04-15-1, dated 15 August 1944.

Leaks in tubes can give you radio trouble, but so can leaks in the radio compartment itself—and water seeping into B-17s and other planes has been known to short out communications equipment. To prevent these difficulties, follow TO 09-1-10 on waterproofing and sealing the plugs and sockets on aircraft radio sets.

With moving day having arrived or impending for many overseas units, someone—and usually everyone—has to help pack supplies for reshipment. To reduce breakage, save time and prevent corrosion, observe the following common-sense rules:

1. Clean dirt and fingerprints from critical parts and dry them thoroughly. Apply a coat of light oil, wrap parts in greaseproof paper and pack with cushioning material. Line the container with waterproof material and strap the package on all sides.
2. Temporary storage is best in a closed, heated building. Next best is a low shelter with roof and floor but no side walls. When neither of these is available, store material above ground level and cover loosely with tarpaulins.
3. At each supply base, only unpack that equipment which you need. The best protection against heat and humidity is the original carton, so don't break it.

wound by motor on reels in much the same manner as a motion picture projector. The wire records sound magnetically, while a control box permits remote operation and enables the pilot to record directly from his own microphone, from the plane's interphone system, or from the radio messages of other aircraft. Inputs are provided for recording from standard AAF radio receivers or from a carbon or dynamic microphone.

A recorder-reproducer, used in conjunction with the airborne voice recorder permits ground playback on the wire transcription, and can reproduce recordings as well as rewind and erase the wire in preparation for its re-use.

A similar airborne apparatus, employing a disc or record instead of the wire, is used in reconnaissance airplanes to free pilots from having to make written notations of their observations, pilot their craft and maintain a lookout for the enemy at one time. With the voice recorder, the flyer simply talks into his microphone, describing what he sees and making a record of the whole flight, while leaving his hands free to control the airplane.

Hydrogen Making in China

By way of reverse lend-lease, Chinese natives are doing their bit to cut down Hump tonnage by taking part in the local manufacture of hydrogen for the AAF's weather balloons. Under the supervision of Kunming University, caustic soda is shaved so that its alkali action on aluminum scraps, when mixed with mercuric oxide, may produce the lighter-than-air gas for balloons used in obtaining meteorological data.

Crashed, wrecked and unserviceable planes are stripped of their unreclaimable aluminum, which is then broken up into small pieces and placed inside a cylinder. Water is then poured in,

Man "churns" hydrogen from cylinder in which aluminum and a caustic soda compound are mixed to produce gas for weather balloons at Kunming.

and the caustic soda compound is added. Next, the top of the cylinder is capped and the whole thing is swung back and forth like a giant cocktail shaker. In a short while the hydrogen generates, and after it is cooled down it is piped into the Weather Squadron's balloons.

Markings for Escape Hatches

By agreement of the American and British Army and Navy, all emergency exit doors, hatches, knobs, handles, releases, catches and stencilling on all aircraft are to be painted orange-yellow (Spec. AN-L-29 Lacquer or AN-E-3 Enamel, Color No. 506) so any passenger or crewman immediately can locate the nearest exit for bail-out or after a ditching or crash landing.

The newly standardized method of marking exits requires a one to two-inch orange-yellow band around the periphery of doors and hatches inside the fuselage. "Emergency Exit" is to be painted in one to two-inch lettering on the most visible portion of each escape hatch, and one-half to one-inch lettering is to be used to describe the operation of the handle, as "Pull," "Push," "Twist," "Turn," "Slide," etc. All releases, handles, and knobs are also to be painted in this color.

To facilitate forced entry from the outside into a crashed aircraft (see TECHNIQUE, February, 1945) a half-inch wide and 1-inch long series

of dashes at 12-inch intervals will outline hatches, domes and doors. 1-inch lettering will read "Cut Here for Emergency Rescue." Also to be painted on all such external positions is "Escape Panel Releases." On yellow surfaces, marking should be in glossy black paint.

Parachute Fall Recorder

"Dummy Joe," the rubber figure who has been bailing out for the AAF since parachutes came into existence, is getting a new mechanical "brain" that will record everything that happens to him from the instant he is pushed out of a plane until his form hits the ground.

Designated the Parachute Drop Recorder, Type S-201, the device is fixed in the hollow dummy by web straps and obtains high-speed bail-out data in a single drop test that previously required several descents. It is enclosed in an aluminum case about the size of a storage battery, and consists of a chart carriage with spool arrangement similar to a large roll-film camera, a pressure-actuated altimeter unit that records continuous height, an accelerometer for determining opening shock, a time-release marker that tells the exact instant when the ripcord is pulled —thus giving the opening time—and a swing counter that picks up and records all oscillations.

These sensitive instruments transfer their data to four electrically operated styluses that scratch coded graph lines onto a special metal-foil backed paper that is wrapped around the carriage rollers. After a drop test, technicians decode the fine scratches with a calibrated celluloid mask, and the results tell them the exact moment Joe's chute opened, the G-forces of opening impact, the rate of fall, the body's position at any altitude during the descent, and the oscillation of the body and the parachute.

The instrument was developed jointly by the Parachute Branch, ATSC Personal Equipment Laboratory and the Hathaway Instrument Company.

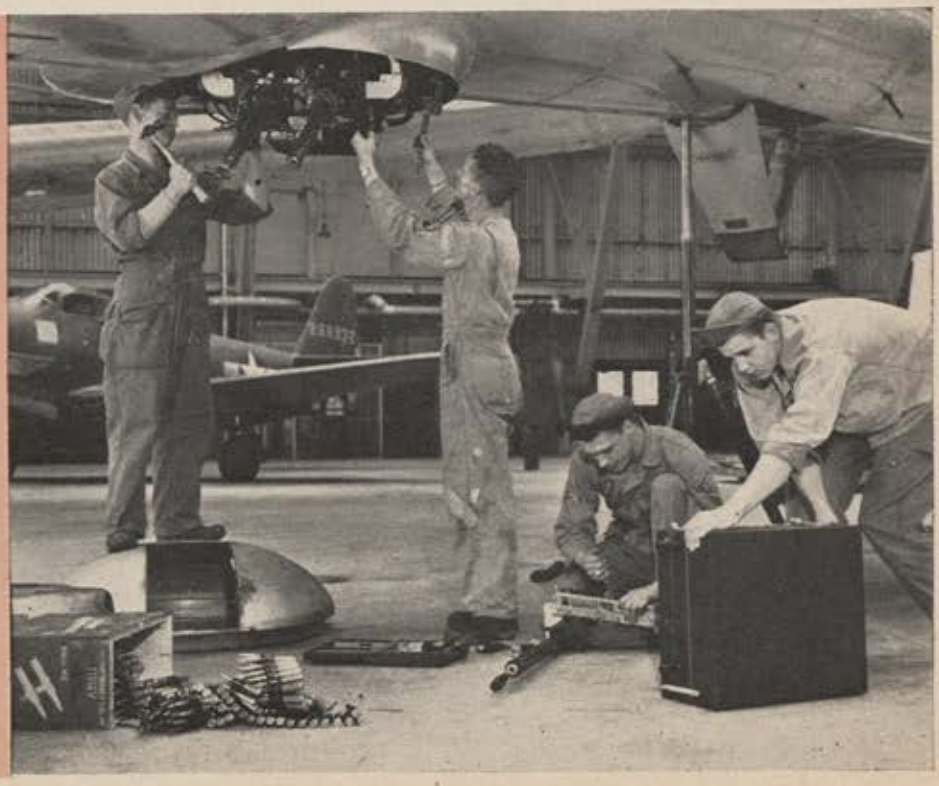
Pneumatic Bomb Bay Doors

Lightweight air compressors, each slightly larger than a milk bottle, are swinging open the doors of late model B-29 bomb bays in a mere two seconds, as against the quarter of a minute required by the conventional electro-mechanical methods.

Component parts of the pneumatic system include a small electric motor that drives the compressor, an automatic switch control, a pressure storage tank, a cooling fan and a centrifugal pump that lubricates the pistons and bearings.

what's wrong with this picture?

The "harmament" specialists shown here are missing TO 11-70A-1 by a wide margin, and their technique is shot through with at least seven gaping errors. These are scored on Page 55, but don't aim your sights in that direction until you've gone gunning for another misfire or two. Providing the target this month, are (from left to right) T/Sgt. Herbert C. (Bing) Crosby, M/Sgt. Charles J. Godley, Cpl. B. Krueger and Pvt. Luther Harper, all of the 4000th BU, Wright Field, Dayton, Ohio.



The compressors are also being used for operating gun chargers for the Superfort's flexible turrets, and similar pneumatic gun chargers are being installed in P-51Ds, B-25s and A-26s.

Cargo Container Floats to Earth

An inexpensive, easily made and efficient substitute for cargo parachutes has been perfected in the form of a fiberboard and plywood box with collapsible rotors, or wings, which open like an umbrella blown inside out when the container is dropped from a plane, limiting its rate of fall to a slow spin.

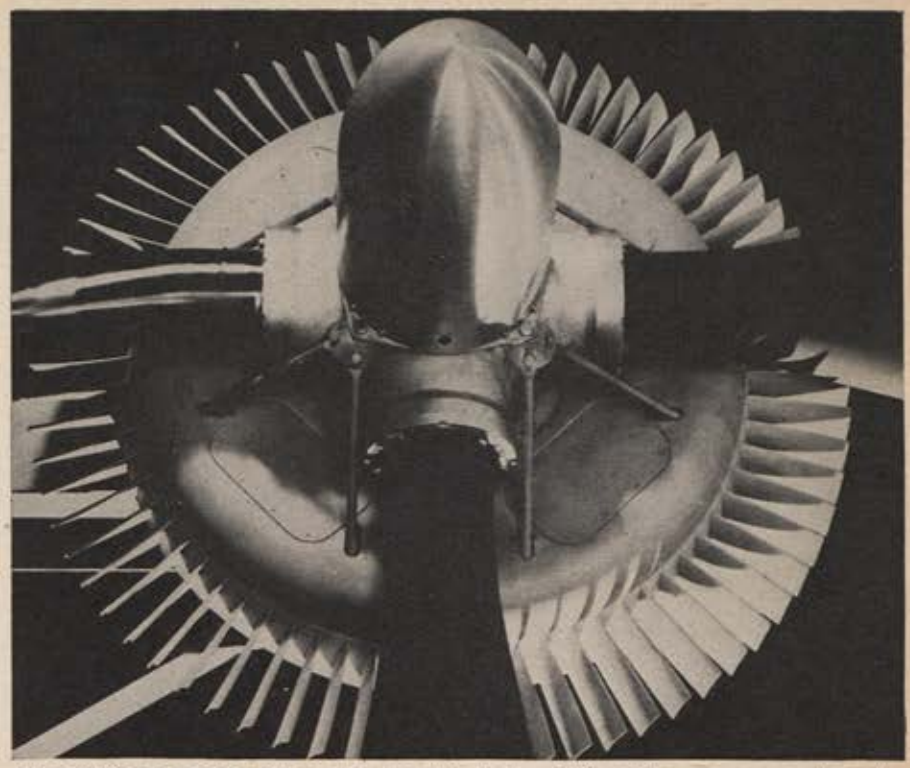
The 12" by 12" by 34" cargo carrier will support 50 pounds of supplies and its speed of descent so nearly approximates that of a parachute that fragile items, such as glass, may be loaded into it without danger of breakage. Unlike a chute, however, it will not drift with the wind, will not hang itself in trees, will not be dragged along the ground and cannot be spotted easily by enemy ground patrols.

The center of gravity is low enough to keep it upright in the air so that the airstream can snap open the two folding wings attached high on the box. Sash cord holds the rotor blades at the proper spin angle, and spoilers on each blade further reduce the rate of fall.

The container was designed at the Forest Products Laboratory, costs less than $4 and can be manufactured at the rate of nearly 1,000 an hour.

Added Hp Through Cooling Fans

Through the mounting of cooling fans on certain types of aircraft engines, as much as 200 additional horsepower may be made available at high altitudes or in climbing. The fans, which are driven by the engines they help cool, are installed directly behind the propellers and serve to increase the flow of air among the finned cylinders of the engines at greatly reduced cost in drag to the airplane. Under many circumstances they permit the craft to operate with its cowl flaps closed, and after tests are completed on how the fans function under icing conditions and at sub-stratosphere altitudes, installation will be made on some of the most powerful types of AAF engines.



By mounting a cooling fan on the propeller shaft, additional horsepower may be available to engines at high altitudes. Spinning vanes of the fan eliminate need for cowl flaps.

Rocket-Propelled 'Power Bomb'

Adapting design details made available by the British Admiralty, the AAF has perfected a "rocket bomb" having a striking speed greater than that of sound. First used by B-17s of the 8th Air Force in their attacks against E-boat pens at Ijmuiden, Holland, on 10 February and 14 March, the missiles were able to penetrate the thick layers of concrete and pierce the massive roofs of the pens, causing great damage to facilities inside.

The rocket-propelled bomb is carried at normal flying altitude and aimed by the usual sighting technique, maintaining perfect stability from release to strike. Initially, however, operational use of the bombs presented many difficulties that required hazardous trials, and with Col. Algene E. Key as test pilot, the new weapon was first dropped over bombing ranges in England.

The task of making the bomb usable in AAF operations was carried out by the 8th Air Force Technical Operations Section, then headed by Col. Benjamin Kelsey.

Preparing Requisitions

"If requisitions are prepared intelligently and correctly at the point of origin," states Lt. Col. A. P. Bondurant, Supply Division, ATSC, "many future difficulties are avoided." Basing his statement on a particular instance where improper requisitioning at an overseas base resulted in some duplications through supply channels, Col. Bondurant further emphasizes the importance of ordering only what is actually required. To eliminate such contingencies and to simplify requisitioning procedures, he recommends that the following rules be observed:

1. Place a tab on the stock record cards of those items which are issued most often, and keep a careful accounting of the tabbed cards so that stocks may be replenished at the same rate at which they are distributed.

2. Set up a maximum-minimum stock level for each item based on how quickly it moves and how long it takes for replacement stock to arrive. This maximum is never to be greater than the allowable level under the prescribed

stock levels for individual theaters.

3. If ordering is necessary, look at the record to see how long it took to reach the minimum level, and then determine whether or not it is necessary to requisition all the way up to the maximum level.

4. Before actually ordering, find out how many you should request by checking on how many parts were issued for the previous ninety days, and whether or not the rate of issue has accelerated or declined.

5. If you find that a special item is in particular demand, find out why, and act accordingly. It might be a modification that will not recur, in which case you will order only enough to suit the circumstances. On the other hand, it might be caused by a change of a continuing nature, necessitating large stocks. ☆

WHAT'S WRONG with the picture on Page 53

1. If mechanical appliances could talk, the AN connectors in the turret would be crying. "Lay that hammer down" to the man at left. A strap wrench is the tool for removing these.

2. Examination of the turret dome would reveal that the man standing on it requires a dome examination of his own. Inspectors say "nix" to nicks.

3. Ammo is meant for the enemy, but the .50 caliber machine gun bullets strewn on the floor will collect dirt and cause the guns to jam.

4. See the boresight tool sticking out of the barrel of the gun on the left? If it's left in the gun—as sometimes happens—it will completely wreck the barrel when the m.g. is fired. Besides, with guns pointed groundward, there is also a chance that the tool will fall to the floor and break.

5. The corporal may be under the impression that he knows something about gun charges, but he's a three-time wrong doer. That screwdriver has no authorized business sticking in the barrel of the gun, nor should the gun cover be left open to collect dirt. He's also pulling the screwdriver in his hands the wrong way, which will jam up the timer motor in the gun charger.

6. Lettering on the Selsyn caps of the guns clearly warns against the use of wrenches, but the Sgt. in the middle left his reading glasses in the barracks. Also, using the gun charger hose to pull the turret around isn't a very bright idea.

7. The big black box on the right is the "brain" of the gun turret, and should be handled with care. Computers should be picked up and carried by two men—never dragged or pushed along the ground.

on the line

with mechs around the world

As a member of the AAF during both World Wars, M/Sgt. Christopher Stanton of Mering, Iowa, knows the value of speed in maintenance operations. His oxygen refilling apparatus, mounted in a trailer and hustled about his overseas base by rapid jeep, has considerably shortened the time required for replenishing oxygen bottles over that normally consumed by the wheel cart transportation previously used. Sgt. Stanton's equipment consists of regulation regulator valves, filters and safety valves.

To aid their crash-landed B-17 to make a take-off short enough to clear fences and trees at the end of the small ploughed English field in which they had been forced down, the crew of this Flying Fortress mounted twelve rockets under the wings of their plane to accelerate its movement across the short runway. The successful experiment was conducted by Capt. Richard G. Holub, Grass Valley, Calif., and may be adopted for bombers which crash-land away from sizeable airstrips.

Periodic adjustment of airplane compasses promises to be a simple job at the AAF's Bu-Karuchi airbase in India, thanks to the Compass Swing Computer developed by Sgt. Stanley Wawrzynek, Detroit. The instrument specialist's device consists of two discs, one slightly less in diameter than the other. Both are calibrated in degrees and spaced with the basic compass markings. To find the compensation necessary for an off-the-beam compass, readings are taken of the master compass and of the compass being adjusted. The two discs are then brought together accordingly, and the correction factor will appear through a slot in the smaller disc. Here Sgt. Wawrzynek uses his gadget in the cockpit of a C-46.

A little mugging seems in order as the builders of this time and labor-saving vehicle group themselves around their contrivance, with which they are able to bring almost every type of test and servicing equipment direct to bombers on a single chassis. The scene is a Pacific airbase, and the characters are, from left to right, T/Sgt. Nobile J. Grace, St. Petersburg, Fla., S/Sgt. Edgar E. Seale, Boligee, Alabama and Sgt. John A. Jauken, Oxford, Nebraska.

Deep in the heart of China, a large percentage of P-51 missions were aborting due to the condition of the fuel on arrival at the advanced fighter base. The barrels were old and rusty on the inside and there were no containers to which the gas could be transferred. The solution came when a B-29 made a crash landing on the field and its bomb-bay tank was salvaged and set up as a fueling station. Shown above, a mechanic gasses up a Mustang from the tank while men in background transfer fuel to the large receptacle from the original drums, filtering the gasoline through several thicknesses of chamois cloth. Idea for the tank arrangement originated with Lt. William Fleming, engineering officer.

SCANDINAVIAN CARPETBAGGER

(Continued from Page 29)

"There it is!" he yelled. "The highest mountain in Norway. I wanted all of you to see it."

Encouraged by the success of the first mission, Balchen's airline strove to fly carpetbagger operations whenever weather conditions were favorable. Increasing quantities of supplies went down to the patriots and word came back the resistance forces were using them to good advantage. Balchen's men had great admiration for the patriots and they took to writing them notes of encouragement. They also enclosed cigarettes and copies of American magazines in the packages. The patriots delighted in taunting the Gestapo by leaving the magazines in the lobbies of Norway's principal hotels.

During the course of these missions, the Liberators also dropped Allied secret agents and soon a highly efficient intelligence network was established. Liberator crews also brought back considerable information about the enemy's northern defenses. On one occasion they spotted a hidden airfield harboring new types of jet planes. Another crew discovered installations that were identified as V bomb sites.

Late in the summer of 1944, the British were informed that one of Germany's highly secret V-2 rockets had fallen into Swedish territory. The rocket failed to explode and was almost intact when the Swedes found it. The Swedish government was willing to give it to British scientists but the problem was how to transport it to military laboratories in the south of England.

Inevitably, the British called on Balchen. Would he bring back the rocket? Balchen said he would. A message was sent to Stockholm. Load the rocket on a Liberator and bring it down at once. A reply came back in a few hours. The rocket weighed 8,000 pounds. It was dismantled and crated and the crates wouldn't fit into the Liberator.

Balchen went into a huddle with Allen. They decided the only way to bring that rocket back to England was in a C-47. Allen agreed to try it.

He flew over to Prestwick immediately to borrow a C-47 but the only one available was a battered airliner known around the base as "The Bug." Its magnetic compass was faulty and the radio compass didn't work at all. Operations refused to take responsibility when Allen told them what he intended to do.

Quickly the blue and black invasion stripes were painted over and commercial airline markings stencilled on the wings. Allen took off for Stockholm with Durham, Withrow and a Norwegian radio operator named Engeland. When they landed in Sweden, "The Bug" did not have enough gas left in its tanks to taxi to the hangar. After the crates were loaded aboard, Allen was told that all flights over Norway had been cancelled because of the lack of cloud cover. He decided to risk it and "The Bug" took off with its heavy load, barely clearing a pile of rocks at the end of the runway. In the bright daylight over Norway, the transport would have had little chance if spotted by enemy fighters but luck was with it and it reached the North Sea without detection. German shore batteries took some shots at "The Bug" as it roared across the coastline but their aim was poor. At seven the following morning the rocket was in the hands of the British.

Having demonstrated that nothing was too difficult for it to handle, Balchen's secret airline soon was asked to undertake another seemingly impossible job.

For a long time, Allied air forces had been trying to sink the German battleship Tirpitz, but as of September, 1944, the vessel was still afloat at her anchorage at Altenfjord, Norway. Except for photo reconnaissance pictures, intelligence had little information regarding the condition of the warship or about the antiaircraft defenses protecting the harbor approaches. The only way to find out was to drop spies in the area with the hope that they could send out reports by portable transmitters.

Allen and Schreiner agreed to fly two Allied secret agents as close to Altenfjord as possible and a B-24 quickly was modified to permit installation of additional gasoline tanks in the bomb bay.

The flight from Britain to the drop zone and return covered more than 2,600 miles and took 16½ hours. It was probably the longest combat mission ever flown in the ETO. The two agents parachuted down close to the harbor and within a day had established contact with England.

On Sept. 21, 1944, Allen and the old reliables — Schreiner, Durham, Jesperson, Sage, Bollinger, Krasevac, Schick, Neil and Richards—took off to drop several spies in a heavily-defended region of Norway. The secret agents came down successfully but one of the Liberator's engines suddenly went out. Allen decided to head northeast to Murmansk for an emergency landing rather than risk the long return flight to Britain. The plane was just passing over the outskirts of Murmansk when it was coned in the searchlights of the harbor defenses. Antiaircraft batteries from the Soviet battleship Archangel let loose a heavy barrage.

The Liberator shuddered under the impact of a direct hit and Allen ordered his men to bail out. He kept flying level until all had gone over the side and then prepared to follow. But another shell tore through the wounded bomber. The Liberator faltered and then plunged into the water, a flaming mass of wreckage.

The Russians deeply regretted the tragedy which nevertheless was excusable for there had been no opportunity to alert the warships and harbor defenses that a friendly airplane was approaching.

Allen was buried with military honors at Murmansk and to the small wooden cross over his grave was affixed the simple inscription:

"In performance of duty."

It was a grevious loss to Balchen and the others who had performed so valiantly in all the Scandinavian operations. But their work continued. And it was not until victory came that the exploits of these men could at last be heralded to the world. ☆

progress report on eggbeaters

(Continued from Page 26)

stretcher cases were strapped to the outside of the fuselage and evacuated successfully.

The scale of tactical use of helicopters increases daily as new aircraft—the R-6A particularly—are delivered to overseas theaters. The Coast Guard—flying Army designed helicopters—has already performed several dramatic rescues at sea and on thawing ice with the eggbeaters; shortly the windmills will be at work with ground troops as artillery spotters, liaison craft, and wire layers.

Now being produced in addition to the R-6 is another Sikorsky design, the R-5, which is a much heavier helicopter powered with a 450 horsepower Pratt and Whitney engine. At the same time "Y" and "X" craft like the Kellet XR-8 Synchropter, the Platt-LePage XR-1A and others are being tested, improved, and readied for production. Drawing boards all over the country are covered with "revolutionary" helicopter designs.

Beyond a doubt the future of the craft is enormous—but we mustn't let speculation about the helicopter of tomorrow make us forget that there's a helicopter today; already at work, already frightening cows and chickens as it hedgehops across the U. S. or gathering crowds at places like Iwo Jima and Guam when it lands on or near an airfield. Recently 17 helicopters of the Helicopter School flew cross country from Chanute Field, Ill., to Sheppard Field, Texas—the largest and longest mass flight of "eggbeaters" ever—and at one point got lost, landing near the town of Ringling, Okla., for gas and directions. A woman who stood on the porch of her farmhouse and watched the things cover her cornfield like a swarm of locusts summed up the current progress of the AAF helicopter. "My God," she said, "Horoscopes! And I thought we'd have to wait 'til the next war to see any horoscopes!" ☆

Answers to Quiz on Page 46

1. (B) Getting longitude and latitude from the stars
2. (A) Floater
3. B-19
4. (B) South African
5. (B) C-47
6. (A) James H. Doolittle
7. CG-10A
8. (C) OA-10
9. (C) DDT
10. (D) Glide-skip
11. (A) True
12. (D) 120 days
13. (A) 1918
14. (B) Single-place Army plane
15. (D) The Southern Cross
16. (C) Divine Wind
17. (C) A nose light goes on
18. (C) Five
19. (B) Aluminum
20. Jap Tony

MASTER OF THE MESS

(Continued from Page 27)

in tall stories of AAF mess as Brandman's Banquet, tribute to the sergeant who made it a reality.

Probably the biggest effort of this kind was engineered by an operator in the Pacific, T/Sgt. Patrick Finn O'Toole. Sergeant O'Toole isn't descended from the Kings of Ireland for nothing. One morning word came that a USO troupe, including a Hollywood star much admired by the sergeant, would stop over several days later. Immediately O'Toole laid plans on a regal scale. Regular supply was relied on for bare necessities. Special Service was called on for place cards. Returning from Australia, a bomber crew brought the makings of ice cream, for which mechs devised a freezer run by jeep-power. A medic suggested native roots and berries for an exotic salad. Morning high-altitude missions guaranteed cold beer. Toward the end of the celebration, the glamorous guest of honor was asked what most impressed her during her war travels. Impartially, she replied: "The Pacific Ocean and Mess Sergeant O'Toole."

Inventors and instructors among mess sergeants hold specially important jobs. If it weren't for the ingenuity of the first, many a squadron in the field might go half hungry. M/Sgt. Edward Q. Bell, who learned how to build a kitchen around a field range and such odd buckets, pipe, sticks, pans, sand and clay as he could rake together in New Guinea, now demonstrates his impromptu methods to B-29 mess personnel at the Smoky Hill, Kan., airbase. Sergeant Bell, who remembers the "old days" of early 1942 in the Pacific, is a practical man, thankful for fundamental things in life such as odd gas cans that provided him with the makings of dishwashing machines and fighter planes that kept the Japs from blowing up his stove. Associated with him at the Flight Feeding School is S/Sgt. Floyd L. Leinbaugh, who has studied all angles of mess—including those of the infantry and Naval air. Sergeant Leinbaugh's chief concern now is training officers and men to supervise and prepare the type of meal required by B-29 crews, but he has been equal to highly specialized jobs such as advising on equipment.

When it comes down to the fine business of getting meals, mess sergeants are indispensable. Whether it's difficult business, such as providing freshly baked bread to maintenance crews on a new strip in the Pacific, or the more sentimental job of whipping up a birthday dinner for a little girl named Mary, just adopted by a bomber group in England, the mess sergeant is central to the scheme. He gets a large part of the credit for a first rate mess system. ☆

PICTURE CREDITS

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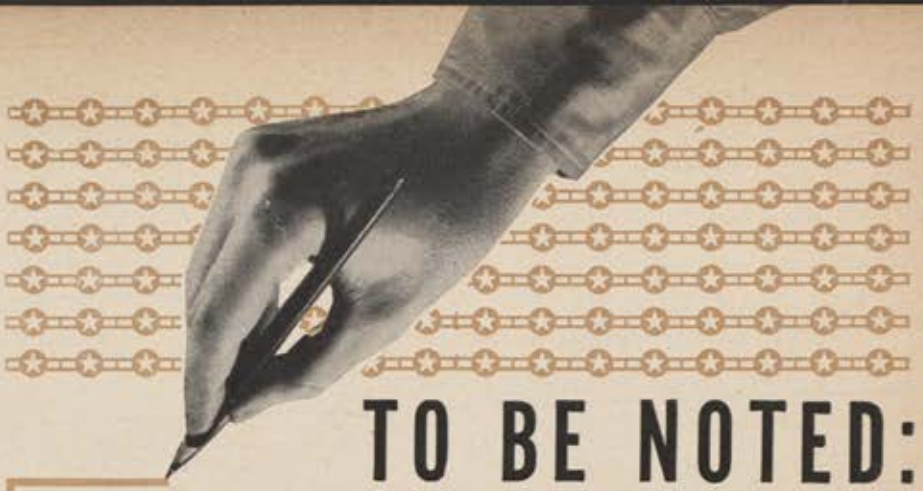


TO BE NOTED:

Alien Overseas Wives: Army Emergency Relief funds will not be used to finance the entry of alien overseas wives of Army personnel into this country. (AAF Ltr 39-43, 27 April 1945)

Longevity Pay: Enlisted service performed in the National Guard by an individual prior to the attainment of 18 years of age may not be counted for longevity pay purposes. (Sec III, Cir 97, WD, 1945)

Commissions for Clinical Psychologists: Warrant officers and enlisted women, as well as enlisted men, who are qualified as clinical psychologists, may now be appointed as second lieutenants. (Sec I, Cir 97, WD, 1945)

New Covers for Service Records: When a service record cover becomes badly worn or damaged, it has been common practice to detach the cover from an unused record to provide a replacement. Sec V, Cir 95, WD, 1945, directs that this practice cease. Replacement service record covers, WD AGO Form 24-C, will be utilized. Every precaution must be taken to see that entries and data contained on the service record are transposed correctly from the old cover to the replacement cover.

Efficiency Reports: Officers' efficiency reports are considered confidential in nature and should be so handled, but it is not the intent of the War Department that individual reports be so classified, except when the report actually contains information that requires proper classification. (AAF Ltr 35-208, 23 April 1945)

Personal Relationships: The fact that a member of the Army Nurse Corps, Women's Army Corps, American Red Cross, United Service Organizations, or a civilian is a blood relative of, or marries, a member of the armed forces or a WD civilian employee in an overseas theater base, or command, will not be allowed to effect an advantage or disadvantage in the assignment or duty of either person, nor will it be allowed to preclude the privileges normally allowed to such persons. Assignments of personnel under military control to duty overseas and authorization for others to proceed will be made solely on the basis of military necessity and without regard to the personal relationships involved. (Sec II, Cir 125, WD, 1945)

Wearing the Uniform After Discharge: Any person who has been honorably discharged from the Army may wear his uniform from the place of his discharge to his home, within three months after the date of such discharge. All persons who have served honorably in the Army during war shall, when not in active service, be entitled to bear the official title and upon occasions of ceremony, to wear the uniform of the highest grade held by them during their war service. Whenever the uniform is worn after discharge or separation from active service there is an obligation not to bring discredit upon the service. (Sec V, Cir 126, WD, 1945)

Unclaimed Personal Baggage: Large quantities of unclaimed personal baggage containing privately-owned and government-owned property are accumulating at railroad, bus, truck and express depots. Military personnel should promptly claim at the destination all personal property which they check or ship by common carrier. (Sec. I, Cir 61, WD, 1945)

Malaria Control: It is the responsibility of all commanders to initiate and enforce the necessary measures to control malaria within their units and unit areas. (AR 40-205 and AR 40-210)

Notice to Former Employer: When any member of the military service is relieved from active duty a postal card notice (WD AGO Form 519, Previous Employer Card) will be sent to the former employer that the ex-serviceman has been separated from the military service as of a definite date. The separation date for an officer will be the final date of such terminal leave as may be granted. (Sec VI, Cir 117, WD, 1945)

Mileage to Home: Where an officer upon being commissioned from an enlisted grade designated as his home the place where he was then serving rather than the place of his home of record, he may be considered as entitled, upon release from active duty, to mileage to his home of record, provided he certifies that he erroneously designated his duty station, or a nearby place, but that his home in fact was at the place stated in the certificate, and provided the place so stated agrees with his residence of record in the War Department as shown by his enlistment papers. (Par 15f, AR 35-4820, 19 April 1945)

Japs sounded fake alert and when American POWs took cover in this air raid shelter, the Japs poured gas in shelter, set it on fire.

This mangled mess is all that remains of a Jap twin-engine bomber.

Jungle Air Force B-24 lands on newly repaired Princesa airstrip.

GIs rest under wing of Jap fighter while building control tower.

Puerto Princesa, heavily-bombed capital of Palawan. At right is POW camp where 140 Americans were machine-gunned and burned.

Palawan

When the time came to lock the door on Jap troop and supply movements in the South China Sea and provide a springboard for airpower in subsequent Borneo invasions, the key was the Philippine island of Palawan which points southward like a finger to the rich East Indies. "I don't want a single shot fired at the infantry when it goes ashore at Palawan," Maj. Gen. Paul B. Wurtsmith, CG of the 13th Air Force, told his staff. And not a shot was fired. Infantrymen of the 41st Division went ashore at Puerto Princesa almost unopposed. No men were lost on D-day. The Japs had fled to the hills.

This easy invasion of strategically important Palawan

Black Widow of 13th AF, one of the first arrivals, buzzes new strip.

This Jap, captured by U. S. infantry and guerrillas during fighting in Palawan's hill country, heads prisonward in back seat of L-5.

Two wrecked float planes, tossed up like flotsam on the shore of the harbor, are closely inspected by interested GIs and gobs.

Pushover

was accomplished by air attacks that started early in October of 1944 when Army and Navy nuisance raiders paid occasional visits. The tempo was stepped up sharply near the end of the month when 37 heavies plastered Puerto Princesa airdrome, destroying 23 parked aircraft and damaging 15 others. The Jap garrison never recovered from that raid and the 13th's bombers continued to give the area a once-over-lightly every time repairmen began filling in the craters. On November 29, Morotai-based P-38s of the 13th Fighter Command flew their first escort mission to Puerto Princesa, but there was no intercception, nor was there any on subsequent missions. The final phase of the softening-up was staged from Mindoro with both fighters and bombers of the 5th Air Force blasting the area with bomb and strafing runs.

A sustained three-day attack preceded the February 28 landing.

The devastated facilities found by infantrymen—buildings, runways, revetments, aircraft—were convincing proof of the effectiveness of the pre-invasion attacks. The concrete runway was spotted with 182 bomb craters. Eighteen other craters had taken care of the overruns. The bombing results looked good to everyone but the aviation engineers, who had to put the strip back into service. ☆

This Nip sign had no effect on U. S. troops that took over field.

Japs turned this cathedral into military garage which was bombed by 13th AF. Pilots donated 2,000 pesos for rebuilding church.

OUR PACIFIC AIRFIELDS

(Continued from Page 13)

and Army ground forces have landed, the ships come up to find that there are no port facilities. The boats stay 1,000 yards off-shore while AAF aviation engineers build causeways, or float in their equipment, or waterproof their mobile units so they can be driven to the shore. Once on the beach, the 15-ton tractors and bulldozers bog down in the soft sand until roads can be constructed. Then, when the engineers have one foot on land and one foot still on the ships, an air alert is sounded, the boats pull away, and part of the equipment is on the island while the other part is still unloaded.

While that problem is being solved, careful surveys of the land are made to decide where the runways should go, to find enough coral and rock for paving purposes, and to select sites for permanent housing facilities. Usually, few maps are available and, as we move northward, no friendly natives. And all work is carried out under intense enemy resistance in the form of land attacks, suicidal forays, and continuous night air assaults.

The job of hacking out the airfield is then begun. Large warehouses, shops, depots, and hangars are built as well as storage tanks for aviation gasoline, and facilities for electric power, water distillation and food refrigeration. A modern city must be erected.

Trained personnel to do this work are not in the surplus category. When an invasion is planned, only a definite amount of shipping space is made available for ground forces, service forces, and supplies, and there is never too much of anything. From 1,500 to 5,000 men are needed to handle the construction of an airfield, depending upon its size and the amount of time available to finish the job.

It is a revealing fact that more men worked on the airfields of Okinawa than worked on all the airfields in France and Germany put together.

To construct an airbase on island X, about four months of back-breaking labor is required. Then, the AAF aviation engineers move to another island and the whole procedure starts all over again. Two hundred thousand more tons are hauled from California; a large-scale amphibious operation is undertaken; casualties mount; tractors broach on the beach; and there is always another and tougher operation lying just ahead.

The problem of building airfields in China is even more difficult. On the Pacific islands there is sufficient coral to provide a firm base for the runways. No such material is available in most parts of China. There, the AAF aviation engineers have to use gravel or scrounge around until a rock quarry is found. Sometimes they have to drain rice paddies and haul rock for many miles over what pass as poor excuses for roads.

It would appear that the tremendous "rice powered" labor supply of China would help solve the construction problem. Such is not the case. Due to the inability of the coolies to operate the highly technical machinery involved, this vast labor pool cannot always be used, since speed is so essential that only heavy construction equipment can complete the job in the short time available.

Further complications exist in China. The large Japanese army is a constant threat to the safety of the airfields. On the Pacific islands, once the existing enemy garrison is cleared out, our air and naval power can assure security from land attack. In China, the Japs captured some of our bases and are still quite capable of making serious attacks against others.

To get away from hypothetical situations and into actuality, consider the problems which existed when the AAF aviation engineers built airstrips in the Philippines and on Saipan. At Tacloban, on Leyte, they found a field 4,300 feet long by 100 feet wide, consisting of coral on a sand strip that could not be extended. The taxiways, such as existed, were made out of sandy loam intertwined with bamboo or just plain sand loam, too soft and narrow for our use.

The engineers practically had to pick up the airstrip and move it to another spot. They changed the longitudinal axis of the original strip 150 feet to the west and altered its direction. This provided ample distance for the necessary enlargement to 7,000 feet. Then they built a diagonal apron 2,400 feet by 200 feet. The field was in operation within 8 days. They had moved 161,619 cubic yards of earth and hauled coral over a distance of two miles.

For one fighter field on Saipan, they had to extend the existing runway by 800 feet, clear an additional 400-foot zone, and build two 75-foot shoulders. All of this was done in 10 days under conditions which could not be described as pleasant. Then, heavy bomber strips were prepared, including warm up and service aprons. The magnitude of the job on Saipan is shown by the fact that one field has seven miles of runway while another has a 450,000 square-foot warm up apron. In four and a half months, a single aviation engineer battalion quarried, hauled two and a half miles, and placed 426,850 cubic yards of coral on the runway, and excavated, moved, and placed 488,890 cubic yards of rock and earth. The amount of surfaces paved by the aviation engineers on Saipan would be equivalent to a two-lane highway from Washington to New York. Since 1941, the AAF aviation engineers have paved 838,000,000 square feet of surface, or enough to pave a two-lane highway almost halfway around the world.

On Iwo and Okinawa, and on every land area to be invaded on the route to Tokyo, the job gets tougher, the pressure greater, the time shorter. So, if someone starts yapping about how quickly we're going to wallop Japan, you can point out, among other things, the enormous problem of getting enough airfields to park our planes. Of course, the job will be done, sooner than later, but a lot of sweating comes first, considerable planning, a great amount of doing, and too much dying. ☆

ASK THEM ANOTHER

(Continued from Page 34)

the airfields. Engine life in the command was increased at least 50 percent.

Operations analysts assigned to the 20th Air Force are currently struggling with some 40 different subjects. One of them, referred to earlier in this article, has to do with devising defensive firepower formations for the VLRs.

Within the continental air forces, the analysts are chiefly concerned with developing new training techniques. These domestic sections are manned principally by professional educators, including two deans of university education schools. A small OAS is also assigned to the AAF School in Orlando, Florida. Col. H. W. Holden, school commandant, says the analysts are "a sort of cross between trouble shooters and efficiency experts. They know more about this school and every course in it than anyone at the school, including me."

Some commanders prefer to have their OAS chiefs take commissions—as in the case of Lt. Col. Sidney K. Wolf of FEAF, who came to the AAF through the Yale Engineering faculty, Western Electric and the War Production Board. But there are definite advantages in civilian status for most analysts. For one thing, it puts them on an effective working basis with either enlisted men or general officers. The gunnery sergeant can and does talk freely with them. And in talking to the CO, they are in a position to express their opinions without embarrassment. Then again, civilian status admits to this work some of the professorial talent who would have difficulties with an Army physical. And it permits the analysts to be retained for this type of work rather than diverted to other Army assignments.

Combat theater regulations require the OAS men to wear the Army uniform—but without insignia, of course. This not infrequently is the source of brushes with MPs and the Shore Patrol, generally beginning with: "What the hell kind of uniform is that?" Then too, they are often mistaken for correspondents, USO members, and assorted feather-merchants. One scholarly OAS chief says the subtlest flattery he ever received came from a sergeant who asked, "What instrument do you play, bub?"

As an operations analyst for nearly three years (including tours as chief of both the 13th and 20th Air Force OAS), Dr. Robert L. Stearns, president of the University of Colorado, has had more than his share of misunderstandings growing out of his brassless uniform. "I walked into the officers' shack on one steaming Pacific island shortly after I arrived," he relates. "As soon as I entered, an aggressive looking Marine officer descended upon me.

" 'Are you a civilian?' he bellowed. There was something about the abruptness of the question that angered me and I decided to have it out, once and for all. So I drew myself up to all of my five feet eight and said: 'Yes, goddamit, I'm a civilian. Want to make something of it?'

" 'No offense, my friend,' said the Marine. 'I haven't seen a civilian in 18 months and I just wanted to touch you.' " ☆

BLANKET OF FIRE

(Continued from Page 8)

staff cars and trucks were destroyed along with food, supplies and ammunition still serviceable and found abandoned by the enemy in his flight to safety. In addition, approximately 75 to 100 caves, some of which were known to have contained Nips and guns, were sealed by bombs. Since our last strike enemy resistance has been negligible as our forces continue moving forward."

Obviously saturation firebombing was an even more effective tactic than we had hoped. It was a new weapon. It could do a job that frags and demos, no matter what their size and number, could not.

Quickly following up the success of our first strike series we moved our targets ahead to keep up with the advancing ground forces. Four fire bomb strikes were scheduled for three target areas in the Mariquina Bosoboso River sector where the Japs had dug in for a determined and effective resistance. The four-day air intent called for the fighters to hit three targets, returning to target No. 1 on the fourth day. Approximately 200 P-38s and P-47s carried the fire bombs while P-51s administered the frag bomb and strafing followups.

Results were even better than those of the first series. The first day's operations put us three days ahead of schedule since the infantry was able to move into targets one and two immediately despite the fact that we had planned a return engagement. This gave us a chance to set up two new targets, Nos. 4 and 5, for three succeeding days. On the four-day action the SAP reported: "In the 38th Division area: Following closely behind our strikes the troops captured with negligible resistance areas struck (targets included areas which the troops had been attacking for five to seven days, meeting stiff resistance with little advancing). All targets hit have been consolidated to date. The areas division stated they had counted 600 to 700 Nips dead in their area killed by air action and artillery, with ammo, gas, food and supplies in flames."

Scheduling the third in our series of mass fire bomb strikes, we felt confident enough to guarantee results. This was a two-day, four-group attack on troops of the Jap's 10th division established in strong positions along the Villa Verde Trail in Balete Pass. The fire bomb treatment was thoroughly administered and all targets were immediately overrun by the infantry. The Villa Verde Trail was opened and Highway 5 was consolidated through Santa Fe.

It is my belief that in the fighter-administered fire bomb treatment we have an extremely potent weapon. I believe you will be hearing a great deal more about it in the near future. This belief is shared by men in the ground forces, men who have been directly affected by the results. This message which came to us after the Ipo strikes illustrates the point: "My heartfelt thanks to you and your airmen for their splendid support of our attack on Ipo which made possible the early capture of the vital Ipo Dam." It was signed by General Krueger, commanding general of the 6th Army. ☆

These droppable tanks with 110-gallon capacity are shown being filled with fire jelly.

When tank is dropped it ignites highly inflammable mixture of jelly which spreads like lava.

Detonator fits into gas cap hole, has small fuze that explodes upon impact, firing jelly.

This P-38 is all set to drop 330-gallons of flaming jelly which is almost non-extinguishable.

The Intercom

As a medium for the exchange of ideas, AIR FORCE presents these answers to its Question of the Month. Replies are those of personnel recently returned from combat duty in the areas indicated.

QUESTION: If you had your choice, what would you have ordered for your first meal when you returned to the United States?

Sgt. William R. Schofield, gunner, 15th Air Force: "Steak and potatoes—the good old American dish. First, I would like some vegetable soup made out of vegetables from our own garden. Then the steak with white potatoes and peas and Jersey tomatoes. I would order some cranberry sauce made from cranberries grown in my native state of New Jersey. Follow that up with ice cream and I'm not particular about what kind of ice cream. A cup of real coffee and then I could go to sleep for a week. We got some good steak when I was overseas. But I'd like to have more."

Sgt. Charles A. Buckley, gunner, 8th Air Force: "Steak. A big juicy steak with plenty of French fried potatoes. Some peas, Lima beans, and a heaping helping of apple pie. Actually, I got steak for my first meal in this country when I reported to Camp Kilmer. Then when I went home I had just the same kind of meal as the one I ordered here. One other thing —around my home town of Woodstown, N. J., we grow a lot of corn. I think I would like to have some good Jersey corn on the cob. That's almost more than I can eat but I certainly would try."

1st Lt. Irving Herberg, navigator, 15th Air Force: "Steak for the main course. I would start off with some of my mother's noodle soup. Then a thick steak with some baked Idaho potatoes and a green vegetable. It really doesn't make any difference what kind of vegetable just as long as it's green. For dessert, I would like some jello with fruit mixed into it. And don't forget the milk. We never got any milk overseas — not even powdered milk. For second helpings, I would order some roast beef, well done. I haven't stopped being hungry since I've come back from overseas."

1st Lt. Frederic Wolkoff, radio specialist, 20th Air Force: "Ice cream and milk. I went into a restaurant and the waitress asked me what I wanted for the first course. I said 'Vanilla ice cream.' Then she wanted to know what I wanted for the main course. I replied, 'Strawberry ice cream.' For dessert, I ordered more ice cream and a quart of milk. I eat ice cream and drink milk whenever I get a chance. Solid food is all right, but when you haven't seen ice cream or milk for a long time, you just can't get enough of it. I'm going to try all the ice cream flavors I can think of."

Cpl. Solomon Mendelson, clerk, 6th Air Force: "Southern fried chicken. To start with, I would like some chicken soup with dumplings. Then tasty southern fried chicken with candied yams. I come from Cleveland, so I would order some of those delicious tomatoes they grow around there. For dessert, my order would be a big piece of lemon meringue pie and American coffee. Top that off with some Ohio wine, and there's a meal fit for a king. And tell the waitress to keep bringing the milk until I start floating in it. And some ice cream on top of that pie is a good idea."

Sgt. Eugene Fitzgibbons, radio operator, 10th Air Force: "I come from Canada and they are great beef eaters up there, so I would order roast beef. Then I would want some asparagus with hollandaise sauce, mashed potatoes and some green peas. Some sort of a green salad would be a good idea. Then some apple pie a la mode and a cup of American coffee—without chicory. I'm not sure I would know what coffee without chicory tastes like, but I am willing to find out. And lots of milk. I didn't even see any milk for two and a half years. I'll never get enough of it."

REDEPLOYMENT

(Continued from Page 22)

apply alike to officers and enlisted men? Generally, yes. However, in the case of an officer returning as a casual or as a member of a unit scheduled for inactivation, a certified copy of the officer's Form 66-2 is forwarded from the theater to Headquarters AAF, and by the time the officer arrives at a reception station, orders have been issued either separating him from the service or transferring him to redistribution station (after RR&R) for reassignment.

16. Might there be instances in which these procedures will be varied? Yes. If military necessity requires, officers and enlisted men in some critical specialties may go direct to continental assignments from reception stations instead of being sent to redistribution stations. However, all efforts will be made to see that all individuals redeployed to or through the United States get their RR&R.

17. Does this procedure apply alike to ground and flying personnel? Yes.

18. Are redeployment policies the same for all three major Army forces? Yes, but there are essential and important differences in the application of these policies. Basic policies applying to all Army forces have been stated by the War Department in the well known RR series. (War Department Readjustment Regulations). While these policies apply throughout the Army, it is recognized that there are problems which, for example, are peculiar to the AAF and require special handling. Therefore, in some of the details but not in the basic policies the procedures vary among the major forces of the Army.

19. How long might an essential enlisted man eligible for release on the basis of points be retained in the service? This cannot be answered conclusively. However, it is the intention of the AAF that every enlisted man having the necessary score and desiring release be separated before the end of the so-called readjustment period, meaning 12 to 15 months after the fall of Germany. This depends not only upon the retraining program but also upon the availability of shipping from both active and inactive theaters.

20. At what rate does the AAF expect to release eligible personnel? It is expected that by late fall the separation rate will reach 40,000 a month. It is the aim of the AAF that except for a few in highly specialized skills, all eligible enlisted personnel desiring release will be separated by the end of the first year after V-E day.

21. Has any authority been established to review the cases of enlisted men who are

Answers to "How Sharp Are You"

Photo on Page 2	Questions on Page 43
1. Changing a propeller	6. True
2. B-25	7. Yes
3. No	8. Stinkey
4. None	9. 11th
5. Two	10. True

eligible for release on the basis of ASR scores, but are retained for military necessity? Yes. Reviewing boards have been established to examine and decide on the cases of eligible personnel who are being retained in redeployed units by reason of military necessity. Boards will be established later to review cases of eligibles being retained at installations in the U. S. As necessary, similar reviewing authorities will be established in the active theaters to examine the cases of men who are retained as essential despite the availability of replacement personnel.

22. How many individuals is the AAF expected to get from Selective Service, Army Ground Forces and Army Service Forces to equalize the percentage of demobilization with the other forces? More than 200,000.

23. What statement may be made on the release of officers? Those having high ASR scores and desiring release will be the first to go. The exception is, of course, that those qualified for and classified in a specialty that is critically short cannot be released until replacements are available. Monthly quotas will be issued for officers which will specify the number in each command by MOS, grade and category to be released. Categories, determined by the combination of ASR score, desire for retention and efficiency index, are defined in AAF Letter 155-9. All individuals with high scores who desire release will be relieved ahead of those in the same specialties having low scores.

To the extent practicable, officers with low scores who have not previously served overseas will go to the active theaters to replace high score officers, the latter to be returned to the United States for determination of their essentiality and probable release if desired. Those who wish to be retained and are qualified will be retrained in specialties that are critically short so that an equitable release of officers in these specialties can be effected.

There will be a very limited list of civilian and military specialties critically short in the Army as a whole. An officer in one of these specialties may be surplus to the AAF. If so, he may be transferred to another branch of the Army as directed by the War Department. Lists of these specialties will be published from time to time.

24. For officers, what are considered "high" point scores? Captain through colonel, 70 and above; first lieutenant, 58 and above; second lieutenant, 42 and above; flight officer, 36 and above; warrant officer, 65 and above.

25. To what extent do point scores and efficiency indices control the release of officers? The basic consideration in releasing officers is military necessity. This means real military necessity and should not be construed to mean military convenience. Military necessity is not to be invoked unless an officer's MOS appears on the Army or AAF critical shortage list. Officers desiring release who are found to be nonessential will be released. But where a choice must be made between two officers, the one with the higher score and the lower efficiency index will be released. ☆

A YANK for Good Measure

Take a look at his scoreboard.

Kit Curdes was circling low over one of his P-51 pilots who was bobbing in his dinghy just off Jap-held Batan Island. Another pilot whose plane had the lowest gas supply had high-tailed it home for a Cat. A fourth was circling at 20,000 feet, giving out with a distress signal.

It had been a fairly good day, as fighter mission days over Formosa go. Curdes' flight had knocked down two planes over the target, Curdes getting his first Nip since he came to the Pacific from the MTO last December. They had blasted three more on the ground at Batan before flak caught one of his flight.

Curdes looked down at the tossing dinghy and figured the chances of a Catalina coming in for a rescue before dark. It was getting along towards mid-afternoon, and the nights come fairly early off northern Luzon in the middle of February.

Suddenly, Curdes noticed a black speck coming from the southwest toward a Jap landing strip on Batan; then the speck became a dead ringer for a C-47 and as the wheels came down on the transport Curdes saw the American markings.

"Those damned Japs have patched up one of our buggies and didn't even have the grace to take the markings off," Curdes figured as he wheeled about to give the visitor a closer look.

Then he read a familiar number on the tail. It was the number of one of the "Jungle Skippers." At this point, the Jap ack-ack opened up—at Curdes' P-51 but not at the transport. A quick run of thinking convinced Curdes there was only one thing to do since the plane would be Jap property as soon as it landed, if it was not already.

The P-51 banked steeply, head-on into the flak, and opened up with its fifties on the C-47's right engine. As the transport headed out to sea, with one engine gone, Curdes made a 180-degree turn and cut loose on the other engine. The 47 settled into the water within yards of the downed fighter pilot's dinghy.

Curdes dived in to do a little strafing after all occupants of the transport climbed aboard life rafts, but he observed in time that the survivors were white. So he went back to his low-level circling. His water-bound charges had grown from one to thirteen.

When darkness fell and still no help had arrived, Curdes figured all hands would be safe until dawn and returned to his base. The next morning before daylight, he and his wingman took off, and they were circling over the survivors when a rescue Catalina arrived to pick them up.

Back at base, Curdes learned that the C-47 had been American manned, with 12 occupants including two Army nurses. The pilot had become lost during a flight from an island in the southern Philippines and had been forced to head for the nearest visible strip because of fuel shortage.

Curdes gave a start and a shout when he glanced at the names of the survivors. One of the nurses was the "date" he had been forced to break—without notification—the night before at Lingayen.

"Jeepers," he exclaimed, "Seven 109s and one Macchi in North Africa, one Jap and one Yank in the Pacific—and to top it, I have to go out and shoot down the girl friend."

A few weeks later, Capt. Louis E. Curdes of the 3rd Air Commando Group was awarded the Distinguished Flying Cross for shooting down a C-47. ☆

SHOOTING THE BREEZE

GOT ANY GOOD STORIES? SEND 'EM IN!

Never Never Land. "There are many and diverse ways the top can be blown in this man's army," a civilian visiting AIR FORCE said the other day. This civilian, who was a master sergeant just 24 hours before he came in, had returned from the separation center at Fort Dix to show off his blue pinstripe suit and flowered necktie.

"I'm talking with this guy for a couple of days while we're waiting to be discharged," the visitor said. "We get all set to sweat out the last sweat. We turn in all our stuff, listen to the lectures, and just take it easy. Then I notice the guy is getting nervous. We're waiting for our names to be called—just a few more hours in the army. They call for me, and later I hear them bellowing for this guy. Then comes the screwiest thing I've seen in four years of the army. They can't find this joker anywhere. The day they want to discharge him —he goes AWOL."

U. S. A. Capt. Edward J. Sawberger, awaiting reassignment at Army Air Forces Redistribution Station No. 2 in Miami Beach, was describing how his Liberator made a crash landing last November on the Isle of Vis in the Adriatic Sea.

"Anybody hurt?" he was asked.

"Two fellows," he said. "The nose gunner hurt his nose, and a waist gunner got a bruise on his stomach."

"By any chance, did the. . . ?"

"No," interrupted the 22-year-old pilot, "the tail gunner was not injured."

South America. The colonel was a lover of beauty. A waving flight of butterflies filled him with inexpressible joy, and he felt that each nodding flower was a bright companion. He liked nature unspoiled. The GIs didn't much care, one way or the other. But fences began to crop up everywhere. The landscaping was protected by wire. The greensward was roped off. Short cuts across grassy patches were out of bounds. Then a USO group came to the station and the soldiers decided to have their revenge. After all, you can't bust a USO pianist down to a piccolo. The theater was jammed to capacity and the Old Man had just made himself comfortable in his reserved seat. The house lights were dimmed, then a spotlight picked out the colonel. The band struck up the first note and a pleading voice wailed through the long, torturous length of "Don't Fence Me In."

Guam. A 21st Bomber Command clerk has been given up as an incurable gambler. If he comes to no good end, then that is how it must be. The young man plays a dull, uninspired type of poker and has lost most of his pay through this method since the day of induction. The guy has become a squadron joke. Recently, after being cleaned out, he appealed to his chaplain.

"You get no sympathy from me," said the chaplain, long acquainted with the man. "You can't win in a fair and honest game—then why did you play with those sharpies down at the motor pool? You must have known you couldn't win there."

"I did," the clerk whined sadly. "But what was I to do? It was the only game I could find."

Leyte. A 30-day supply of apricots accompanied the air task force which operated on this island in the early days of its liberation. Logistically, that is a minor triumph in itself. By any standard it is a batch of apricots. Apparently it had never occurred to the supply officer that there are such things as pineapple, peaches, fruit salad, pears and prunes. When he thought of fruit, he thought of canned apricots.

After two weeks the task force hated apricots with the same spirit they hated Japs. One red-haired corporal was particularly bitter. Even as a child, he wailed, he had despised apricots. Three times a day the chow line rang with his denunciations. Between meals he criticized the judgment which had caused the apricots. Then, just at breakfast time one morning, the Japs came over, strafing the chow line, sending the men to whatever shelter they could find. When it was over the shrill voice of the corporal was heard behind some packing cases. He was madder than before, and his raving was more bitter than ever. The packing cases had been riddled, but he had escaped bodily injury. He was, however, soaked from head to foot in apricot juice.

Pacific. Shaking a half dollar out of a coke bottle, T/Sgt. Vernon Black looked casually at the startled airmen around him. He rubbed his hands together and thick puffs of smoke burst forth.

"These little accomplishments could come in handy," Black said solemnly. "I'm glad I spent my spare time back in the States learning magic." With a quick flick of the hand he removed an egg from behind a gunner's ear.

"I might even become king of a native tribe with a trick like this," Black said. He took another egg from the bewildered gunner's ear. "Just in case I get forced down," he explained.

Black dropped the half dollar back into the coke bottle and went to unpack his gear. He had just arrived for combat in the Pacific.

Luke Field. Warrant Officer Rex Swindling says that airmen seem to have a never ending stream of questions when they call at the local finance office. About the dumbest question to date, and certainly the most sensible answer, occurred when a new brass hat asked Cpl. Pete Jackson if Link Trainer time counted for flying pay. Without blinking an eye, the patient Jackson replied, "Well, sir, if you can get the damn thing off the ground—we'll pay you for it." ☆

The Album — AVIATION CADETS

1911. This vaguely familiar chap, sitting at the controls of a Type B two-seater, is 25-year-old 2nd Lt. H. H. Arnold who is learning to fly at Wright Flying School, Dayton.

1910. Orville Wright and his aviation students drape themselves alluringly around a Wright plane at Montgomery, Ala.

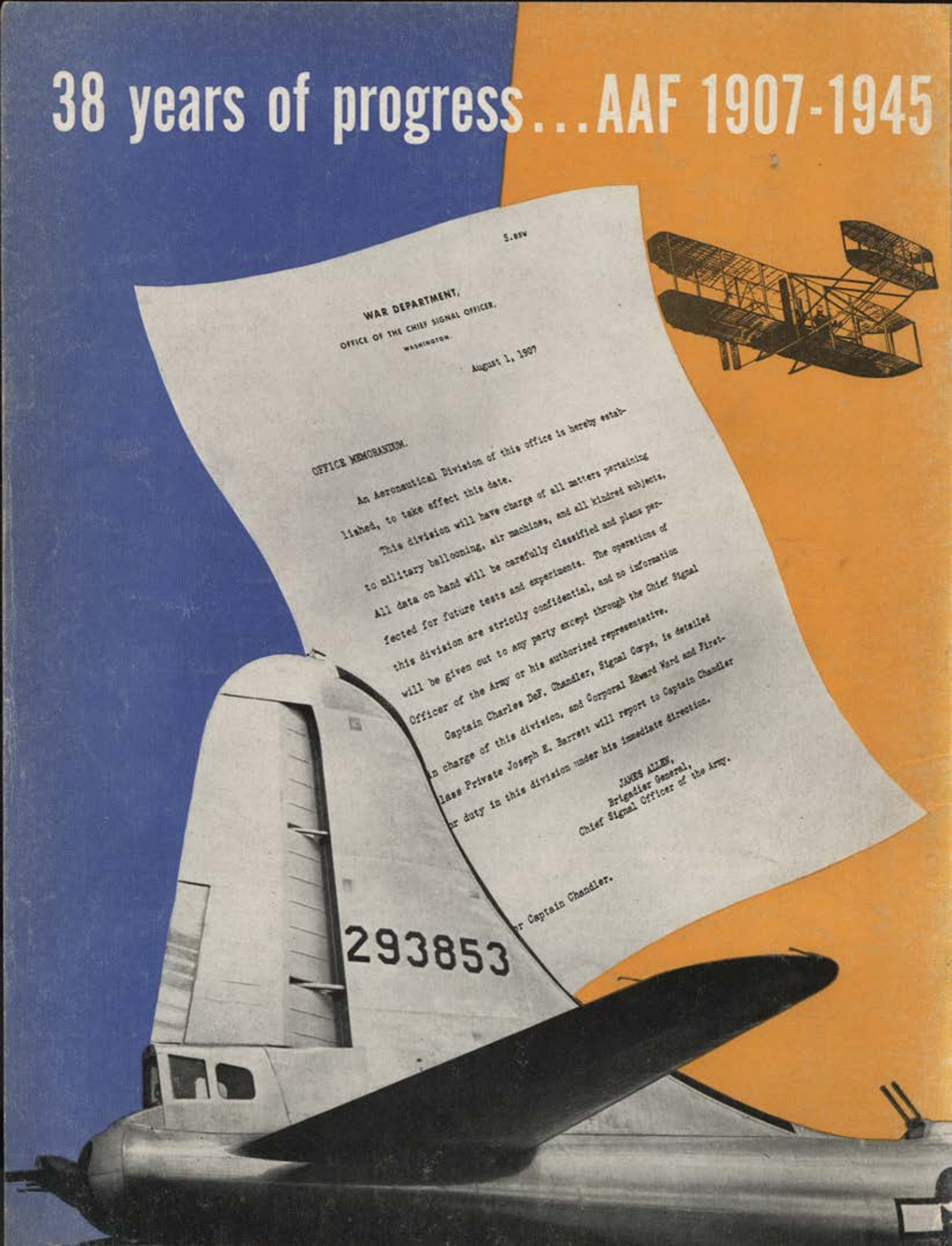
1913. In this biplace machine, instructor communicated with pupil by rapping him from behind with wrench.

1914. Hangars of first aviation school at San Diego, Cal. Hangars for seaplanes were located a short distance away.

1916. Ragtime mechs fuss with a Burgess-Deunne Tractor Trainer. Get a load of the swing-wings with the reet-seats.

1915. Student body of the Wright School at Augusta. As for uniformity of apparel, these guys look like a United Nations parade.

38 years of progress...AAF 1907-1945



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WAR DEPARTMENT,
OFFICE OF THE CHIEF SIGNAL OFFICER,
WASHINGTON.

August 1, 1907

OFFICE MEMORANDUM.

An Aeronautical Division of this office is hereby established, to take effect this date.

This division will have charge of all matters pertaining to military ballooning, air machines, and all kindred subjects. All data on hand will be carefully classified and plans perfected for future tests and experiments. The operations of this division are strictly confidential, and no information will be given out to any party except through the Chief Signal Officer of the Army or his authorized representative.

Captain Charles DeF. Chandler, Signal Corps, is detailed in charge of this division, and Corporal Edward Ward and First-lass Private Joseph E. Barrett will report to Captain Chandler or duty in this division under his immediate direction.

JAMES ALLEN,
Brigadier General,
Chief Signal Officer of the Army.

r Captain Chandler.

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