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# AIR FORCE

THE OFFICIAL SERVICE JOURNAL

OF THE U. S. ARMY AIR FORCES



APRIL 1944



Backbone of our striking power against Hitler's Europe are the thousands of ground men who work around the clock to keep our bombers and escorting fighters in the air—men like this crew chief and mechanic who are shown clearing the cylinders of a P-47 at an airfield in Britain. For a profile of a ground crew "boss" in England, see "24-Hour Job" in this issue.



# CROSS COUNTRY

**B**ECAUSE the troop basis for 1944 requires a sharp reduction of activities in the zone of interior, the Army Air Forces must, in the words of General Arnold, "increase the output per man on all jobs on each post and station."

In a February 7 letter to the commanders of all continental air forces, commands and stations, the Commanding General declared: "Personnel will be transferred to units destined for assignment overseas. The training and servicing job in domestic commands must be accomplished with fewer personnel and the flow of men and equipment overseas must not be diminished."

He called for a continuation of current efforts to reduce overhead and house-keeping activities in order to meet the "critical obligation" facing the AAF in 1944, adding: "There is no excuse for 'luxury personnel' at any AAF installation. There must be no idle personnel on a station waiting for work."

The Commanding General specifically ordered reduction of personnel engaged in overhead and training functions, and the replacement of general service men with those who are limited physically.

"Success of this program requires initiative and superior performance on the part of every officer and man in the Army Air Forces," he wrote. "I expect no less from all."

Today the AAF must look to increased efficiency through better deployment of tactical or technical skills. As Brig. Gen. J. M. Bevans, Assistant Chief of Air Staff, Personnel, put it, "Where we now have three men to do a job, there will be only two. Sometimes there will be only one."

The AAF strength overseas will be built up greatly this year. Men must be supplied largely from continental activi-

ties since the AAF intake now is limited to replacements for actual losses. It follows then that for every man added to our theatre forces, a man must be taken away from a station at home.

The problem is pointed up just now by the demands of the program for very heavy bombardment, which will require large numbers of men this year. There will be no increase in AAF manpower for this undertaking; thousands must be squeezed out of existing activities.

All steps are being taken to eliminate functions which can be spared. Many men are being taken out of training and made available for use immediately. Some schools are being discontinued and, wherever it is feasible, on-the-job training is being undertaken. To achieve maximum utilization of manpower, commanders are asked to assign additional duties to all personnel whose time is not now fully utilized.

"The most effective duty assignments combine full use of available man hours and the substantial utilization of military occupational specialties in which personnel are qualified," says General Bevans. "For instance, a special purpose vehicle operator can be assigned appropriate additional duties when he is not operating a crash truck or wrecker. A draftsman can be assigned additional clerical duties when he is not at his drawing board. A machinist can be assigned mechanic's

work to fill out his time. In effect, there is no longer any 'fat' in our personnel picture that will allow specialists to be idle while they wait for work in their specialty."

## WEATHER VANE

Unless it be a window full of cuckoo clocks, there is nothing busier than the nervous gadgets at a weather observer's station. There are whirling psychrometers, theodolites, self-synchronizing wind vanes, three-cup anemometers and thermographs and, for that reason alone, we have always shown the greatest deference and respect for weather-men.

Naturally we were surprised and a little let down to learn that an AAF weather-



### FRONT COVER

Airmen of two races—members of the Chinese-American Composite Wing of the 14th Air Force—gather around a briefing table in this month's front cover photo. See Page 19 for details on the Wing's work.

man at one critical period had relied on a rheumatic donkey for his forecasts. Lieut. Col. F. A. Kluever, a front line weather officer, has revealed that at one time in Africa there was such a scarcity of weather equipment he came to depend implicitly on this crippled donkey which would bray well in advance of approaching rain. The colonel has described the method as "unscientific—but in that case accurate."

### NO RIGHT SLEEVE PATCHES

Personnel authorized to wear the shoulder sleeve insignia of a separate air force or command are prohibited from wearing the AAF shoulder patch on the right shoulder of the uniform under terms of AAF Regulation No. 35-11, dated 25 February 1944. The AAF shoulder sleeve insignia should be worn on the left sleeve, one-half inch below the top of the shoulder seam, by all AAF personnel except those authorized to wear the insignia of a separate air force.

### DEADLY HEADWORK

There are more ways to kill a cat than to drown him in butter, and 10th Air Force pilots in India do not stand on ceremony when they polish off a Jap. Recently two American airmen have been credited with disposing of enemy planes in rather novel ways.

When Capt. Sydney Newcomb, commanding officer of a fighter squadron, got a Zero on his tail he hit the deck and began pruning the shrubs and foliage, but the Jap hung on close with guns blazing. Suddenly a Burmese pagoda loomed up in front and Newcomb held the nose down until the last split second, then yanked back on the stick and zoomed over it. The Zero, not so quick at the stick, tried to clear the pagoda and failed. The result was a rather loose mixture of Jap and pagoda.

Another instance is that of Lieut. William T. Larkin, B-24 pilot who tried to get back into formation with a badly shot up plane while a Jap I-45 made a pass from just below 12 o'clock. Other planes were holding the fire of his gunners so Larkin dipped the nose of the Liberator and fired his fixed .50s. The Jap winged over and trailed a feather of smoke and flame until it crashed. Larkin was credited with a confirmed kill.

### STUD DUCK

It was in the early days of occupation of a bitterly contested island in the Solomons that two AACCS officers made their hot and weary way from the installations they were setting up alongside the bombed and rebombed mat to the headquarters of the Island Command. There was too much confusion to waste time with correct procedures when things had to be done on a scene that was little more than a beach-head. The two officers, principal actors in this drama, were clad in nothing more



A six-minute blitz by Fortresses of the 15th Air Force blasted harbors and factories at Pola, Italy, 226 miles northeast of Rome, an important German submarine base and shipping port. This raid early in January did heavy damage to submarine pens and other installations in the dock area. Some of the bombs are shown heading for the harbor, while others are bursting on the target.

than trousers and shoes. One wore a long hunting knife in his belt like a bad mutineer. They were in a rush to complete their job since the station had to be on the air the next day to start bringing in tactical planes. Consequently, they were in a heated discussion of these plans when they approached the only screened quonset hut on the entire island. The two AACCS men approached the hut without paying much attention to its other occupants.

"This must be the shack, let's get going," said the one with the knife, and they entered without knocking. His com-

panion led the way and was somewhat struck by the appearance of one individual who had something on his collar that certainly was no accident of the laundry. The thing was broken out all over with silver stars. Before the leading visitor could make warning outcry, however, the other had unsheathed his weapon and, with a fine display of marksmanship, whizzed the knife across the room and made it stick quivering in the middle of the center board.

"Who's the stud duck around here?" the knife-tosser demanded.

It took all the persuasive power and

diplomacy of one of the senior officers in the hut to calm down all the high rank. However, he did bring them under control when he told them of the excellent work done by the men of the AACS.

On the following day when the two AACS officers walked by the quonset hut they saw a modest little sign on the door which proclaimed the person inside to be the "Stud Duck" of the island. Since that day a well-known admiral has had that sign on his headquarters wherever he happened to be.

### BRONZE STAR

The Bronze Star, newest decoration for action against the enemy, takes precedence over the Air Medal and the Purple Heart. It can be awarded to anyone in the Army, Navy, Coast Guard or Marine Corps who distinguishes himself "by heroic or meritorious achievement or service, not involving participation in aerial flight," according to an explanation given by Robert P. Patterson, Acting Secretary of War. It is expected that Ground Force troops may lead the eligibility lists, although it is entirely possible for flyers to win the Bronze Star—but not in the air.

### ALWAYS WITH US

Our unshakable confidence in the innate kindness of sergeants has been bolstered again. This time it takes the earthly form of Sgt. John Love of Base Squadron Supply, Walker Field, Kan. Sergeant Love recently went home on furlough, expecting to spend two weeks in a restful little garden just outside of Nashville—two weeks away from web straps, high shoes, tin troughs, stencils and everything that is the Army.

The sergeant arrived home in good order, birds sang and skies were not cloudy all day. The first night, however, was filled with hurrying feet and raucous voices. Love investigated and found that the Army was having maneuvers all around him, and no small part of that force had been assigned to toss a theoretical enemy out of his own backyard. Love tried not to notice, but it was too much. The night got blustery, cold rain fell and the sergeant's heart was touched with compassion. He put on the big pot and served coffee and cakes to the soldiers who were just outside his window. The Army remained until the day before Sergeant Love returned to duty.

### THE LONG VIEW

We have heard the highly adaptive story of a flyer who had been stationed on an island for many months and had taken a lively part in the social life of the place. During his stay he had become much enamored of a half-native girl who, from all accounts, was very beautiful. One day he was growing warmly poetic in his enthusiasm for the young lady, while his

buddy was thumbing through a movie magazine. The disinterested party had heard about enough of this raving when he suddenly turned to a fine example of Hollywood beauty in a brief bathing suit.

"How's this?" the buddy asked, holding the magazine before him. The love-stricken pilot took a brief look and snorted:

"White trash!"

### THE LAST MILE

This department would be derelict in its duty if it failed to give some mention to War Department Circular No. 60, dated 10 February 1944. The War Department has titled it: "PER DIEM—REIMBURSEMENT TO OFFICERS FOR SUBSISTENCE EXPENSES INCURRED IN CONNECTION WITH TRAVEL PERFORMED WITHIN CONTINENTAL LIMITS OF UNITED STATES IN COMPLIANCE WITH ORDERS ISSUED ON AND AFTER 1 MARCH 1944." This ponderous thought, however, can be digested into: "No More Mileage."

Circular 60, in a few brief paragraphs, lays away a custom of the service that is almost as old as travel by rail. Puttees, high-collared blouses and campaign hats came and went, but mileage carried on forever—until March 1, 1944.

Briefly, the circular provides that orders directing travel and temporary duty of commissioned officers (including officer personnel of female components) flight officers and warrant officers of the Army, within the continental limits of the United States, will not specify the method or rate of disbursement.

It further provides that a payment of a flat per diem is the only authorized method of reimbursement for subsistence expenses incurred in temporary duty

travel with the exception of travel performed in connection with permanent change of station, when, in most instances, mileage will be allowed.

### CONSOLIDATION

Transfer of the AAF Eastern Technical Training Command headquarters from Greensboro, N. C., to St. Louis, Mo., and disbanding of the AAF Central Technical Training Command was effected March 1 to bring about an economy in administration. Under this new alignment the seven major installations of the central area will become part of the eastern command, and two stations, formerly under the eastern, are transferred to the Western Technical Training Command at Denver.

### FOR TH' BIRDS

Ground crews at Greenville Army Air Base in South Carolina sound like Maes you'd enjoy knowing. Here is a note the night maintenance crew left for the day crew of the 471st Squadron recently:

"Awake sparrow in the right rudder of ship number 9873 before pre-flighting."

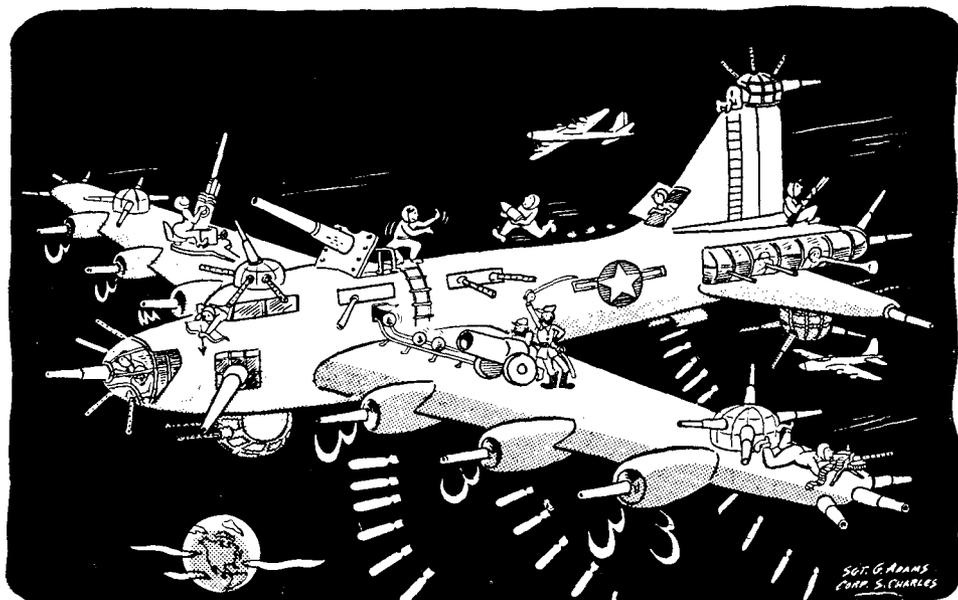
### A BLEND

At times we have given way to pleasant contemplation of that wondrous place in fable, the big rock candy mountain. There is something utilitarian about beef steaks that grow on bushes and a place where Var 69 trickles cool and abundant from the rocks. However, we have dozed into nothing quite so fanciful as a story which has just reached us from loyal friends of Capt. Robert Howard, mess officer at one of the AAF installations in the CBI Theatre.

This strange thing occurred last New Year's Eve when Captain Howard decided that the day should not go unnoticed. Feeling that there must be a lad or two

A GI conception of the B-29.

SGT. G. ADAMS AND CPL. S. CHARLES, ARTIST





Bombs from B-24s drop on Frankfort on the Main during one of several heavy poundings to shake this important German industrial and transportation center early in February. In this attack, 800 heavy bombers, accompanied by hundreds of fighters, dumped 1,800 tons of bombs on the target, an AAF record to that date. We lost 31 bombers and 13 of our fighters were missing; 103 enemy planes were shot down during the attack.

in the outfit who would like a drop before his supper, the mess officer got together a big supply of native whiskey which he blended with fruit juices and syrup. From time to time the concoction was sampled by some of the wiser among the kitchen help and at last it was pronounced fit for a general.

Since there were several squadrons involved and it appeared likely that a majority of the lads might like a touch, the problem of serving the liquor came up to puzzle Captain Howard. Looking about the kitchen it was decided to use the giant vat from which soup was ladled, a decision which seemed to solve everything. Naturally the medics were consulted and they proceeded to toss a half-hitch around the whole happy affair. Native whiskey, acid fruit juice and an aluminum tub might create such a chemical disturbance that the insides of all celebrants would resemble neglected storage batteries, the doctors decided. Anyway, no chances were to be taken.

At that point the hero appeared. The whiskey, syrup and juice were poured into a Lister bag, and from its four spigots the

lines fanned out like spokes of a great wheel.

Never before, and for all we know never since, has a Lister bag so well filled in for a wassail bowl.

There were no casualties.

#### PLASMA ON THE FLY

Because a flight surgeon insisted that his men know how to give blood plasma in flight, an airman's life has been saved by this means in the Central Pacific theatre, dispatches advise. Lieut. Andrew A. Doyle of Brooklyn, a bombardier-navigator, was in danger of dying from loss of blood and shock when he was given plasma as his plane raced back from bombing a Jap base in the Marshalls.

Capt. Lowell Ladd Early, squadron flight surgeon, had insisted that plasma could be used to advantage during flight and his instructions were followed by Lieut. August Mizaroff of Plainfield, N. J., co-pilot, and Sgt. R. V. Smith, Jr., of Charlotte, Va., engineer-gunner. By the time the B-25 reached the nearest American base Doyle, injured in the legs, was feeling much stronger and responded readily to further treatment at the field hospital.

#### TRAINING RECORD

The AAF Training Command has revealed facts and figures on the training program which heretofore were treated as confidential matters. The report shows that 100,799 pilots, 20,086 bombardiers, 18,805 navigators, 107,218 aerial flexible gunners and 555,891 ground and air combat crewmen were graduated from the command's nationwide network of schools from 1 January 1939 to 30 November 1943.

In 1939 there were 696 pilots gradu-

ated from two flying schools, while in the first eleven months of 1943 the command graduated 61,730 pilots of all types from 135 schools. The increase in the production of technicians is no less spectacular when it is considered that only 14,803 were trained in the twenty years preceding 1941.

A tribute to the maintenance crews, most of them graduates of the technical schools, is the fact that during the eleven months ending 30 November 1943 Training Command students flew an average of 25,600 hours between each fatal accident.

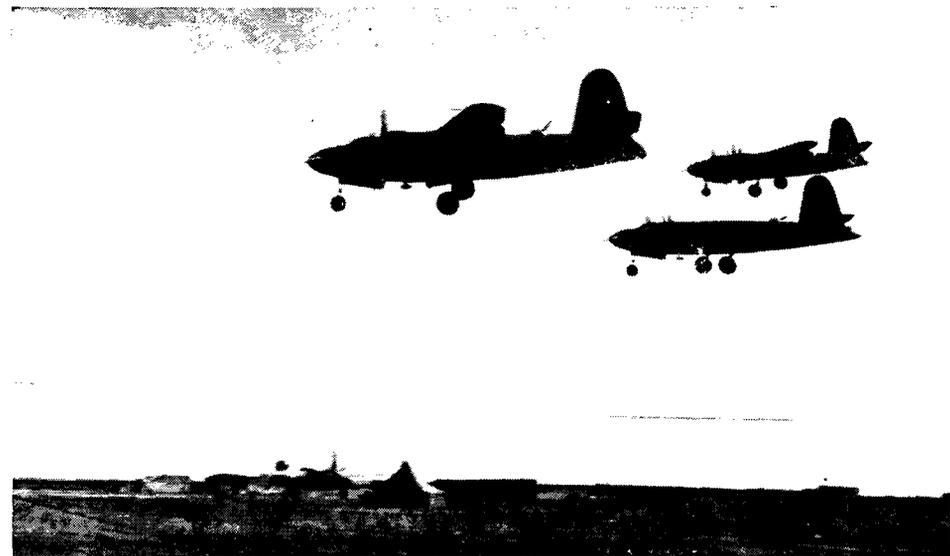
#### UNsung

In countless air battles the records can never reveal the great gallantry of the guys who go down in action. A case in point is the story of an unidentified soldier, now missing in action, who is reported to have shot down at least ten Nazi planes before his own B-17 was destroyed by enemy fighters during the attack on Munster, Germany, last October.

The missing soldier apparently was the ball turret gunner of a plane, also unknown, although his shooting has been reported by Staff Sgt. Everett W. Lewis of Yellow Springs, Ohio, left waist gunner on the B-17 Situation Normal.

"I'm not sure what Fort it was since several went down together and others took their places to keep the formation tight. But I saw at least ten German planes explode nearby, and all apparently were destroyed by that fighting Fortress on the left. All the other Forts were to the right of this one so I'm sure it shot up all the Huns I saw explode—and I repeat there were at least ten. They came in from the left and up from below, toward that ball turret. Each one blew up just before reaching it."

Three-at-a-time take-offs and landings are a specialty with Lieut. Col. Joseph R. Holzapple's 15th Air Force B-26 group, oldest medium outfit in the theatre. Working without mishaps for more than twenty missions, this tricky flying is not for show. Three abreast take-offs give an estimated range extension of fifty miles, and save the equivalent amount of precious gasoline.



## SNAFU BUT FUNNY

A young radio operator on a transport flying the Hump to China was given orders to radio ahead that the ship was bringing in a complement of two lieutenants and twelve enlisted men to be stationed with the 14th Air Force for rations and quarters. This message was sent in code and our radioman screwed it up rather thoroughly.

After it had been deciphered at the China airbase the intelligence officer had a message which led him to believe that the ship was bringing in twelve members of the State Department and two visiting ambassadors. In consequence of this information the plane was met by General Chennault and a coterie of important

## PARACHUTES: LOST AND FOUND

### Lost:

Nos. 42-140129, 42-229808 seat-type; return to Base Operations Officer, Fairmont Army Air Field, Geneva, Neb.

No. 42-662988, return to Sub-Depot Supply Officer, 398th Sub-Depot, Laurel Army Air Field, Laurel, Miss.

Nos. 39-30, 41-7952, 41-19775, 41-24837, 42-128591, 42-466077; return to Parachute Officer, Luke Field, Phoenix, Ariz.

Nos. 42-222909, 42-45422, 42-45436, 42-222910, 42-22959, 42-22935, 42-22937, all type S-1; return to Office of the Engineering Officer, 51st Air Base Squadron, Eglin Field, Fla.

No. 42-288686, return to Operations Officer, AAF Pilot School (Basic), Majors Field, Greenville, Texas.

No. A.C. 42-2426, return to Operations Officer, Orange County Air Field, Santa Ana, California, and notify R. F. Loughmiller, Lieut. Col., M. C., Surgeon, Hobbs Army Air Field, Hobbs, N. M.

Nos. 42-291994, 42-291995, 42-292031, 42-291964, 38-2281; return to Base Operations Officer, FAAF, Florence, S. C.

No. 42-9835, return to Curtiss-Wright Modification Center, Cayuga Road, Buffalo 5, N. Y.

### Found:

No. 42-303510, seat type, left at 6th Sub Depot, Bainbridge Army Air Field, Bainbridge, Ga. Drop Test Card shows this chute was packed at 348th Sub-Depot, Casper Army Air Field, Casper, Wyo., March 30, 1943.

No. 42-648262 is held by Curtiss-Wright Modification Center, Cayuga Road, Buffalo 5, N. Y.

Chinese officials. Instead of protocol and diplomatic gestures, however, the first thing the reception committee saw was a dozen GIs tumbling their barracks bags out of the plane. When the intelligence officer, barely escaping this shower of equipment, asked about the state officials on board he was given a rather suspecting glance by the pilot and told to stop the humor because the GIs and the lieutenants were hungry and wanted to eat.

When the truth of the fumbled message came out the intelligence officer was thrown into such a fury that he commanded the quivering little radio operator to explain the whole sorry affair to General Chennault.

With every ex- (Continued on Page 64)

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April, 1944

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AIR FORCE (formerly the Air Forces News Letter) is printed monthly by authority of Army Air Forces Regulation No. 5-6, Sept. 6, 1942, and with the approval of the Bureau of the Budget, Executive Office of the President. AIR FORCE is published by the U. S. Army Air Forces at the AIR FORCE Editorial Office, 101 Park Avenue, New York 17, N. Y., U.S.A., for use of personnel of the Army Air Forces and allied activities, and is not to be re-published in whole or in part without express permission. Direct communication with this office has been authorized on matters of editorial content, circulation and distribution. Tel., Murray Hill 5-1951; Teletype No. NY 1-2530; Director, Lieut. Col. James H. Straubel, A.C. AIR FORCE is primarily a medium for the exchange of ideas and information among Army Air Forces personnel, and the opinions expressed by individual contributors do not necessarily reflect the official attitude of the Army Air Forces or of the War Department.



# AIR PINCERS OVER EUROPE

By Maj. Arthur Gordon  
AIR FORCE Overseas Staff

**H**ISTORY may well disclose that the last stand of the German Air Force began in February, 1944. An air arm which cannot supply itself with replacements is doomed. In February, Nazi fighter production received such a hammering from the air that, for the first time, it failed to keep pace with the attrition of the Luftwaffe.

Those who like precise dates may choose either February 20 or 22 as a critical moment. On February 20 the greatest daylight aerial assault in history was launched from Britain. Nearly 2,000 planes of the 8th and 9th Air Forces struck the German aircraft industry in eight widely separated areas. The next day another great force continued the attack. On the third day, bombers of the 15th Air Force roared up from the Mediterranean to add their bomb tonnage to the weight being dropped simultaneously by the British-based heavies.

This closing of aerial pincers was the final outcome of long planning and careful preparation on the part of the U. S. Strategic Air Forces in Europe. To any

thoughtful German, it must have looked like the handwriting on the wall. In these three days, with more than 4,000 American aircraft attacking, with American heavies dropping over 5,000 tons of bombs and with the RAF adding some 3,000 more at night, the air war over Europe moved into its most violent phase.

One hundred and seventeen American aircraft—94 bombers and 23 fighters—were lost; 310 enemy fighters were reported destroyed in the air, plus a considerable number on the ground. Weary from combatting the RAF's shattering night attacks on Leipzig and Stuttgart during the same period, the Luftwaffe fought back with its usual skill and courage but showed definite signs of grogginess. At USSTAF headquarters, staff officers, who remembered a similar climax in July, 1943, prayed for a few days of clear skies. "Give us the weather," they said, "and our combat crews will finish the job."

It was back in February, 1942, that the first AAF officers arrived in Britain. A year later, in February, 1943, the

American air effort in Europe was still pathetically small. The 8th Air Force consisted of about a half-dozen groups of heavy bombers, and when they managed to put 100 planes over a target in Germany, it was without any fighter escort.

Now the picture has been altered so radically that it is not easy to focus it clearly. The expansion has been so great that the result at first glance seems to be a bewildering jumble of British and American air power, of strategic and tactical and expeditionary air forces whose names are likely to change overnight and whose operational and administrative affiliations defy analysis.

Such is not actually the case. The organization wherein the 8th, 9th and 15th Air Forces are cooperating with one another and with the RAF in the pre-invasion softening of Germany is practical and very much to the point. It is still, however, in a state of crystalization and further changes are to be expected.

The backbone of American air power in Europe is the 8th Air Force, whose

fighter and heavy bomber commands now match the RAF in size and striking power. Under command of Maj. Gen. James H. Doolittle, the 8th Air Force now forms one wing—the British-based wing—of Lieut. Gen. Carl Spaatz' Strategic Air Force. The other wing of the USSTAF is the 15th Air Force, based in Italy, under the command of Maj. Gen. Nathan Twining. General Spaatz exercises operational control of the 15th Air Force through the Mediterranean Allied Air Force, under Lieut. Gen. Ira C. Eaker, but the distance from Britain makes administrative control difficult and much of this remains in the Mediterranean.

The combined operations of these two air forces against German aircraft factories on February 22 were initiated at General Spaatz' headquarters in Britain, and they provided the first example of how these two spearheads will function as one weapon, bringing the pressure of strategic bombing to bear on the enemy from opposite directions. Our tactical air power in Britain is wrapped up in the plans of the invasion forces, all under command of General Dwight D. Eisenhower, Supreme-Commander of the Allied Expeditionary Forces. The Supreme Headquarters of the latter is referred to as SHAEF.

Directly under SHAEF is the Allied

## **How our air organization in the ETO is drawing the noose around the Luftwaffe.**

Expeditionary Air Forces. AEAFF is the joint British-American force under command of Air Marshal Sir Trafford Leigh-Mallory, with Maj. Gen. William O. Butler as deputy. Its mission will be to furnish air cover and support for the forthcoming invasion of Fortress Europe.

Currently, the AEAFF is composed of two tactical air forces, the British 2nd and the American 9th. The official announcement on February 18 that the 9th was in Britain surprised practically no one, inasmuch as shoulder patches of personnel had been visible for weeks all over England. Well known as the air force whose tactical aircraft harassed Rommel across the sands of Africa and whose heavies struck the Ploesti oil fields last summer, the 9th retains some of its old personnel. Its commander is still Maj. Gen. Lewis H. Brereton; its bombers are mediums taken over from what used to be the 8th Air Force Air Support Command. In addition, it is rapidly building up a powerful striking force of attack bombers, fighter-bombers and fighters. It includes a Troop

Carrier Command with paratroops and gliders carrying Airborne Infantry, all in a state of pre-invasion training.

Not that the 9th has been content with waiting for D-day. During the intervening months its B-26s have struck across the Channel as often as weather would permit, blasting Nazi airdromes and marshalling yards and concentrating particularly on military installations which Prime Minister Churchill finally identified as emplacements for rockets or glider bombs. Marauder losses have been very low—eighteen bombers in approximately 7,500 sorties—thanks to close support from RAF Spitfires and the fact that the bulk of German fighters have been forced back to defend Germany proper. In addition, the 9th has been sending out long-range, hard-hitting P-51s and P-47s to escort the 8th Air Force heavy bombers and furnish target support on deep penetration missions. One Mustang group in 28 combat missions has destroyed 115 enemy fighters with a loss of only 19 Mustangs, outmaneuvering and outfighting every type of German fighter at altitudes ranging from practically zero to more than 25,000 feet.

Despite the valuable contributions made by the Marauders and long-range fighter escorts provided by the 9th, the salient feature of the winter air offensive has

been the Allied effort to smash the German Air Force by crippling its production centers on the ground. In the early days of the 8th Air Force's activities, much was made of the spectacular claims of fighters destroyed by bombers in aerial combat. This attrition of the Luftwaffe was undeniably valuable but the emphasis was misplaced. As long as the Germans could make good their losses—and total German twin-engined and single-engined fighter strength was steadily rising—they could afford their casualties. What they could not afford was serious damage to their fighter factories, sheltered for the most part deep within the Reich.

On January 11 the grand assault began with daylight attacks on Oschersleben, Brunswick, Halberstadt and other key production centers. The cost was heavy that day—59 bombers—but the Allied Command was willing to pay an even higher price if necessary, to break the Luftwaffe's back. In the next six weeks the bombing blows seriously crippled more than fifty percent of the German factories that were producing Nazi fighters on January 11. This was the most significant aspect of the air war, perhaps of the war itself. This was the goal toward which the AAF and RAF had been pointing for more than two years. This was the realization of detailed plans made months before—plans that had been awaiting the necessary planes and weather before they could be carried out.

Losses during these six weeks were not as heavy as expected. Through February 22, 8th Air Force heavy bomber losses were 2.2 percent of aircraft dispatched. This compared favorably with the overall loss of 3.1 percent of all aircraft dispatched since the first operational mission of August 17, 1942. It compared brilliantly with the worst month, when losses ranged over 6 percent. For the same period, February 1 through 22, our fighter losses were 0.8 percent as against an overall figure of 0.7 percent. Considering the fact that in the first 22 days of February more sorties had been flown by the 8th than in any previous full month—nearly all of them deep penetration missions—losses were astonishingly light.

There were three main reasons for this.



Lieut. Gen. Carl Spaatz



Maj. Gen. William O. Butler

One was the immense and cumulative strain on the Luftwaffe. An exchange of letters between Air Marshal Harris and General Spaatz corroborated this growing weakness. The RAF lost 79 aircraft in a terrific battle over Leipzig on the night of February 19-20. On the following day, with our main attack centering in the same area, American losses were only twenty-one. That night the RAF attacked Stuttgart in great strength, losing only ten. Obviously German defenses were stretched to the breaking point.

The other two reasons were the increasing skill and experience of bomber crews and the inestimable value of long-range fighter escort, with hundreds of P-47s, P-38s and P-51s shepherding the bombers, usually providing complete cover to and from the most heavily defended targets and target support as well. German fighter attacks on bomber boxes could not develop to any effective degree. More and more, German defensive tactics seemed to call for the use of twin-engined rocket-carrying fighter-bombers—ME-110s, ME-210s, ME-410s, JU-88s and JU-188s. These aircraft, standing out of range of the bombers' machine guns, attempted to cripple Fortresses or Liberators by lobbing rocket projectiles into formations; then ME-109s and FW-190s would jump stragglers.

Rocket carriers proved no match for our fighters. One reason for the amazing score registered by Mustangs, Thunderbolts and Lightnings—better than four-to-one in some groups—was the fact that unless rocket carriers were provided with top cover of their own they were shot down in droves. The air war was resolving itself into a devil's merry-go-round where rocket carriers attacked our bombers, our fighters attacked the rocket carriers, and German fighters awaited a chance to pounce on crippled airplanes whenever the opportunity presented itself.

The only conclusion possible to a close observer during the last part of February was that the Allied air chiefs were going all out for the kill. Not even the urgent requirements of the Anzio beach head were being permitted to interfere with the planned destruction of the Luftwaffe in the air and in the nest.

Once the curve of German fighter production started downward—and it has started—it was imperative to maintain the pressure; to give the Germans no breathing space, such as they were granted last summer, in which to rest tired men and rebuild shattered factories.

Every lesson of modern warfare points to one inescapable conclusion: mastery of the skies is a prerequisite to the invasion of Europe. As these words are written, somewhere in England, that mastery is being achieved. ☆

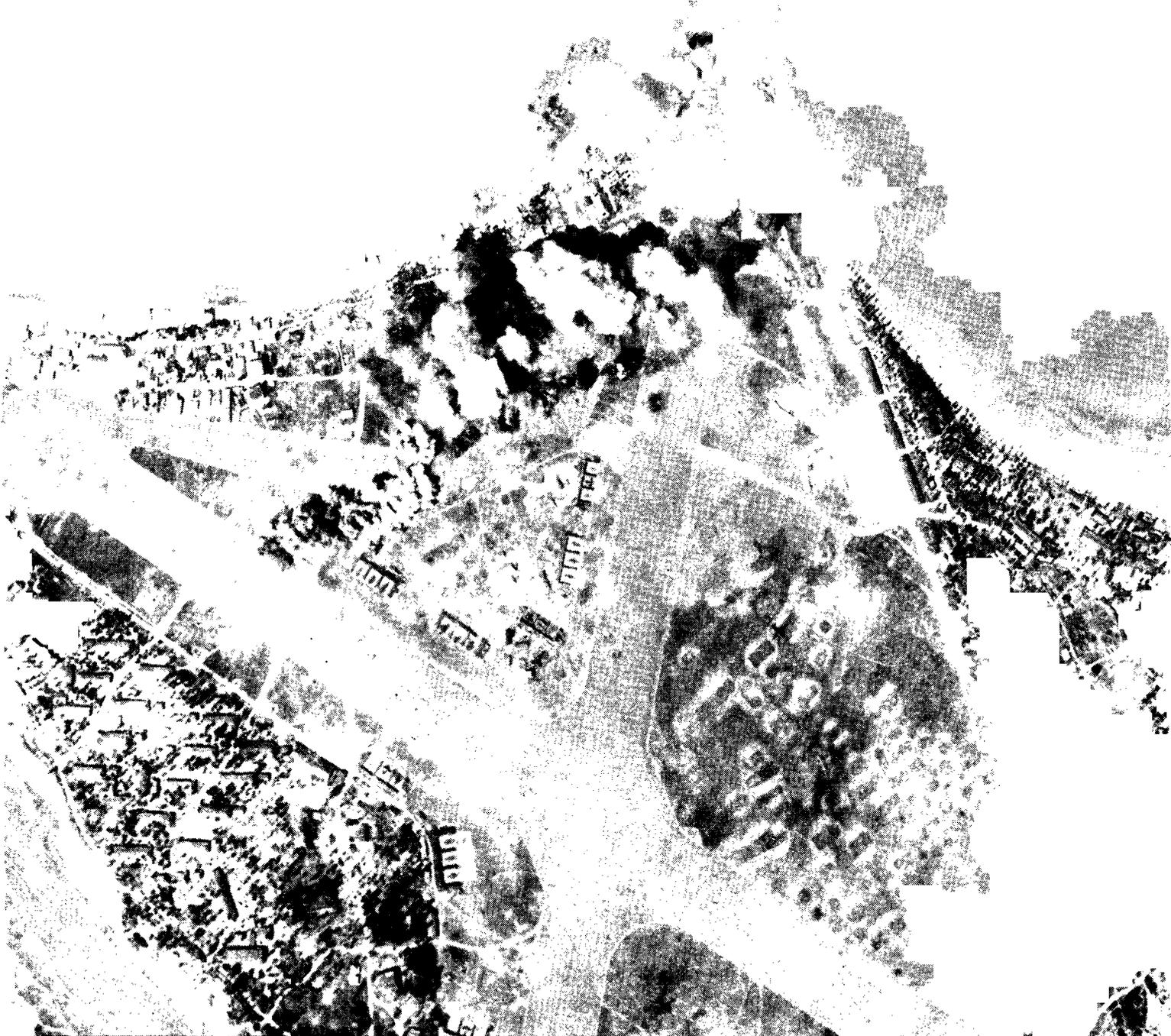
Lieut. Gen. Ira C. Eaker

Maj. Gen. Lewis H. Brereton

Maj. Gen. James H. Doolittle

Maj. Gen. Nathan Twining





## HAMMERING THE JAP MIDRIFF

This scene of destruction at the Taroa island airdrome in the Maloelap Atoll is typical of recent 7th Air Force operations against key Japanese bases in the Marshall Islands. Overcoming heavy fighter opposition, B-24s laid an accurate bomb pattern on the service apron, repair area, hangars and shops of this important interceptor base.

The Taroa attack was part of a plan to neutralize enemy resistance from all other Marshall bases while amphibious forces, protected from the air and sea, landed successfully on Kwajalein and later on Eniwetok.

Beginning in December, when our newly-acquired bases in the Gilberts were consolidated, five enemy installa-

tions in the Marshalls—Jaluit, Mille, Maloelap, Wotje and Kwajalein—were subjected to almost daily attack by airplanes of the 7th Air Force. In the missions against Mille and Jaluit, B-24s and B-25s were joined by A-24s, P-39s and P-40s. It was the first time that our Central Pacific attacking forces included medium bombers, dive bombers and fighters, previous major operations in this area having been outside the range of any except heavy bombers.

Immediately before the January 31 landing on Kwajalein, B-24s flew a number of successful night bombing missions, guided by fires started during the day by bombing and shell fire. When the landings were made, the 7th Air

Force flew in almost continuous support.

By-passing other islands, where Japanese power had been reduced by 7th Air Force and carrier-based planes and bombardment by naval surface vessels, amphibious forces landed on Kwajalein and Eniwetok with small losses. With United States forces thus established in the Marshalls and in the nearby Gilberts, it became increasingly difficult for the Japs to supply the Marshall bases they still held.

Kwajalein and Eniwetok are great prizes. As the Gilbert conquest placed us within easy bombing range of the Marshalls, so the Marshall success has placed us within easy bombing range of the eastern Carolines, including Truk. ✪

# THIS IS YOUR ENEMY

## Nazi Reprisal Raids



## Jap Torpedo Bombings



## Tojo's Favorite Drama

**D**ESPITE recent Luftwaffe activity over Britain, which has been stepped up greatly, observers assert that Allied air power, increasing daily, has forced the German Air Force to concentrate on defensive tactics at the cost of its own power to attack.

Beginning the night of January 21-22, the GAF undertook a series of reprisal raids against London and other British population centers. The nature of these attacks and the German propaganda that accompanied them made it clear that they were intended primarily to bolster the sagging morale of Berlin and other hard-hit German cities.

In some cases, the GAF striking force was so small that no more than nuisance value could be expected of the attacks. Usually, when larger forces were used—and these forces were small by comparison with those of the Allies attacking German targets—relatively few got through the British defenses.

Many types of German aircraft—fighter-bombers as well as bombers—were observed in these renewed GAF efforts. There was little apparent effort at concentrating bombs on specific targets; bombs were dropped wherever it became necessary or convenient to drop them.

For propaganda purposes, each of these attacks against Britain was intended to avenge one of Germany's blasted cities, and the raids were appropriately named. For example, one would be hailed by the Germans as the "Hamburg raid," another as the "Schweinfurt raid," another as the "Bremen raid."

Until this series of attacks, there had been but little German effort since March, 1943, to retaliate for the terrific blastings given Berlin and other cities.

To review GAF offensive activity for 1943:

From January to March last year, there were several low-level, hit-and-run raids on British coastal towns, and an increase in mine-laying activity. Many reconnaissance flights were made over England, too. After a heavy raid of four-engine British bombers over Berlin in the middle of January, the GAF, stung to activity, attacked London with about 75 aircraft, of which about 30 reached the target. Eight German planes were destroyed. This was followed a couple of days later by a mid-day raid of about 60 fighter-bombers, of which only 12 reached East London. Fifteen raiders were destroyed and the Germans gave up that style of attack for the rest of the year. There was an increase

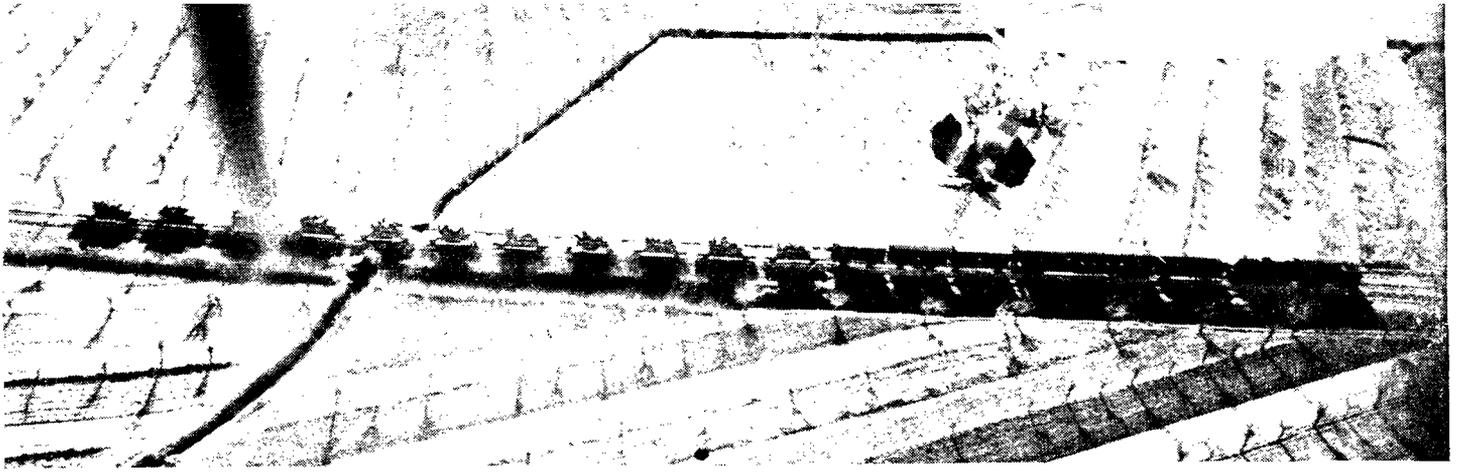
in night activity in March, and a reprisal raid on London after Berlin had been hit by 300 heavy bombers. Little damage was done.

In April, the Nazis started a new tactic, sending the FW-190 as a fighter-bomber at great height on nights the moon was shining. The first time they tried it, of the twelve FW's, four tried to land peacefully at a British field. Two got down all right, a third crashed, as did the fourth which cracked up when people at the field, in a quite successful prank, turned off the landing lights just as the wheels were about to touch the ground. Two other attempts to reach London were made by pairs of FW-190s, and minor nuisance raids of this sort were carried on in moonlight periods for the rest of the year.

LONG range tanks were put on the Focke-Wulfs in May and they attempted to penetrate deep in England. This stunt eventually caused the end of the hit-and-run tactic because the ratio of casualties increased rapidly. Between May 1 and June 6, when the hit-and-run activity ceased, 43 of 274 aircraft which took part in 16 raids were destroyed. On the last four large raids, 21 out of 77 were knocked down.

Near Rudesheim on the path to Frankfort on the Main, ground defenses have opened up with accurate anti-aircraft fire against this B-24 formation. A photographer in one of the bombers attacking the German transportation and industrial city caught this vivid picture of what was happening to the Liberators. At right, a B-17 is blasted by flak in another raid. The tail surface is shown in flames at top left; in the center circle is a wing section, and below it, the fuselage and other wing.





Taking advantage of Italy's rail lines from the north, German forces send supplies quickly to their armies opposing the Allies on several fronts. An AAF photo reconnaissance pilot made this picture of a train-load of Mark III tanks being hauled to points near the Adriatic Sea.

In June and July there was only casual activity, and in August there was a slight increase in night attacks. Intruder operations were stepped up in September, and by October there was quite a lot of night raiding. November ran along about the same as October, and German activity fell off considerably in December.

### SILENT JOES

Japanese naval aviators have strict rules on radio silence. Use of the radio in a combat area is even forbidden for reporting movements of enemy units unless "friendly units are in imminent danger." Flight and formation leaders in Japanese combat groups rely almost entirely on visual signalling. They use pieces of cloth tied to an upraised arm, or else rock their wings. There have been cases of Japanese flyers in trouble who still did not attempt to make radio contact with their bases.

### DOUBLE TALK

Some fellow on radio Tokyo reached a fine conclusion recently. He said: "The standard language of East Asia should possess three attributes: First, it must carry the cultural and spiritual tradition of all East Asia; second, it should be the language of a nation which can lead all the world; third, it should be a language of superior quality. On this basis the Japanese language may be described as most suitable."

### DECKS AWASH

A "double-ended" fuel barge, which can be loaded so its top deck is awash or slightly under water is being used these days by the Japs. The advantage of having the barge a little under water is that it is far less vulnerable to strafing attacks. The barges are towed by tugs or small ships.

### JAPS AT NIGHT

After losing quite a few medium bombers in daylight attacks on our shipping, the Japs have turned to making torpedo attacks at night, dusk or dawn. They have developed good coordination between float light and flare dropping planes and

the attacking force. Several of their night attacks have been exceptionally skillful.

The usual pattern is for them to send out a snooper plane which finds and then tags along behind one of our task forces. Once the trailing plane has established the course of the ships the Japs intend to attack, flares are dropped parallel and perpendicular to the course and the attack group then closes. Colored flares are used to tell the different kind of warships.

The number of planes used in attacks has varied greatly, from five to as many as thirty.

### TAIL GUN

Mortars have been placed in the tails of several Japanese medium bombers. Dinahs and Sallys in the Southwest Pacific and in China have been using the weapon. Fighter pilots report seeing mortar-type explosive missiles fired back from the Jap planes, and it looks like the same sort of shell used in the Japanese 70 mm ground type barrage mortar. The initial burst of each projectile is followed by secondary bursts.

### SUCKER TRICKS

It can't be said too often that the Jap is a clever, tricky fighter. For example, here are a couple of successful baiting jobs he pulled in the CBI theatre:

Jap bombers came over a certain field one day, and all our personnel scrambled for their slit trenches. The Japs, however, dropped only pamphlets, and went on. Our men, suddenly of a literary bent, climbed out of their trenches and began reaching for the paper which was fluttering down. The raiders then wheeled around and really plastered the field on the second run, catching and killing a lot of our personnel out of their protective trenches.

Men at another field had been plagued for weeks by a Photo Joe who came over at high altitudes nearly every day. He got on their nerves. At this particular time, P-40s couldn't get up high enough to go after him, so they stripped one fighter down to give it more altitude. The next

time the reconnaissance plane came over, the stripped P-40 took after him and shot him down. A few days later, another Photo Joe came over and all the fighter pilots at the field, pleased about what happened to the first Jap, climbed in their P-40s and went after him. The reconnaissance plane started running. While our P-40s were chasing him merrily, a big flight of Jap bombers came in and let go on the unprotected field. Smart planning by the Japs—and a very small show of brain work on our part.

### WHISTLE WHILE YOU WORK

The Nazis are using a new kind of whistle to indicate withdrawal from positions held during battle, a tactic they have been employing quite extensively of late. Aply, the whistle makes a sound like a low moan.

### HOLLYWOOD IS WHERE YOU FIND IT

This is the plot of a Japanese play, produced recently and reviewed in a broadcast from a far eastern station. Feeling a little weary now, we present it without comment:

"The play dealt with frantic efforts of the U. S. administration to keep from the American world the truth contained in Imperial Headquarters communique on the last battle off Bougainville. Scene One was a telephone conversation in which Halsey reports to boss Knox the disastrous results, which Knox at first mistakes for U. S. victories. When he realizes his mistake, the decision is taken to spend some more millions of dollars to keep the story secret. Scene Two shows a South American newspaper correspondent, who has picked up the communique, haggling with Harry Hopkins over the price at which he will refrain from sending the story to his paper. Hopkins has to give in to all the terms demanded, and has to pay the \$65,000 in gold as demanded. The last scenes are set in Mexico, whither some American has smuggled a copy of the communique, sacrificing his life in the gallant effort to tell the people the truth . . ." ❧

# A Battle Plan TO FIGHT MALARIA



**M**ALARIA is a most important military problem, requiring consideration right along with questions concerning operational tactics, enemy facilities and supply. Every man in the AAF has a personal responsibility to understand the importance of the disease and to keep it from putting him out of action.

In many of the air forces, especially those operating in the tropics, malaria at times has reduced the number of effective men twenty to fifty percent. In a few places nearly all of the men in a squadron have become casualties because of malaria. This loss of manpower delays offensives, upsets timetables, drags out the war. In avoiding malaria, our men may be able to shorten the war considerably by the simple expedient of having more healthy fighting men in the field than the Nazis and Japs.

Malaria occurs in almost every theatre in which the AAF operates. North Africa, Italy, the Balkan States, the Middle East, India, China, Burma, Malaya and the South and Southwest Pacific theatres are scourged with malaria today as they have been for centuries. Even in those air forces in which the disease is not normally found, it is not to be regarded lightly since planes and men from malarious areas may be flown in.

Malaria is important to each man in the AAF because the chances of his getting sick with malaria may be five to ten times greater than his being wounded by enemy strafing, bombing, bullets or flak.

Malaria is no respecter of rank, and it can strike the strong and hearty just as hard as the weakest.

In every military operation it is of great importance for the soldier to know the characteristics of the enemy. Nobody would consider attacking a Zero or a Messerschmitt without knowing all he could about its fighting abilities. In the same way, you must know your enemy when you fight malaria. That enemy is a mosquito—the Anopheles. The only way you can get malaria is by its bite.

These are characteristics of the malaria mosquito. It is a night fighter-bomber. It attacks almost exclusively at night, but especially at dusk and again about dawn. It may sometimes bite even in daytime, in dark places in the jungle or in dark tents and buildings. This mosquito is loaded with the "germs" of malaria which it sucks from the blood of some person (usually a native) sick with the disease. These "germs" are the ammunition carried by the mosquito. Its ordnance supply is almost unlimited because, unlike ordinary bombs or machine gun ammunition, the "germs" multiply in the mosquito so that it can carry ammunition enough to attack a great many objectives without reloading. There is also an almost unlimited supply of natives who have malaria and from whom the mosquito can load up again.

The mosquito hides during the daytime, usually near human beings whom it will attack the following night. It hides in dark places under caves, in corners, under desks, tables and beds. It hides in brush and tall grass.

The malaria mosquito's reserves are almost unlimited. The mosquito breeds in water—in almost any kind of water such as ponds, irrigation ditches, flowing streams, brackish marshes, collections of water in tire ruts, footprints, coconut shells, tin cans, tires, shell cases and all sorts of small containers. The female mosquito lays hundreds of eggs every few days. Unless a thorough attack can be made on the mosquito enemy, its reinforcements are practically inexhaustible.

A successful offensive against the malaria-enemy must have these objectives:

- (1) Air superiority—to drive the mosquito out of the skies.
- (2) Destruction of reinforcements—by wiping out the mosquito's breeding places.
- (3) Lengthening enemy lines of communication—by locating camps and fields out of mosquito flight range.
- (4) Setting up a perfect system of in-

terception—to prevent the mosquito from biting.

Every man, from the Commanding General down, shares in the responsibility for attaining these objectives. Commanding officers of every grade have the greatest responsibility in controlling malaria, not only because the regulations say so, but because the fighting effectiveness of their command may be directly affected by the presence of malaria among the men. It is the responsibility of every officer in the command to make certain that each man understands and applies the control measures necessary for protection against malaria. Medical officers are responsible in the largest measure for advising the commanding officer and for supervising the measures of control.

**T**HE program for conquering malaria is divided into two parts: (1) unit operations—large scale control measures by specially-trained anti-malaria units, and (2) individual measures—personal control by each man (and woman) regardless of rank.

The responsibility for *unit control* lies with the commanding officer. In many places, special squads are available for carrying out some of the engineering control measures. In other areas where these special units are not available, it is the duty of the squadron commander and the surgeon to carry out whatever measures are possible.

To gain "air superiority" efforts must be made to kill the mosquito before it has a chance to bite healthy men. This is done by strafing the enemy on its home ground before it can take off. In regions where malaria is common, native houses in the neighborhood of camps should be sprayed often. In these places the mosquitoes load up their ammunition of malaria "germs" by biting natives sick with malaria. Buildings and tents on the post should be sprayed every evening and every morning to kill all mosquitoes hiding there.

Spraying with insecticide all planes coming in from other theatres is another unit responsibility that rests right on the CO's shoulders. Mosquitoes hitch rides in planes, and malaria may be brought to a field--and to a country--if these hitch-riding mosquitoes are not killed. Yellow fever, dengue or filariasis as well as malaria mosquitoes may be imported in planes. Brazil has spent millions of dollars over many years to rid the country of a breed of malaria-carrying mosquito brought in by boat from Africa.

The second objective, to destroy enemy reinforcements by preventing mosquito breeding, is accomplished by:

(1) Filling ponds and collections of stagnant water; draining swamps; cutting vegetation from the margins and banks of streams.

(2) Organizing and supervising details to police the field for collections of water in all forms of refuse; controlling traffic to avoid unnecessary tire ruts.

(3) Organizing and supervising units to spray collections of water which cannot be drained or filled. The spraying may be done with a mixture of Paris Green and road dust, and blown by a hand or mechanical sprayer from the windward side on to the water. Other materials besides Paris Green may be available.

(4) Oiling water which cannot be drained or sprayed adequately.

In order to lengthen enemy communication lines, camps and flying fields should be located at least one mile away from swamps and, especially, from native villages which are the chief sources of malaria infection. Whenever possible, camps sites should be located on high, dry ground. One of the primary steps in setting up an effective interception system is to see that adequate screens are placed in windows and doors of barracks and other buildings. In areas where malaria is very common, screen doors should be

double and set about six feet apart so that a trap will be formed between them. Doors must open outward. All cracks in buildings should be sealed because mosquitoes come through even a very small hole.

It is obvious that all unit control measures cannot be applied all of the time. In smaller units at advanced fields it may be impossible to apply any of the measures, especially in the first few days of occupation.

UNIT control measures go a long way toward beating malaria, but the responsibility of the commanding officer does not end at that point. In the last analysis, the effectiveness of an anti-malaria campaign depends on the protective measures applied personally by each individual against the mosquito. If a man avoids its bite he is safe from malaria.

The most important individual measure for protection against malaria is proper use of the bed mosquito net every night. It is just as important to take care of the net as it is to prepare a slit trench properly. Bombers may come over irregularly and they may do great damage, but the malaria mosquito comes over every single night on its "blood run." The mosquito is intercepted chiefly by proper use of the net.

The protective net should be set up every night about half an hour before dusk. The inside should be examined for the presence of mosquitoes before going to bed. If mosquitoes are inside, the net should be sprayed with insecticide spray. After getting in bed, the individual should tuck the bottom of the net under the blankets or mattress. Any hole in the net should be sewed up or mended with adhesive tape before the man goes to sleep. In the morning the net should be neatly folded over the support at the head of the bed, or else taken down altogether and

folded carefully, in order to prevent tears in the net.

Long-sleeved shirts and long trousers should be worn at night, from about half an hour before sunset, even if it is excessively hot. The mosquitoes are unlikely to bite through sleeves and trousers.

GI repellent should be used by all personnel who are exposed at night, such as guards, movie audiences, men working on the line and pilots and crew on night missions. Repellent should be applied to hands and faces and to the parts of clothes which are tight on the skin especially around the shoulders and seat. The repellent lasts for several hours. It should be applied carefully and no part of the exposed skin missed except immediately around the eyes.

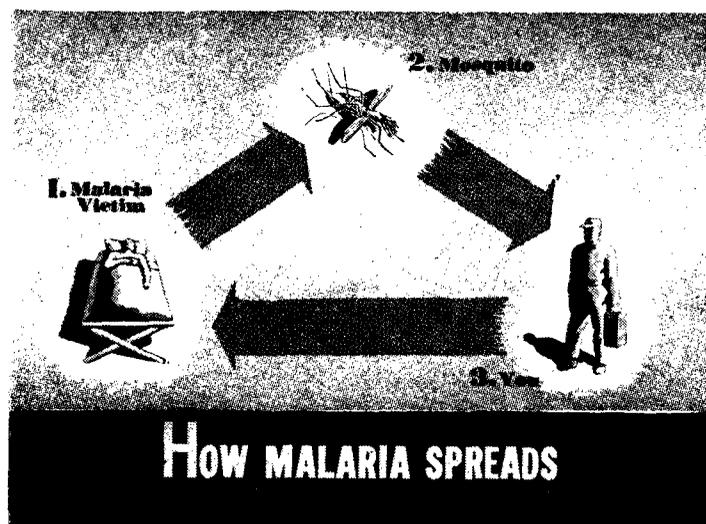
In some areas where malaria is especially common, men whose duties require them to be out at night may be ordered to wear headnets, gloves and mosquito boots. These may be uncomfortable and it may be hard to see through the net, but the protection is well worth the trouble. The use of a head net will not be ordered unless absolutely necessary.

Atabrine is given personnel stationed in areas where the chances of getting malaria are very great. This drug will not prevent an attack of malaria but will postpone it so that a man can keep going. There are no serious ill effects from taking atabrine, and it has no effect on a man's ability to fly. Because atabrine is a dye, yellow coloring may appear in the skin. This is not a dangerous condition but on the contrary, it may be an indication a man is receiving full protection from the drug. The discoloration disappears when the drug is stopped.

The only good thing about malaria is that the Japs and Nazis get it in the same theatres we do. We can lick them, and we can do it more quickly if we keep malaria under control. ☆

To aid in the fight against malaria, a series of posters is being prepared by AFTAD, in collaboration with the Air Surgeon and

the Arctic, Desert and Tropic Information Center, for distribution to field units. Two of the posters are reproduced below.





Plaster casts do not keep hospitalized patients from taking the carefully supervised scientific exercises that are an important

part of the AAF's Convalescent Training Program. Wherever possible, classes such as this one at Miami Beach, are held outdoors.

Exercise, too, even for those who must stay in bed. Muscles not used waste away and joints grow stiff. So some form of mild muscle

reconditioning begins the day a patient stops running a fever. Exercises are graduated according to patient's recovery stage.



As old as the Army is the GI gripe over going to an Army hospital. Soldiers have claimed you never get out unless you know a couple of Congressmen.

They have had a point. The average stay in an Army hospital is about twice as long as it is in a civilian hospital for the same illness. But this is not without reason. When you leave a civilian hospital after—say, an appendectomy—you go home and spend a few days or weeks lying around the house taking it easy before you go back to work.

Not so in an Army hospital. Until recently there was no place in the Army for that in-between stage of slow recuperation. Result: you stayed in the hospital itself until you got your discharge papers—which meant you were ready for active duty.

Very often this also happened: After a certain length of hospitalization you were given your two-week convalescent furlough before returning for your final discharge. You started home and perhaps you had to stand, in a weak-

ened condition, on a crowded train or bus for hours. Once home, what you did in that two weeks may not be what the medical officer had in mind. Parties, lack of sleep, strenuous activities may re-

ward your physical progress and not infrequently you returned to the hospital in worse shape than when you left. So in you stayed for another stretch.

The boredom of an Army hospital didn't speed your recovery either. You were restless, impatient, thoroughly disgusted, and you wished for something to do besides lie in bed and count nails in the ceiling.

At least that's the way it *was*. But thousands of men in the AAF, who have been hospitalized within the last year for anything from an infected foot to double pneumonia, have an entirely different story to tell. Hospital times have changed.

To tell why and how, the story must go back to December, 1942.

The Air Surgeon's office, aware of all the thorns in the traditional system, decided it was imperative that the AAF's hospital program be geared to the pro-

### The AAF's Convalescent Training Program means faster recoveries and a broader military knowledge for hospital patients.

gressive ideas in operation elsewhere in the Air Forces. Two facts had become too apparent to be dismissed: first, there was an appalling wholesale wastage of time and valuable man hours in all our hospitals at a period when we could ill afford to lose that time; secondly, a patient's psychological condition had a profound effect on his physical recovery—a man kept interested, alert and active will certainly get well faster than one who is bored.

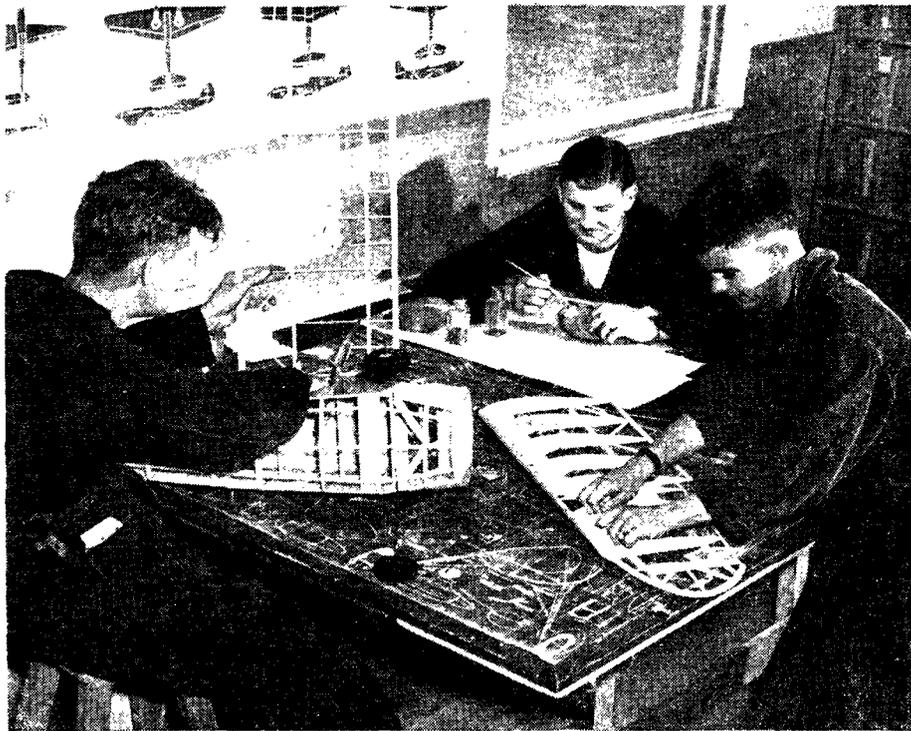
This challenge was tossed out to a group of AAF medical officers by Maj. Gen. David N. W. Grant on a visit to the

The launching of the program was as unorthodox as the plan itself. Colonel Rusk sent "stooges" to spread the word around in the wards at Jefferson Barracks. They purposely used a negative approach.

"What these brass hats won't dream up next to make life miserable! Listen, fellas, I just heard they're going to make us *work* all the time we're in this dump. And I heard something about having to go to lectures and watch training films and a lot of that stuff. As if that weren't bad enough, they're going to cancel our convalescent furloughs."

This was dark news indeed to those GIs who make hospitals a favorite place for gold-bricking and equally disconcerting to those patients who resented the intrusion of a training program into their prescribed routine of reading comic books and sleeping the days away. But Colonel

Rusk got the reactions he wanted. No matter how the plan was presented, most of the men were in favor of it. Their attitude was that no matter *how* bad it was it would be better than the mental



Available time in AAF hospitals is put to constructive use. These GI patients at Lowry Field, Colo., banish dread hospital boredom and learn useful skills at the same time. Keeping patients interested helps to speed recovery.

station hospital at Jefferson Barracks, Mo. Lieut. Col. Howard A. Rusk, chief of medical services at Jefferson Barracks at that time, went to work on the problem. With an unqualified go-ahead from the hospital's commanding officer, Col. James R. McDowell, Colonel Rusk assembled a small staff and began work on a training and reconditioning plan for the AAF's hospitalized men that grew in less than a year to a vast Convalescent Training Program which at the present time saves more than two and a half million man hours per month in the AAF.

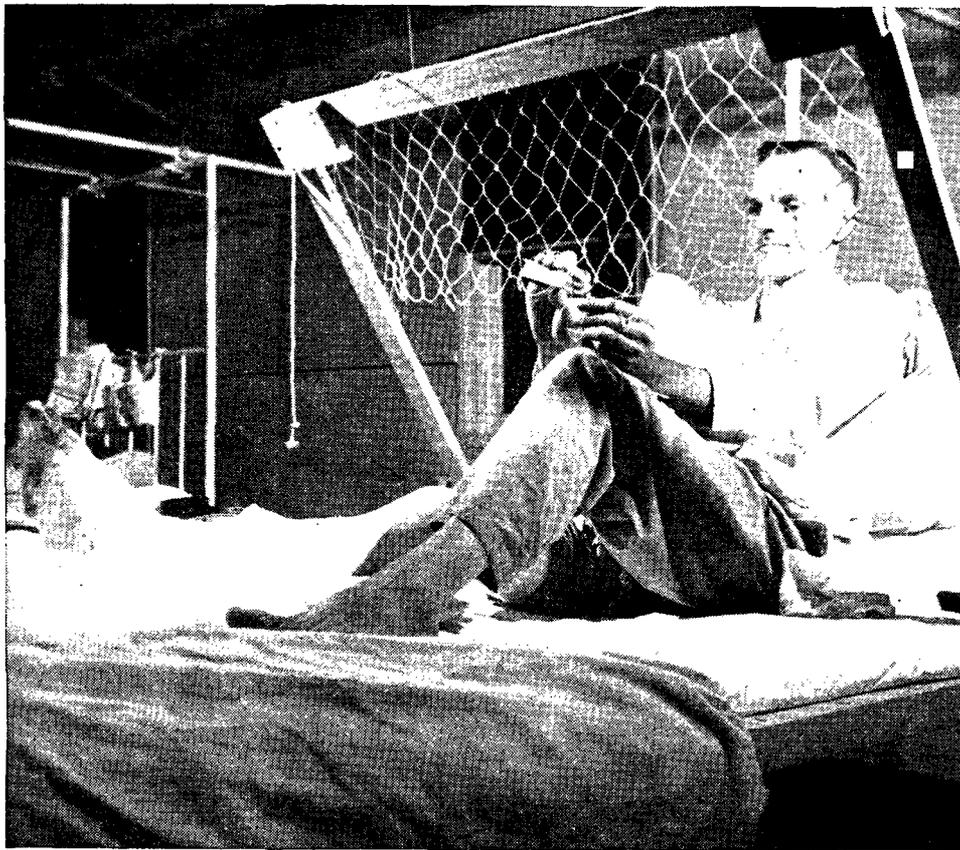
fatigue they had been suffering.

The original CTP staff in 1942 consisted of Colonel Rusk, Lieut. Raymond C. Lewis, a former adult education specialist, Sgt. Lorin C. Hawkes

and Sgt. Donald MacInnis. Doubling in brass at first as directors, physical education leaders, lecturers and teachers, they tried out their ideas in the wards of the hospital. The ideas paid off. A report went back to Washington and two weeks later a directive from General H. H. Arnold ordered the establishment of the CTP in all AAF hospitals. Before the end of 1942 it was in actual operation.

Two objectives are paramount in the CTP: To recondition sick soldiers physically by a carefully planned and executed physical rehabilitation program and to utilize heretofore wasted convalescent time with educational instruction in subjects of importance to all soldiers regardless of the branch of the AAF they may be serving.

Already the result of these ideas, unique in military medicine, has been to:



If the soldier-patient can't go to the CTP classes, the classes are brought to him. Some form of military training is going on in wards of AAF hospitals almost continuously these days. Code, aircraft recognition, mathematics and a host of GI subjects are included in a flexible curriculum. Time goes faster for this patient engrossed in making a camouflage net at Jefferson Barracks hospital where the Convalescent Training Program originated. More than 20,000,000 man-hours have already been saved for the AAF since the program started in all Air Force hospitals.

Soldiers leaving hospitals must be returned to duty in fighting shape. To keep them up to par, CTP gives convalescents as much action—both calisthenics and games—as their condition permits.



(1) Reduce hospital re-admissions, by as much as 25 percent in some bases, by sending men back to duty in better physical condition.

(2) Shorten the period of convalescence in certain acute and infectious and contagious diseases by as much as 30 to 40 percent. The average internment for scarlet fever, for example, has dropped from 33 days to 23, that of virus pneumonia from 45 to 31.

(3) Eliminate in the majority of cases the necessity for convalescent furloughs.

(4) Increase vastly the soldier's military knowledge and his general knowledge of geography, geopolitics, foreign languages, tropical diseases and the like. In addition it has enabled medical officers to practice preventive neuro-psychiatry by establishing a series of "patient-doctor" talks of great assistance in the soldier's orientation to new conditions.

Walk into the typical ward of the average AAF station hospital and you will notice cards of red, orange and green at the foot of the patients' beds. These are the "signal lights" indicating varying degrees of illness. A patient with a red card is not allowed to get out of bed. Nevertheless, if his temperature has been normal for one day, he can still take mild finger, hand, arm, head and neck exercises although he's flat on his back. Men bearing orange cards can get out of bed for ten minutes of mild muscle reconditioning. Green cards indicate the patient can have the works—full, vigorous calisthenics three times a day.

Incidentally, the ward nurse also finds practical value in this simple color system. She can tell at a glance who is able to help with routine ward jobs, such as cleaning windows, scrubbing floors and no back talk, either. Green cards mean an hour and a half of ward fatigue daily.

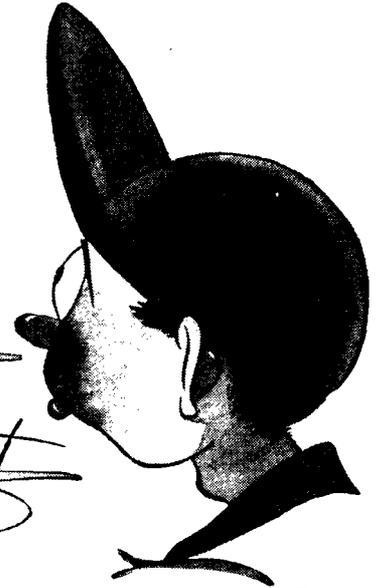
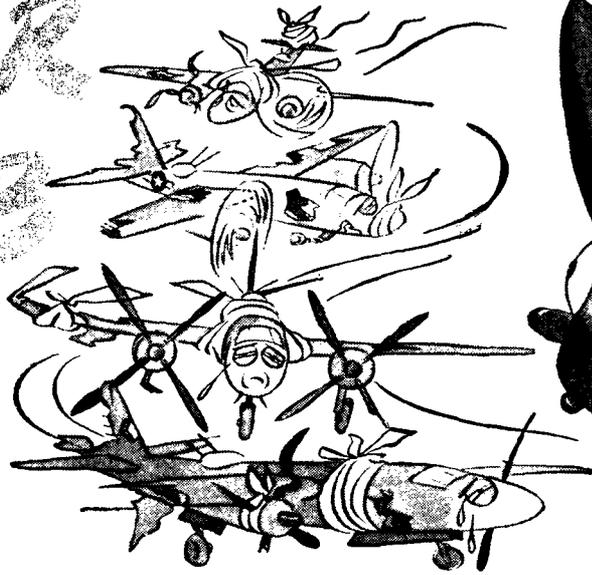
Special classes for orthopedic rehabilitation, under the direction of the orthopedic surgeon in charge and the physiotherapist, are also in continual operation in the hospitals.

Some hospitals have camps to which ambulatory patients requiring long and slow convalescence are sent. Training at these centers is modified to meet the physical limitations of the convalescents and new recruits who are sent there to be brought up to par. These camps serve much the same purpose as a baseball team's spring training camp. They have reclaimed for further military duty many men who otherwise would have been lost to the service.

In addition to these local camps, eight convalescent centers for returned casualties have been established at Santa Ana, Calif., Buckley Field, Colo., Coral Gables, Fla., Jefferson Barracks, Mo., Maxwell Field, Ala., Pawling, N. Y., San Antonio, Texas, and Ft. George Wright, Wash. Each center has a carefully selected staff, includ- (Continued on Page 60)

**By Maj. Bernard W. Crandell**

**8TH AIR FORCE**



Illustrated by James T. Rawls

HE'S always cussing the B-26 and praising the B-17, which is explainable only because a man is sometimes critical of a thing he loves most dearly.

He swears he isn't interested in the four Marauders that he and eleven other mechanics must maintain. Not the least bit attached to any of them, he insists, as he carefully watches eighteen specks in the sky approaching the airdrome. Crew chiefs may take a personal interest in their 26s, but a flight chief treats them like a big, cold hunk of machinery, he repeats as the Marauder formation swings around on the approach leg.

"Watch this one," he suddenly gasps. "Watch it now. It's Pistol Packin' Mama! She's coming in right there. You got to take a look at that ship. Damnedest picture on it you ever saw. Old 'Nap' is paintin' it on and it's an old gal leaning against a rail with a big gun in her hand. He hasn't painted her head on yet—hasn't had time since the last Amsterdam raid. Been patching the damn thing up . . . turret dome busted, hydraulic system shot out, conduit in engine hit, oil dilution line hit by same piece of flak, hits on two leading edges, holes in two pieces of cowling, hole underneath pilot but it didn't come through, holes in the fuselage. . . ."

"Pistol Packin' Mama! What a ship! Damnedest picture you ever saw! Come and take a look at it!"

Master Sgt. Jack Loving, the Marauder flight chief who looks at his ships in that coldly impersonal manner, also has the reputation at his base in England for being the "bitchingest" man on the line.

"Which is an indication," observes the group air executive, "that he's doing some thinking and feels fairly happy over the state of repair and maintenance on his ships."

Loving is an ordinary man from Beauregard, Miss., with an important job. The

job consists of keeping four B-26s, each capable of dumping 4,000 pounds of bombs twice daily on Hitler's western fortress, in shape for such destruction of the enemy. It's up to Loving and eleven other air mechs to insure 32,000 pounds of bombs daily for Nazi Europe.

Grooming \$1,000,000 worth of bombing machinery is a responsible business for a 21-year-old from Beauregard. Responsible enough to make it understandable that he might have a worry or two and a fairly vivid way of expressing himself when his four Marauders, looking more like sieves than flying machines, droop pathetically on the hard stands only twelve hours before their next mission.

THOSE next twelve hours, and the preceding twelve just spent sweating them through the last mission, are called the "24-hour jobs." This means it takes 24 hours of work, most of it under the feeble rays of worn flashlights, all of it through the penetrating cold of the English winter, to patch holes, to mend hydraulic lines, to replace electrical conduits, to hope and fret over four battle-damaged airplanes. Loving is never sure that they'll be ready for the next mission, and his eternal pessimism often disgusts his squadron engineering officer who tries to figure how many bombers can go down the runway the next morning.

The "24-hour job" is a misnomer for a night of wrestling with 34,000 pounds of intricate machinery. Because even after the mechanics have won their 24-hour match with the machines, they still have another eight or ten hours to sweat them

out from the mission, and perhaps a repeat performance of the night before.

"We spent thirty-hour stretches on the line during the first days of October when they were going out every day," Loving recalls sourly.

The only Marauder on the field that was properly named, Loving thinks, is Flak Happy, of his flight. They've had some lively times with Flak Happy on the ground as well as in the air.

"One night after Flak Happy came home with the leading edge shot up in three places, and an elevator and rudder smacked by flak, we had an air raid," he relates. "We had to get the ship back in condition so we stayed out there with our flashlights, helped considerably by the light of the flares the raiders were dropping. Flak Happy got off the next morning all right.

"On the last Amsterdam raid it came back full of holes. One piece of flak went in above the bombardier's head, cut the cables to the bomb racks and the line from the air speed indicator. There was only a small strand left of the right aileron control cable and one large hole where the top of the left wing tip should have been. That time the ship had to go to the hangar for four days while the service squadron did the sheet metal work on the wing tip. At the end of four days everything else was fixed, too, and Flak Happy with its left wing nothing but patches went back for more action."

Patching is a fairly simple job, according to Loving. If the flak doesn't damage a structural member, a piece of aluminum is riveted over the hole. And if the hole

**Sergeant Loving is an ordinary man from Mississippi with an important job in England. His mechanics work around the clock to patch holes, mend hydraulic lines, replace conduits and get those battle-damaged bombers back in the air.**

is a small one, a patch of cloth is slapped on. Although these patches are called "temporary," Loving says they're permanent so far as he's concerned.

When flak hits the highly sensitive leading edge where hundreds of wires and conduits are imbedded, the repair becomes a major job. Birds are Loving's pet peeve because they do nearly as much damage as flak when they strike the tender leading edge. Similar touchy points in the B-26 are the hydraulic system and, of course, the power plants, Loving explains.

Loving says he and his eleven mechanics are seldom told what target the B-26s are attacking, but they can usually tell where the ships have been by the amount of battle damage they bring home.

"Amsterdam and the Calais-Boulogne area are the toughest on the ships," Loving adds. "Amsterdam always means another 24-hour job for us.

"Pistol Packin' Mama got it worse than Flak Happy on the last Amsterdam mission. As for the other two ships, 739 had only a few holes in it and 906 didn't get off the ground because the oil dilution solenoid stuck open and let fuel run into the engine—another damn 24-hour job. After we'd drained the engine and changed plugs and started her up, a cylinder head blew out and that was about the limit. We changed it, though, and had it ready by next morning."

Loving figures that, on the average, the crew chiefs and other mechanics in his flight spend between fifteen and twenty man-hours daily on each B-26.

"But after a hot raid, much more than that," he quickly adds. "If we have the necessary parts we stick with the repairs until we're finished. Those 24-hour jobs wouldn't be so bad if it wasn't so damn dark and cold."

The speed of repair and maintenance of the B-26s in England recently drew a commendation from the Air Force on the general condition of the bombers, a recognition that Loving and his flight were glad to get after having both Bomber Command and Air Force inspectors snooping around for three weeks.

Loving says the combat crews were as happy over the commendation as the ground crews, which was proof enough that the boys who fly take an interest in what the mechanics are doing. On that point, Loving is emphatic.

"The pilot on 739 and his crew take an unusual interest in what we do," he explains. "He is Licut. Frank S. Barrett of Dallas, Texas, and the crew chief is Tech. Sgt. William L. Whitton of Austin, Texas. You might know what happens when you get two Texans together. Every time one of the combat men goes to London he always asks the ground boys if there's anything he can get them.

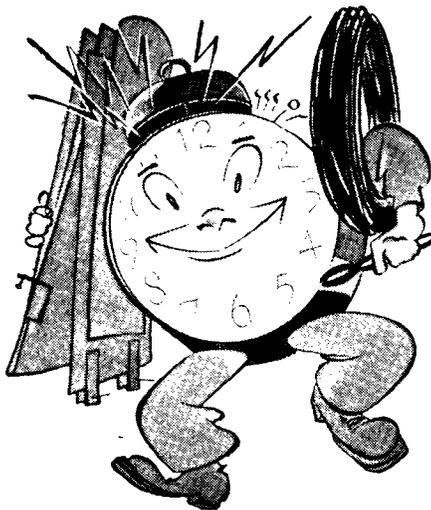
"We've put an awful lot of patches on old 739. It's been out on 29 missions and always gets back somehow. Lieutenant

Barrett won't give it a name because he figures it will change his luck."

The name Pistol Packin' Mama was selected by the bomber's crew chief, Tech. Sgt. James T. Ratliff, of Tylertown, Miss., and his assistant, Sgt. Dominic G. Napolitano, of Brooklyn, N. Y. Although Marauders usually are christened by their pilots, occasionally the honor is taken by the crew chief because, Loving explains, the crew chief is as much the "boss" of the bomber on the ground as the pilot is while the plane is in the air.

"The crew chief can red line his Form 2-A at any time to keep the ship on the ground," Loving says. "And that's a matter that would take a command pilot to declare otherwise. The crew chief can red line his ship, but I'm always there when he's ready to take it off again. I'd never turn a ship back to a pilot until I am ready to go up in it myself."

Since May 14, 1943, when the Marauders made their first attack against Western Europe, Loving has seen a com-



plete turnover of the bombers in his flight. He lost two ships on the disastrous May 17 raid, and one since then. The latter was 817, the B-26 that carried him across the Atlantic to England. The loss of 817 along with its crew and one of the most popular pilots in the group, hurt the crew chief, Tech. Sgt. Antonio L. Vendrame, of Santa Barbara, Calif., considerably, Loving says.

"Tony hardly believed it when I told him 817 had been shot down. He now has 906, the 'command' ship that the squadron operations officer or the CO fly. Everyone likes Tony on that job."

Some of the other B-26s formerly in Loving's flight have gone to training or replacement centers. One of them was the Silver Streak, a B-26 without paint that had extra speed but at a distance either was invisible or reflected a blinding flash from the sun. Silver Streak, an old type Marauder with the 65-foot wing, made only one mission at medium altitude and had to be rolled into a hangar every night

to conceal its brilliance, but it was held in high regard because it had gone for 350 hours without an engine change.

"That might not seem so much as when compared to some other airplanes," Loving says, "but a year ago we would have thought it was wonderful for a B-26."

In addition to repair and maintenance, the ground flight must make engine inspections every 25 hours' flying time and modify the new replacement aircraft. Modifications always bring another 24-hour job, for the bomber may be scheduled for its first mission the following day.

As flight chief, Loving finds his overall job only begins with his store of technical knowledge. Coordinating the work of four crew chiefs and the other mechanics into a well-balanced team requires more than technical knowledge, especially from a youngster who gives instructions to men eight and ten years older than himself. But Loving proved he had the respect of the men all along the line, according to the group air executive.

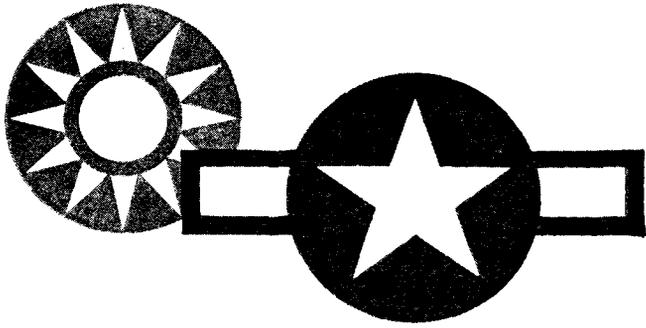
"I first heard of Loving when the boys said he was the hottest aerial photographer in the business," the air exec recalls. "A few weeks later they began talking of Loving as being the best aerial gunner they'd seen. The next thing was how good this Loving was at navigation, and then I heard he was an expert on radio. Finally they told me he was a top-ranking air mechanic. I decided to go out and get acquainted with him."

Loving's brief but rare background runs from his enlistment May 20, 1941, as a photographer—"because I was interested in chemical solutions"—to April, 1942, when his squadron was given its first Marauders and he decided to be an air mechanic. He learned it all on the line and takes some pride in the fact that he never went to air mechanics' school.

A flight chief can live a decent life—less than fifteen hours a day on the line—only when there are few missions during a month, Loving admits. The day a mission is run, however, is fairly easy. On the morning the bombers are to go out, for example, Loving and his ground flight will leave their Nissen huts as late as 0500, eat breakfast—"we've learned not to wait"—then go to the hard stands.

"We pre-flight the bombers, checking everything and giving the engines a run-up, and then top off the gas tanks," he says. "If the wings have frost we scrape it off with de-froster fluid. Then we might talk with the combat crew until they climb in. Someone starts the energizer, and that's about the last we do."

The last thing, of course, is the cool, indifferent stare of the flight chief as his four B-26s trundle off the hard stands and swing around the track to the runway. Then he might sneak over to a shed where old Nap is mixing paint to finish the picture on Pistol Packin' Mama, when she returns. ☆



# CHINESE-AMERICAN COMPOSITE WING

By Capt. Robert V. Guelich  
AIR FORCE Overseas Staff

**B**ASED somewhere among the sugar-loaf hills of China is the Chinese-American Composite Wing of the 14th Air Force. There U. S.-built planes bear the twelve-pointed star insignia of China, carry bombs and gasoline from America and are flown by airmen named Wang, Tsao, Lo, Chin, Jones and Smith. This composite wing is a dream come true for Maj. Gen. Claire L. Chennault who sponsored the program to train Chinese air cadets in the United States where they learn our methods of aerial warfare.

Not only has China's new air force been successful in harassing the Jap communication lines to Burma and the Malay peninsula, but it also has met and bested the enemy in aerial battles. It has given effective aid to China's own ground troops by turning back the Japanese thrust westward in the Tungting Lake area last December. With B-25s and P-40s the Chinese-American squadrons bombed and strafed the area so heavily that 35,000 Jap troops were reported killed and Chinese ground troops were able to rally and retake thousands of square miles of territory, effectively turning back one of the most serious Jap threats to central China.

In this series of bombings, one co-pilot was dropping explosives on his home village where all his relatives lived, yet he had insisted on flying the mission. "If

these bombs I drop kill my own family, but also kill some Japanese, my family and the rest of us will be better off," he had explained to the briefing officer. The Chinese have suffered much in their seven and a half years of war with the Japs and they realize that many more sacrifices must yet be made.

Before flying combat missions from China, the newly-trained cadets spent several weeks at the largest OTU in the Southeast Asia Command where they were joined by veteran Chinese Air Force officers and by ground crews who had completed the excellent mechanics school course of the CAF in the Chunking area.

Although the squadrons originally were activated as provisional units of the AAF, a parallel command was established with Chinese officers. In this manner, the higher ranking Chinese Air Force personnel, who had not received flight training in the United States, were able to combine their operations with AAF tactics of seeking out and destroying the enemy. The duplicate staff organization was cumbersome at first, but it justified itself as each new unit gained experience and became independent of American supervision.

At OTU Chinese pilots from the States join American pilots and fly simulated tactical missions with mixed crews. Enlisted men of the Chinese Air Force take

over gunners' posts while others learn to maintain and repair the new planes alongside American ground crews. Fighter pilots and bomber crews practice formation and cross-country flying, tow-target gunnery, strafing and skip-bombing. After several weeks of intensive training with experienced American personnel, the Chinese crews go out alone, thereby gaining the experience and confidence in their own flying and in their new equipment that is the prerequisite to successful tactical flying.

When able to operate independently, the crews fly their planes to China as new units or as replacements for the composite wing. The AAF personnel move up to the front and begin actual operations jointly with the Chinese combat crews and staff personnel. Such continuous cooperation is essential to coordinate the tactics of Chinese units with those of the AAF units flying missions with General Chennault.

On November 4, 1943, units of the new Chinese Air Force flew their first mission against the Japanese. With planes of another AAF unit, the Chinese-manned Mitchells flew a sweep far out over the China Sea. Three weeks later, six B-25 crews joined the AAF in the devastating raid against the important Shinchiku air-drome on Formosa Island. Thus, after years of defensive warfare, China was able to join the offensive action of the United

Chinese pilots have learned their lessons well and now are carrying the war to the Japs in coordinated offensive strikes with the men of the AAF. In B-25s and P-40s they are bombing and strafing ground troops, supply installations and shipping in the China Sea.





American commanding officer of the composite wing is Col. I. L. Branch who shares duties with Maj. H. Y. Lee. Major Lee, a graduate of the third class of the Chinese Air Force, 1932, holds a distinguished record of combat service.

lage, they were received with feasting and fireworks. Word spread rapidly that a crew of Chinese and American airmen had been flying together and wanted to return to their base hundreds of miles away. When the chairman of the province heard of this desire he left his local duties to provide a personal escort, and at every village on the long trip back to base there were celebrations, parades, public speeches and feasts. Gifts were showered on the men and they were questioned incessantly by pleased Chinese who wanted to know why they were flying together. The natives, of course, had often heard of American assistance, but the sight of these airmen walking together from a plane crash was indisputable evidence that Americans were actually flying with the Chinese.

This bail-out gave the three Chinese airmen an opportunity to tell the story of Chinese-American cooperation to hundreds of thousands of natives—how the men had been trained in the United States, how they had met and flown together in India and how they had been flying over these same villages almost every day in their bombing missions against the Japs. The new hope generated from this mishap did almost as much for the Chinese people as a military victory over the Japanese. ☆

States against the common enemy. November 4 truly marks an important milestone in the history of Chinese air power.

First blood was drawn on December 6 when a Chinese gunner on a B-25 shot down a Tojo during an air battle near Tungting Lake. On the day before Christmas, Chinese pilots won a fierce aerial battle over Canton, three of the flyers shooting down a Jap apiece. In the first two months of combat operations the bombers flew sixty missions. The fighters flew 200 sorties against the enemy in the first thirty days. Yet some of the Chinese pleaded for more flying and were disconsolate when they were not included on the roster of crews assigned for the next day's mission. The Chinese are eager to fight the Japs, sometimes too eager, and it has been a major problem for the American commanders to cope with them. Chinese have proved time and again that they can fly near-perfect formations, but they sometimes like to go out on their own. This inclination, to be sure, is common to all new pilots, and it is up to the more experienced American crews to restrain the eagerness of the new men.

During the comparatively short history of the Chinese-American Composite Wing's operations, probably the most important non-combat accomplishment in gaining prestige with the Chinese people came from a forced bail-out of a squadron commanding officer, and his crew.

The two Americans and three Chinese landed fifty miles from the Jap lines, and when they made their way back to a vil-

When the job involves gun repair, calibration or adjustments American mechanics can frequently take lessons from the Chinese. Metal work is second nature to these men who seem able to feel tensile strength with their sensitive hands.

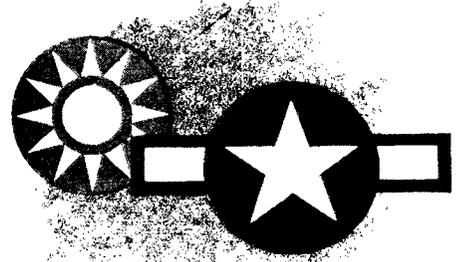
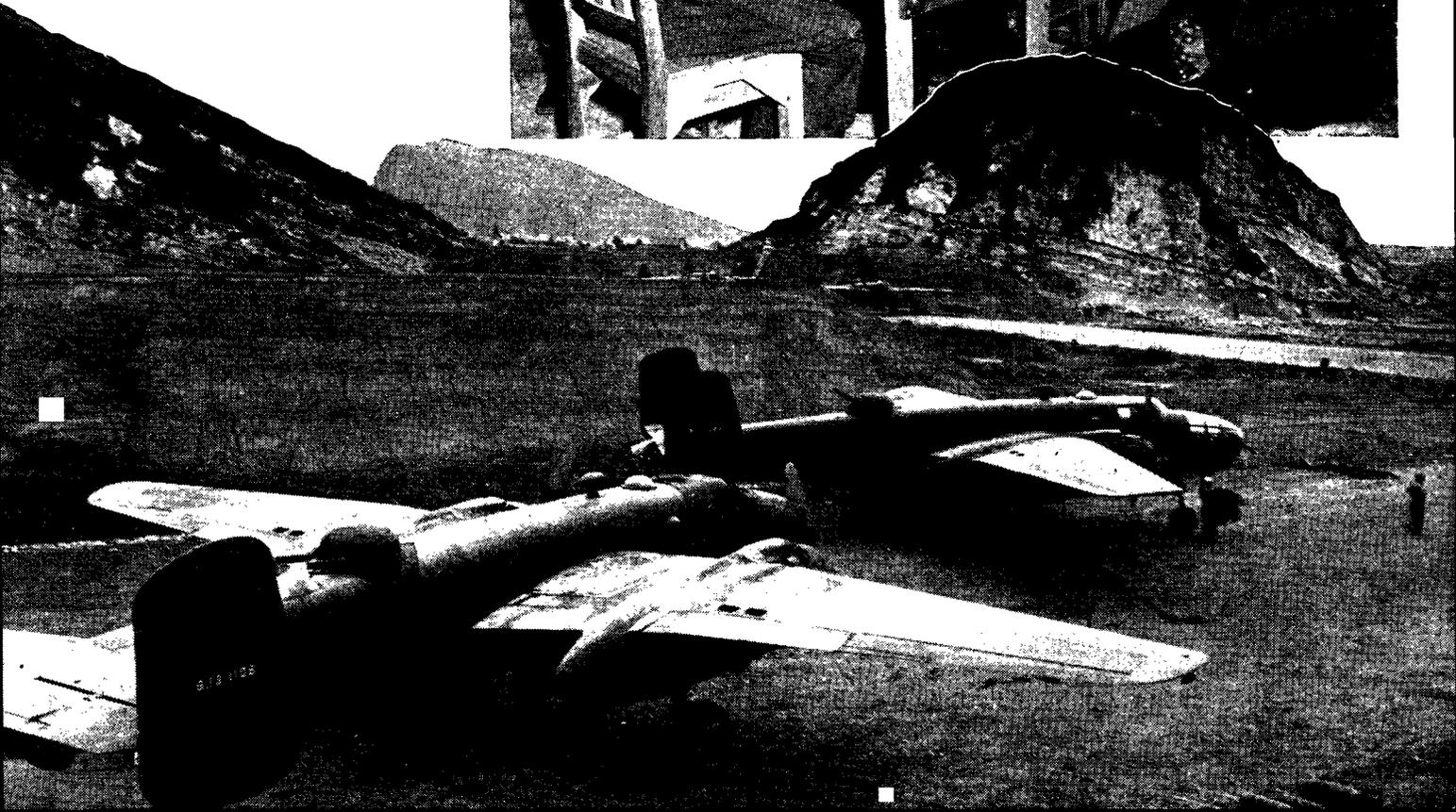




By assigning aircraft to Chinese crew chiefs, with American mechanics as supervisor-instructors, the wing's units have been able to keep their planes in commission at the time they conduct their programs of on-the-job training. These 500-pounders are marked for the Jap.

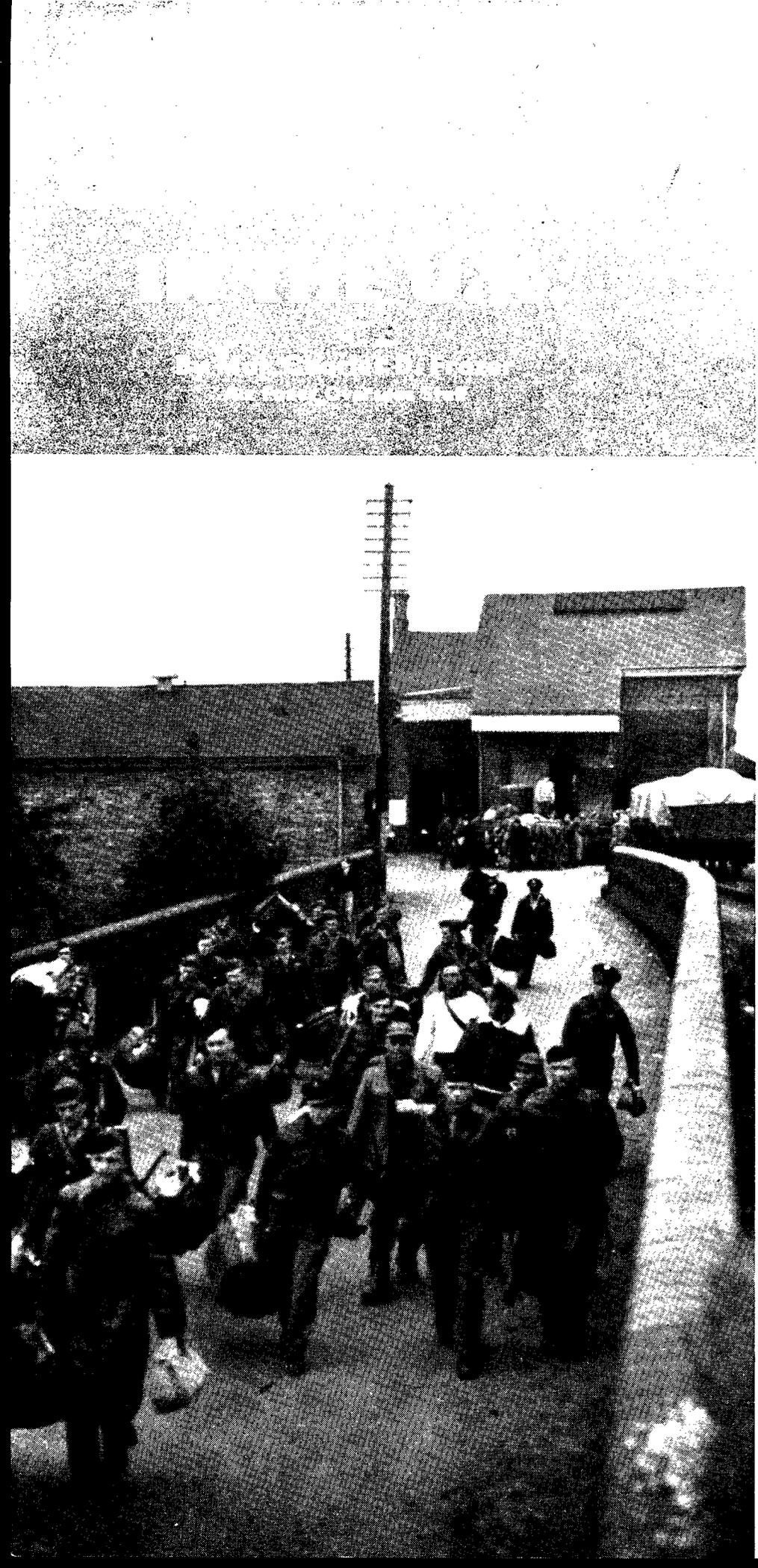


B-25s of the Chinese-American Composite Wing have piled up an impressive record against enemy shipping in the China seas. In protective revetments, beneath the colorful sugar-loaf hills, these bombers wait between missions.



Off-duty hours presented another theoretical problem in original plans for a Chinese-American tactical unit. This problem, however, remained theoretical. Chinese officers live in barracks with American officers, enjoy the same recreational program and are bound by the same disciplinary regulations. As the men overcome the language hurdle they begin to know each other as personal friends and comrades in arms.





**W**HEN heavy bomber men arrive at a Combat Crew Replacement Center of the 8th Air Force they go through several days of training which is unique, vigorous and, perhaps, the most specialized in the AAF. It is a schooling for battle, a final prep for a tough assignment—air war in the European theatre.

This course has two purposes: to eliminate any operational flaws of individual crew members and to indoctrinate every man in the procedures and problems of the theatre.

While much of this training is classified, a description of subjects covered will indicate its breadth and value.

Three schools are operated by the 1st CCRC Group—one for B-17 crews, another for B-24 men and a third solely for gunners. They are large bases, complete with airfields, classrooms, American and British synthetic-trainer buildings and other facilities.

New crews assigned to a school spend their first two days together. Assembled in a lecture hall, they devote eight hours or more each day learning general information about the theatre which will fit them for active combat.

Take, for example, instructions in oxygen equipment and high altitude flying. Like all other lectures, these instructions are extremely factual and to the point. Every crew member is taught in detail the use of the A-14 mask. He learns how important it is to shave the night before a mission, because a heavy beard can cause a five percent leakage. He finds that he must guard carefully against a frostbitten chin, which can result from the collection of spit or sweat. He is advised always to carry two masks and is shown how to prevent cracks in the rubber and how to use a high pressure bottle—a vital matter.

Supplementing this data is a meticulous drill in the use of the British chest parachute, with which crews in this theatre are equipped, and high-altitude bailout procedure. The latter instruction emphasizes methods of making delayed jumps, the many reasons why they are advisable and the means by which they can be accomplished safely and surely.

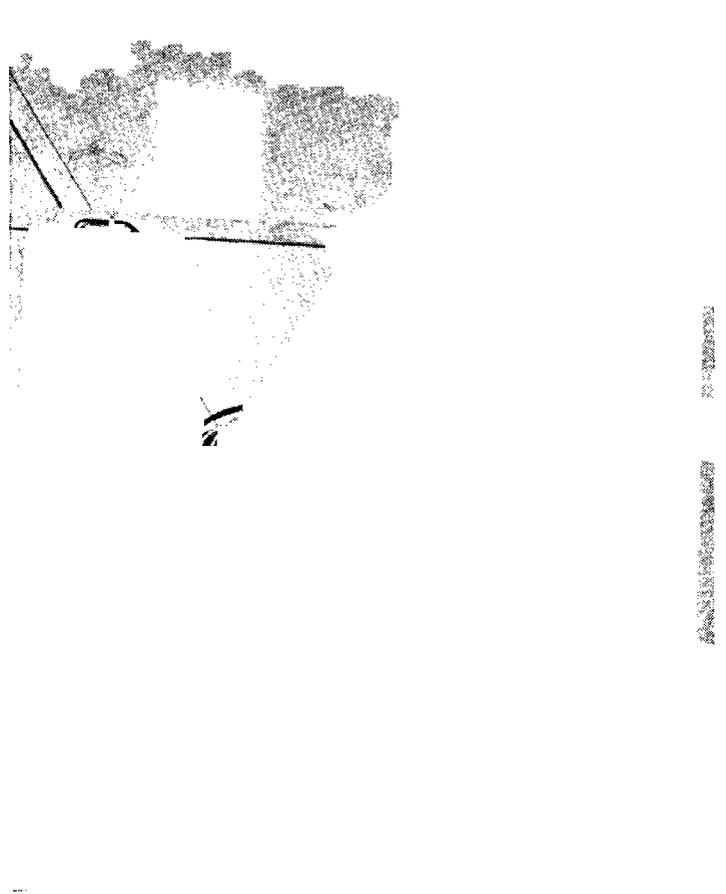
Ditching and dinghy drill gets much attention. All the fine points of ditching are thoroughly covered, such as—in a B-17—the need for the top turret gunner to swing his turret forward so the pilot and co-pilot can reach up, grab the guns



Bombardment crew members arrive at a CCRC in England for their course in battle indoctrination. They spend two eight-hour days together in the classroom for instruction in a variety of subjects, ranging from the importance of shaving before going on a mission to naval craft identification. Specialized training comes later.



Following their indoctrination, gunners attend a special CCRC gunnery school to learn live firing, turret gunnery, the "zone system" and malfunctions of equipment. Every member of a bomber crew must learn to load and shoot—and shoot well.



AAF operators learn British radio procedures in the Harwell Box. Later in the course, radioman and navigator work as a team in a Grape trainer. The radio operator must learn to distinguish between faked and genuine communications.

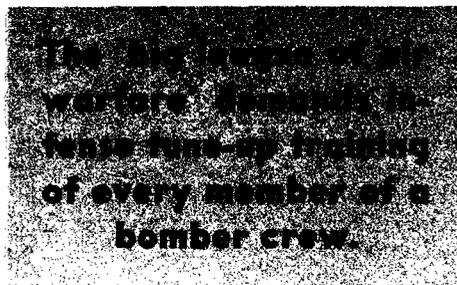
and thus pull themselves out. There is, of course, description of the British Air-Sea Rescue System, with full details on "what to do till the doctor arrives."

An intelligence lecture of prime interest is that devoted to prisoner-of-war information and escape procedure. It is no accident that many American airmen have come home from parachute jumps or forced landings in Europe. They are taught how to do it before they take off.

**ORIENTATION** of a bomber crew naturally stresses intelligence topics. All flying personnel are familiarized with intelligence bulletins, strike photographs, the principles of photo-interpretation, enemy defenses, maps and the like. They learn that a large part of their job will be to gather information—"hot news," as it is called—as well as to drop bombs on German targets.

Recognition is strongly featured. Bomber men are taught to recognize friendly and enemy aircraft by a variety of methods—by movies, photos, charts, epidiascope and by blindfold procedure, in which the student must identify a small model purely by feeling its surface. Only those aircraft likely to be encountered in the theatre are taught, but each man must pass exacting tests.

Identification of naval craft is also important. Crews learn what mine fields look like and the distinguishing characteristics of friendly and enemy convoys, as well



as warships. The activities of German E and R boats are thoroughly analyzed.

While it may seem unusual that in a school of this sort geography should have to be taught, it is an indispensable subject. Many men who think they know the map of Europe find that actually, they do not know it at all, particularly relative distances between countries. Nor do they realize how Europe appears when it is figuratively lying on its side—that is, when approached from England in the direction taken by AAF bombers.

To the new bomber crew, lectures on the German order of battle and the current war situation are obviously invaluable. Hence, the CCRC schools provide many instructional hours on the history and evolution of the German Air Force, its current strength and disposition, its newest planes and equipment, its abilities and weaknesses, its strategy and tactics.

Complementing all this information are summaries of targets recently hit by the

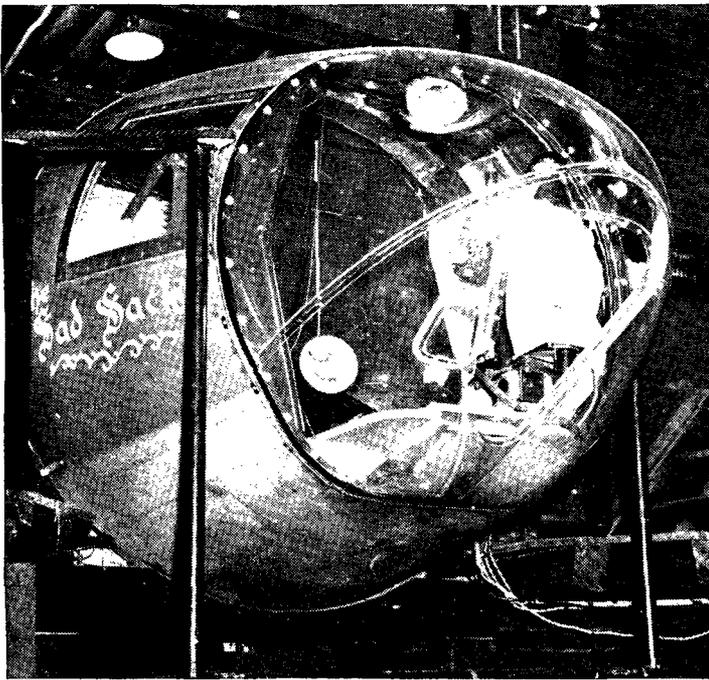
8th Air Force and the RAF and a general description of important industrial areas and targets which may be on the black-board tomorrow. Day-to-day progress of the war in the European theatre and elsewhere, obtained by flash and TWX reports, is regularly imparted to the crews.

General theatre indoctrination cannot be accomplished in two days, of course. New bomber crews will continue to receive instruction in these and other subjects even after they leave the school and report to their operational groups. However, it is at the CCRC station that they are given an intense tune-up in fundamentals by AAF and RAF instructors.

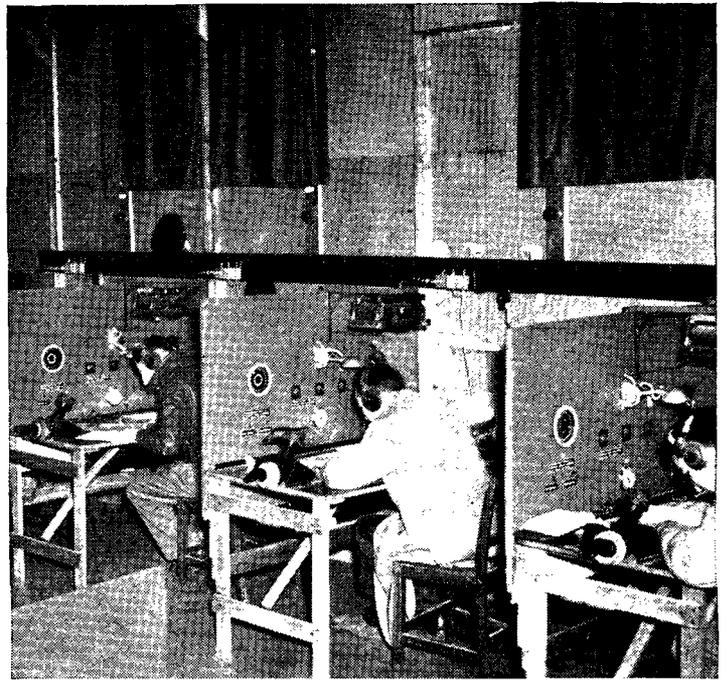
Once the initial two days are over a crew splits up. All gunners go to the special CCRC gunnery school for many days' practice in all varieties of live firing, instruction in malfunctions, and a thorough knowledge of the "zone system" of firing now used in the European theatre.

Other crew members—pilots, navigators, bombardiers, engineers and radio operators—stay at the original CCRC school for specialized training. This is tough and rigorous. It is designed not only to acquaint each man with 8th Air Force and British procedures but also to correct any flaws which may exist in his ability to do his job. Even though he may have once been taught a subject a man can become rusty. The CCRC course brings him to his peak.

Each of these specialized courses is a



The bombardier soon learns the difference between a bombardier and a combat bombardier. While making his "runs" in this bomb trainer, an electrically operated device which provides air speed and drift problems, the bombardier is subjected to aircraft sounds, gunfire and simulated flak puffs.



Navigators get an operational test on their first day of specialized work and the results usually shock them into intense study and practice. In this DR trainer room, the navigator solves problems in dead reckoning. Practice in the use of the radio compass and airplot is also part of the curriculum.

blend of lectures, demonstrations and practice, with emphasis on the fine points of wartime flying.

Navigators and radio operators get a particularly rude awakening. A navigation student at CCRC receives an operational test on his first day of specialized work after which his attendance and attention at lecture are very earnest indeed. Dead reckoning is taught and practiced day after day in the class room and in the dead reckoning trainer until the navigator is perfect in its application. He learns completely the use of a radio compass—regarded as the most important aid in this theatre—and the airplot, which RAF observers use faithfully. In a device known as the Grope trainer, he rehearses radio navigation, map reading, use of certain British equipment, the making of a flight plan and keeping of a log.

When he and the radio operator are regarded as proficient, they take simulated flights together in this Grope trainer. To all intents and purposes, they must get an airplane to a given target and back again without difficulties. Later on, they will do this on high-altitude practice missions before going over Festung Europe.

The radio man, meanwhile, if he cannot take at least twenty words a minute, must practice until he can. He must learn British radio procedures via Harwell box which govern in this theatre. He must study in the Navigation and Security Trainer, which contains a large map of England mounted on a copper plate with all existing radio aids shown by small electric lights. He learns all about classified radio position-finding equipment.

When he and the navigator take their simulated flights together he gets all kinds of messages, faked and real, so that he will learn the difference and not be tricked in combat.

**T**HE bombardier is not neglected. He sweats away in a trainer that soon teaches him there is a difference between a bombardier and a combat bombardier. While he may be adept at operating a sight, he may have forgotten some of his teachings on target location, bombing run procedure and computation for present data. If so, he learns them again. He gets navigational instruction. He practices his job for hours in the bomb trainer, an electrically operated device which provides problems of air speed and drift. Under the sight of this trainer is a turntable which is synchronized with the movement of the sight and which contains a map of the Ruhr Valley. The bombardier must select his targets on that map and bomb them. Moreover, he must do it with the ringing in his ears of aircraft sounds and gunfire, and a remarkable simulation of flak puffs. A bombardier also is rehearsed in the quick closing of bomb-bay doors after emergency release, the correction of a spring loading failure, the use of intervalometers and computers, and several methods of bomb salvo.

Pilots and co-pilots, while usually up-to-the-minute in operational efficiency, still must have a thorough grounding in instrument flying, in formations employed in the theatre, in high-altitude formation flying, British flying procedures and general airmanship and tactics.

Briefly, every bomber crew man is brought up to the mark demanded by the toughest air theatre in the world. All are given much gunnery, for it's been found that bombardiers and navigators, for example, are not proficient enough with the .50 caliber for successful combat.

The gunners themselves receive what amounts to a complete course—with practice and instruction in sighting, nomenclature, malfunctions, turret gunnery and maintenance. But all crew members at least learn to load, correct stoppages, shoot and shoot well.

These CCRC installations—which are under the command of Col. Harold D. Smith, with Lieut. Col. John P. Dwyer as director of training—are really "finishing schools for combat."

While, as broadly described here, many of the subjects covered make the CCRC program sound like a refresher course, this is not the case. There is a combination of basic and new information, plus a war atmosphere in the schools themselves which exacts from every man the utmost in ability and learning capacity and which leaves him, after only two weeks or so, far better equipped for combat than he could possibly be when he arrives.

Directors and instructors of the schools are all battle-trained themselves. Furthermore, they understand the art of education as well as their own particular subject; they constantly alter the syllabus of instruction to keep completely abreast of every new combat development. They know from experience the urgent need for a man to be absolutely "on the ball" before he crosses the Channel. ☆

# REDISTRIBUTION STATION

By Lieut. Wm. T. Lent



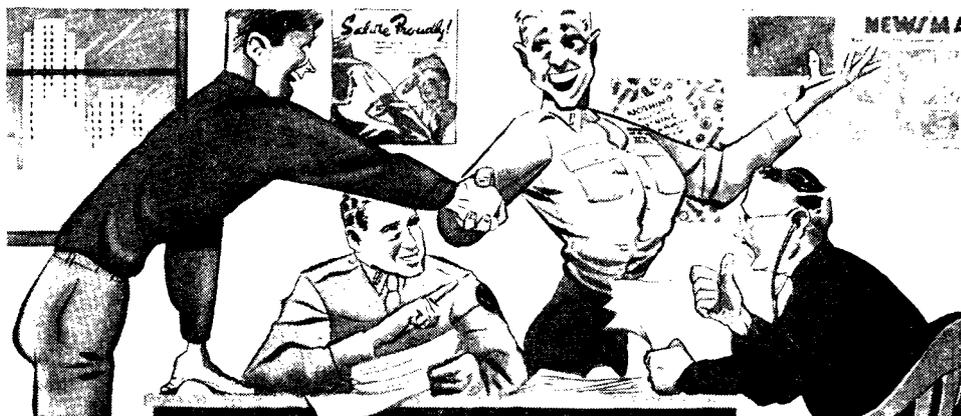
Each returnee's service record and all his GI memorabilia are given a rigid inspection at the Redistribution Station. As a result, in this instance, Master Sergeant O'Rourke has been enriched by six months' back pay on flying time. Overflowing with appreciation, he pops for the lads in the record section who helped to make it possible.



While soaking up the sun and southern sights, a couple of bomber pilots indulge in their favorite pastime—arguing the relative merits and superiority of the B-17 and B-24. Today's battle is temporarily interrupted by a fast-looking job, complete with war paint and trimmed fuselage.



After fighting Japs, malaria and boredom in the Southwest Pacific for the past two years, the peace and comfort at this AAF Shangrila seem like a dream to Captain Foster. USO hostess Sally Wallace is sufficiently impressed with the riot of color on the Captain's chest.



Old home week at the station. Liberator Pilot Winchester, who has been assigned to a new bomber group in the process of being formed, finds his former navigator detailed to the same outfit. The classification officer and the flight surgeon share their delight in keeping an efficient combat team intact.



Co-pilot Grant is the proud possessor of the Distinguished Flying Cross and Air Medal and has fifty successful missions to his credit. Today he makes his first forced landing but suffers no more than a bruised ego and empennage.



Solicitude at the station knows no bounds. White Mrs. Peters of the local "Sewing Moms" repairs the sergeant's sleeve, Miss Randolph of the Red Cross tempts him with a basket of home made tidbits. Poor old General Sherman would roll in his grave at such a sight.



# FLYING SAFETY

Suggestions from the Office of Flying Safety, Headquarters, Army Air Forces, in the interest of accident reduction.

*These items are for educational purposes and are not to be construed as directives.*

## USE THAT HARNESS

In recent accidents a number of flyers have received needless injuries through failure to comply with AAF Regulation 62-18, which requires that safety harnesses shall be used in all planes furnished with the equipment.

To help correct this situation, Air Inspectors of the Training Command currently are treating wearing of harness, as well as safety belts, as a special subject for inspection.

The only conceivable objection to wearing a harness is that it restricts movement when locked. However, once a plane is in flight, it is a simple matter to throw a lever at the base of the seat releasing the tension and providing a flyer all of the freedom he needs.

The harness, of course, should be locked during all take-offs and landings and aerobatics, as well as when a crash landing is imminent.

Additional information on this subject may be found in Pilots' Information File, 6-8-1, as revised 1 August 1943.

## PILOTS' ADVISORY SERVICE

During their first full month of operations, the 23 Flight Control Centers, OFS, issued 1,834 flight advisory messages, warning pilots of dangers and furnishing alternate procedures when necessary.

When pilots maintain a listening watch of Communications Stations en route, they are in a position to receive any report of changed conditions. When they fail to do so, they are throwing away the facilities of a nation-wide organization in favor of trusting to luck. The reports which follow illustrate the two alternatives.

Two B-17s took off from Pueblo, Colo., at 0055 on a round robin flight (Contact Flight Rules). Within a short time, weather conditions at Pueblo grew worse. The Denver Flight Control Center attempted to convey this information to the planes by means of range stations in the path of the flight. No contact was made. The planes returned over Pueblo at around 0530, and one of them attempted to land with an 800-foot overcast and a ground fog. The bomber crashed and burned. The other

plane, milling above the overcast, subsequently received FC advice that Colorado Springs was CFR and made a safe landing there.

A C-78 left the Army Air Field at Garden City, Kan., for the auxiliary field at Gage, Okla. (Contact Flight Rules).

When the flight plan was received by the Albuquerque Flight Control Center, weather reports there indicated a 400-foot overcast at Gage. The CAA range station at Gage was instructed to convey the information and ask the pilot's intentions. The pilot, who was listening on the range, received the message and, not desiring to fly in instrument weather, returned safely to Garden City.

## CONTROL TOWERS ON WHEELS

Use of portable control towers at a number of bases in the Training Command has proved a valuable aid in accident reduction.

Stationed at the approach of the runway, a portable tower is in an ideal spot to prevent traffic mixups and over-shooting and under-shooting by trainee pilots. The towers are constructed locally of non-

critical materials. A typical tower is shown in the accompanying photograph.

Regional Safety Officers assigned to the Training Command are promoting the utilization of the portable units wherever the regular tower is too far away to maintain adequate control over student flyers.

## FLIGHT ENGINEERS' SCHOOL

Recognizing the importance of flight engineers in operation of heavy bombardment aircraft, a bombardment operational training wing in Texas has set up a school in one of its groups to teach emergency procedures to these crewmen. Results so far have been excellent.

A regional safety officer, who assisted in establishing the school, reported that the wing air inspector's office had examined recent graduates and found them 100 percent better equipped for their jobs than any group examined previously.

Under the guidance of experienced manufacturers' representatives, student engineers go through a ten-day period of lectures and work on mock-ups and airplanes. The course is climaxed by a thorough written examination and a proficiency check in the air, which students must pass before being assigned to flight duty.

Both wing and group training sections predict that accident rates will be lowered through continued use of the school.

Subjects covered include hydraulics, electricity, fuel system, generators and engines.

## PRECAUTION

As a result of a near-accident at MacDill Field, Fla., when a plane took off with the pitot tube covered, red flags were tied to all pitot tube covers to attract engineers' attention.

## ADDED OXYGEN TRAINING

A heavy bombardment OTU at Palm-dale, Calif., is making sure that its crews do not go into combat with an insufficient knowledge of the use of oxygen by conducting weekly drills in high altitude emergencies.

They include practice with walk-around bottles, artificial respiration, rapid appli-



ization and adjustment of masks, first aid and various changes of connections and stations in the airplane. Emergency instruction periods are usually conducted when weather is bad or planes are out of commission temporarily.

### WEATHER 'ROUND TABLE'

The 2nd Air Force has instituted a program of "round table" discussions by weather forecasters within a wing area before each daily forecast as a means of increasing forecast accuracy. The plan was initiated by a heavy bomber wing with headquarters at Topeka, Kan. Heavy bombers of this wing take protracted flights to both the east and west coasts.

The discussions are held each midnight on the telephone system, with the wing and base weather officers plugged in. For forty-five minutes the pros and cons of the synoptic picture are analyzed.

"In this way we get the benefit of the experience of all," comments Capt. W. A. Brown, 2nd Air Force staff weather officer. "Some forecasters are strong on weather in the east, others have had their experience on the west coast. In any case, all forecasters get the benefit of the best experience available."

At the start of the conference, the wing weather officer arbitrarily singles out one base weather man to make the forecast, thus insuring that each man will be prepared nightly.

After the forecast is agreed on, the wing officer TWX's the finished product to the bases. If any base subsequently makes changes due to local conditions, the wing is notified.

"Since the program began last November," Capt. Brown states, "the wing hasn't lost a single plane due to weather."

### TEETH IN REGULATIONS

Regulations and Enforcement Division, OFS, reports that severe punishment of offenders is reducing flagrant violations of flying regulations to a minimum. Here are a few recently reported cases:

While flying too low, a staff sergeant liaison pilot clipped a high tension wire. It fell to the ground and started a grass fire. Children playing nearby were attracted to the blaze and a ten-year-old boy stepped on the live wire and was electrocuted. The pilot was court-martialed and sentenced to be reduced to private, serve six months at hard labor and forfeit \$33 pay per month for a like period.



An aviation cadet entered traffic from the wrong side of the field and landed cross-tee, causing another pilot taking off to slam on his brakes and nose over to avoid a collision. The cadet will pay more attention to regulations after carrying a sign inscribed "I Help The Axis" up and down the flying line for five days.

When a commissioned pilot buzzed a TVA installation, he struck a main transmission line, causing injury to himself, a \$700 damage to the airplane and a three-hour slowdown at a nearby shell-loading plant. This pilot is restricted to the post for three months and is forfeiting \$75 per month for six months. ☆

## P. & I. SAYS:



(The Prevention and Investigation Division, OFS, is composed of veteran flyers. These reports include comments by these veterans on recent accidents. Read and heed.)

**MERIDIAN, Miss.** — Preparing to land after a cross country flight, the pilot of an A-24 discovered that he could not extend his landing gear. The lever was jammed in "up" position and could not be budged.

Advice from the tower failed to help. The pilot made a belly landing on the field with no injury to himself or his passenger, but considerable damage was done to the plane.

Subsequent investigation disclosed that a nut—foreign to the plane—was lodged in a position to foul the gear controls. It was hidden from sight and could not be found in the air.

The accident was blamed on improper maintenance, and an investigation was launched to prevent its recurrence.

**P & I COMMENT:** *A loose part or tool in an airplane may sometimes mean the difference between life and death in the air. All ground crews must be cautioned repeatedly concerning the dangers of foreign objects fouling controls.*

**KEESLER FIELD, Miss.** — A series of pilot errors recently resulted in injury to two crew members of a B-17F and a badly damaged airplane.

His first blunder came when the pilot landed on the wrong field. Cleared from Dalhart to Gulfport on a night training flight, the pilot landed at Keesler instead of Gulfport where runways were longer.

After an unusually short approach, the wheels touched 1,100 feet from the end of a runway 5,000 feet long. Instead of going around again, the pilot applied his brakes so suddenly that the plane smashed its nose and props into the ground and settled back to crush the tail wheel assembly.

**P & I COMMENT:** *When in doubt, go around again!*

**PROVIDENCE, R. I.** — A formation of three P-47s came in for a landing. The first plane landed and cleared the runway; the second was forced to groundloop because of brake failure, and the third nosed over to avoid crashing into the second plane.

The tower warned the third plane of the crash on the runway, but the warning came too late. All the pilot could do was apply brake to prevent a collision.

Accident investigating officers blamed the accident 100 percent on supervisory personnel in the tower.

**P & I COMMENT:** *No matter how proficient a pilot is in landing his plane he cannot see through a blind spot. It is the responsibility of the tower to keep*

*him informed of unexpected hazards in his path. That's one of the reasons why we have towers.*

**SELFRIDGE FIELD, Mich.** — The pilot of a P-40F, following a P-47 out for take-off, crashed into another P-40 parked at the extreme edge of the strip. The parked P-40 was allowing the engine to cool before taking off.

Although the pilot of the offending P-40F said he was "essing" and taxiing slowly, the other pilot testified that the plane came toward him in a straight line for more than 100 feet. Results of the crash indicated that the P-40F was taxiing too fast.

**P & I COMMENT:** *A taxi strip isn't a good place to park an airplane, nor is it good practice to taxi blindly behind another ship. Sheer carelessness almost without exception is responsible for this type of accident.*

**MATHER FIELD, Calif.** — A BT-13 landing on a field where construction work was in progress rolled through an area clearly marked with yellow flags and wound up in a ditch, tearing off the landing gear.

**P & I COMMENT:** *While making his approach this pilot should have made a mental note of the point of landing, then scrutinized the area through which his plane would roll. These surveys must be made while a plane is still in the air, because once on the ground the nose of the ship will interfere with vision. ☆*

# Salerno:

## INVASION PROVING GROUND FOR AIR POWER

By Herbert H. Ringold  
AIR FORCE Staff

**When the AAF saved the day at Salerno,  
it demonstrated air power's capabilities  
for coming invasion of Western Europe.**



**T**HE Battle of Salerno provides the best example of what air power is capable of accomplishing in the invasion of Western Europe.

In that engagement air power not only redemonstrated its necessity to large scale amphibious operations, but also its extreme flexibility—its capacity to change suddenly the entire nature of its operations yet retain its maximum striking power.

Air power in the original battle plan was committed to diversified operations ranging from local cover to long-range strategic bombing. However, when strong opposition prevented invading troops from proceeding according to plan, air power was able to mass all its available strength in direct support of the ground forces and turn impending defeat into assured victory.

At the outset, Allied strategy called for landing thousands of troops at Salerno to split the German forces, speed the conquest of Italy and secure airfields closer

to the enemy's heart for continued attacks upon strategic targets. The initial landing objective was to establish a beachhead 25 miles wide and 12 miles deep in the Salerno area and make contact with the British 8th Army moving up from the south.

The Army Air Forces originally had three major assignments:

(1) Fighter planes were to throw a protective screen over naval vessels and the troops landed on the beaches.

(2) Medium bombers were to pound communication lines, hit airfields and create roadblocks to prevent enemy reinforcements from reaching the beachhead.

(3) Heavy bombers were to perform their normal function as part of the strategic Air Force and hit military installations outside the invasion area.

Supporting these operations, A-20s were to drop flares and incendiaries for night-flying B-25s and Wellingtons; Beau- fighters of the RAF were given night

patrol assignments; P-51s were to perform tactical reconnaissance, and C-47s and C-53s of the Troop Carrier Command were to drop paratroops, transport Airborne Infantry, deliver emergency supplies and evacuate wounded.

However, the enemy, forewarned by aerial reconnaissance of the apparent destination of our convoys, met our invasion forces with sufficient strength to jeopardize the entire operation. Continued resistance forced changes in original air assignments and placed responsibilities of the most vital importance upon the AAF.

The flexibility of an air force properly created and efficiently led met an extreme test, and practically every type of aircraft was able immediately to take on an additional function. The tactical and strategic air forces, designed to perform separate functions, were effectively combined in the midst of the battle to meet an un- anticipated crisis.

B-17s, B-24s, B-25s and B-26s were

This is how a portion of the shoreline at Salerno looked to invasion troops moving in for landings. A shell is shown bursting in the background. Huge,

rolling hills rise to a height of 2,000 feet like a backdrop to the narrow coastal plain. Allied planes flew steady cover during landing operations.

pulled in to bomb troop concentrations and tank elements which were holding up the Allied advance; A-36s, originally assigned to fly low cover, were used to dive-bomb artillery emplacements; P-38s and P-40s, low to medium cover in the planned aerial umbrella, were ordered to make low-level attacks on enemy troops and transportation facilities. Other P-38s, which were used in earlier campaigns for skip-bombing by the Strategic Air Force, were transferred to tactical operations and given dive-bombing and strafing missions.

All fighters were based on Sicily, approximately 200 miles from the beachhead. The AAF had not anticipated running long fighter missions for more than two days. Enemy resistance, however, prevented capture of airfields in the beachhead area as originally planned, and fighter pilots were put under the additional strain of spending almost two hours flying to and from the target area. Fortunately, insofar as equipment was con-

cerned, the AAF had over-insured against such a contingency and had a greater than normal extra supply of belly tanks on hand, enabling the fighters to continue these operations for six days.

It is difficult to determine when the air battle of Salerno actually started. The beachhead was assaulted by ground troops on September 9, but weeks before heavy and medium bombers had softened up the enemy for the attack. They ruined airfields, pinned aircraft on the ground and weakened the striking power of the Luftwaffe by shattering the fighter formations which rose to meet them. Supply centers and communication lines around and far above the invasion area were hammered repeatedly.

When the ground battle began, cooperation between the ground troops and the AAF was so precise that dive-bombing requests from the Infantry were actually passed on to the attacking planes while they were in the air on their way to,

or immediately over, the invasion area. Fighter-bombers and dive-bombers hit enemy positions within from ten to thirty minutes after the ground troops had relayed the location of the targets. The overall aerial operation was coordinated perfectly by headquarters personnel who had a sortie-by-sortie report of all developments and were in a position to dispatch aircraft whenever and wherever support was needed by the ground forces.

From the outset the Allies maintained overwhelming control of the air. All told, fourteen different types of Allied aircraft participated. More than 2,000 sorties were flown in a single day, yet our aircraft losses were so low that some groups did not suffer a casualty. The small number of German planes which did get into the air during the day were, with few exceptions, either shot down or prevented from reaching the battle area.

Moreover, the extent to which the continued presence of Allied aircraft over the



Weeks before ground troops assailed the beachhead on September 9, AAF bombers had struck repeatedly at the Salerno port area, softening up the enemy for attack. On this particular mission B-26s of the 12th Air Force, covered by P-51s, scored hits on railroad tracks, buildings and shore installations. The Germans sent up ME-109 interceptors and thirty were knocked down.

battle zone raised the morale of the ground forces cannot be over-estimated.

Precision bombing continued throughout the operations as heavy, medium and dive-bombers hit enemy troop concentrations in front of the Allied ground forces, blasting a path through which the Infantry could press its attack. Lieut. Gen. Carl A. Spaatz, then commanding general of the Allied Air Forces in the Mediterranean theatre, observed:

"Never before have bombs been employed on a battlefield with such telling effect."

First news of the impending invasion came to the lower echelon of AAF personnel on September 6, 72 hours before D-day, when General Spaatz called a meeting of group commanders. In a two-hour session, Air Marshal Sir Arthur Coningham of the RAF announced the forthcoming operation and described the

Africa-based B-24s visited Foggia in persistent waves for three consecutive days, fighting off Focke Wulf 190s and reducing the airdromes and

railway marshalling yards to rubble. The debris pictured here gives a good idea of the thoroughness of the job done by the Liberators.



exact nature of the aerial support it would require. He outlined the entire method of attack, pointing out in minute detail the job of the ground forces, the part of the combined navies and the function of the supporting air force.

Then Col. W. S. Gravely, chief of staff of the 12th Air Support Command, broke down the assignments with regard to fighter and fighter-bombers. The attack was explained in the form of a timetable and each group commander was told how many of his airplanes would be required, their assigned altitudes, their patrol period and the particular stretch of the beachhead for which they would be held responsible. Lieut. Col. Frank A. Hill, commanding officer of a Spitfire group, commented later, "We didn't deviate from that schedule by more than thirty seconds. It was absolutely perfect."

For from two to four days before the invasion, the convoys en route to the assault area were protected by an aerial screen provided by Coastal Command aircraft. At 0605 on September 9, the beachhead air cover schedule went into effect. Four different types of aircraft made up the first aerial umbrella. A-36s and British carrier-based Seafires covered from 6,000 to 10,000 feet, P-38s from 10,000 to 14,000 feet, and Seafires and Spitfires from 15,000 to 22,000 feet. The A-36s operated with squadrons of eight planes, the Seafires used from six to eight, the Lightnings twelve, and the Spitfires patrolled in two groups of six planes each, with the first element at 15,000 feet and the second from 20,000 to 22,000 feet. Each squadron was given a fifteen-to-twenty mile beach area to cover, and reinforcements were arranged so there was always a relief group of planes on the way to the target.

This is how Lieut. William Murphy, P-38 pilot, describes the first mission of his group: "We left after dawn and picked up warships, transports and landing craft just off Salerno. I could see the activity beneath us and it appeared that

there wasn't much in the way of opposition. We assumed our position over the beachhead in groups of four in stepped-down strings. Throughout the first day, we didn't have any aerial opposition. We just went up and back, up and back, without any trouble. There were control boats in the water to warn us of approaching planes, but during the first day there just wasn't anything to warn us about."

THE same was true for the top cover Spitfires—no German aerial activity—according to Capt. Dale E. Shafer. "I was over the invasion area with the first element," he recalls, "and it was just like a practice mission. All we did was fly around for awhile and then go back to our base while another group took over. Our squadron flew in elements of two, line abreast, and the whole operation was damned monotonous the first day."

The original German tactics consisted principally of single planes trying to sneak through to bomb the boats in the harbor. Lieut. Malcolm Hormatz, Spitfire pilot, relates, "One or two Nazis would come in from the seaward side at about 20,000 feet, mostly FW-190 fighter-bombers. They would dive toward land and drop their bombs on the convoys from 8,000 to 13,000 feet. Then they would keep on diving, hit the beach, strafe the ground and continue back to their lines. But not many of them got through our screen."

Colonel Hill explains that one of the principal reasons for the success of the protecting aerial screen was the fighter control system.

"That control system was marvelous," adds Captain Shafer. "I remember once when they called me and said, 'Fighters approaching you, now a mile away,' and gave me the direction. They then called back and reported, 'Fighters now half a mile away.' A moment later they called and said, 'Heads up, here they are.' I looked in the designated position and sure enough there were the Germans."

The ground control station, established on the beachhead, was used not only to warn against approaching enemy aircraft, but also to provide liaison between the ground troops and the air forces in the selection of enemy targets. Direct contact was maintained between the Infantry and the control station. When advanced ground forces needed supporting aircraft to wipe out strong enemy emplacements, messages were relayed to the control station and immediately radioed to air elements. The control station operator described the exact nature of the target, its location and importance, and actually briefed the pilots while they were in the air heading toward the battle ground. This was a makeshift arrangement due to the difficulty in getting target information back to Sicilian bases in sufficient time. After the fighter units became operational in the Salerno area, all pilots received



These paratroopers were eager for news. The pilot of this P-40, returning from a mission, had no sooner stepped from his plane than he was surrounded by jumpers who were anxious to learn details of the invasion, how the ground forces were progressing along the newly won beachhead.

complete briefings prior to their take-offs.

Fighter-bomber pilots, about to leave their bases without specific briefing, would ask incoming pilots how to select their targets. They were told, "Oh, some major at a fighter control center will pick you up and give you a perfect briefing just before you reach the target."

THAT major was Jack Romerman, assistant chief of staff for a section of a fighter wing, whose control station was set up in an unprotected farm building within direct range of small arms fire and under constant shelling of heavy German artillery. He was commended later, in the name of General Eisenhower, for gallantry in action.

At one point, a battery of German 88 mm guns, thought to be located in a tobacco factory on the northwest side of the Salerno plain, was subjecting Allied ground forces to murderous point-blank fire. Apprehension was felt about calling for supporting aircraft because the enemy position was so close to our own troops. However, the situation became critical and instructions to dive-bomb were forwarded to the control station. Major Romerman described the target by radio to a flight of A-36s. They peeled off and dropped their bombs squarely on the emplacements, wiping out the battery and enabling

Allied troops to continue their advance.

Meanwhile, P-51s were handling the tactical reconnaissance work. "We had two main jobs," reports Capt. James J. Armstrong. "There were about twenty of our planes operating, with half of us doing naval adjustment fire and the other half assigned to road reconnaissance for the ground forces.

"My assignment was to help with naval adjustment fire. We flew in two-ship elements at 4,000 feet, watching the bursts of naval artillery and informing the ships of its accuracy. Our job is probably the most soul satisfying in the entire air forces. I remember that first day when the Navy told us about a particular enemy artillery emplacement they were firing on. We went over to check the fire and observed that it was slightly short. I called the ship that was laying down the barrage and indicated the necessary adjustment. A couple of minutes later six gun salvos landed squarely on the target. We were both working from gridded maps, and those naval guns could hit a dime at 32,000 yards and give you nine cents change.

"Once our troops were only 500 yards away from an enemy emplacement when the Navy opened fire after having received the precise location from our observation. The target just disappeared.

Usually the combined navies selected their own targets from information received from the ground forces. It was our job to pick out additional targets, give the information to the control station and let them decide how the enemy installations could best be attacked.

"We ran into no enemy aerial opposition. In our two ship elements, one plane did the observing while the other ship watched for intruder aircraft. Our normal cruising speed was 250 miles an hour. From 1,000 feet at that speed you can see with surprising accuracy. Whenever we wanted to look at something on the ground, we would bank up, criss-cross in sharp turns, or stand the plane on one wing and take a quick glance.

"On the second day I did reconnaissance in cooperation with the ground forces. I observed a great many enemy troop movements on a road leading into the beachhead. Information of that nature was important enough to warrant the immediate attention of the ground forces, so I moved in for a landing on the Pastrum landing strip, just south of Salerno. This strip had only recently been constructed by our aviation engineers, and it was frequently under direct enemy fire. My observations were sent to the control station and a few minutes later, dive bombers went out to attack the troop movement. You can't ask for closer cooperation than that."

The planes called in for the attack were A-36s operating from Sicilian bases. Lieut. Harold Hill described the operations of his outfit in this manner: "On the first day, we were low cover in the protective screen, patrolling at about 6,000 feet. The beachhead area was divided into three sections, with our element covering the area from Salerno to the Isle of Capri. We flew in eight-plane flights, line abreast, but we split up so that we could give each other protection.

"On the first two days, there was no enemy opposition at all. However, on the third day, we saw an FW-190 and an ME-109 at about 7,000 feet. They evidently didn't see us, for they started to drop right in front of us. At that time I was flying Lieut. Bob Hood's wing man and we went after the ME. We chased him down to the tree tops and I started shooting from my position slightly in back and to the right of Hood. When I opened, the German turned hard left, directly in front of Hood. Bob just raked him up and down until he caught fire and crashed. At the same time, Lieutenant Campagna got the FW. Those were the only two German planes we saw during our patrolling activities.

"The next day we were ordered to dive-bomb roads and bridges directly beyond the Salerno area. Apparently at that time the situation on the ground was still under control because our job was to cut

off the routes of the retreating Germans.

"Our first indication that things were going badly came the next day. We were sent out on a dive-bombing mission with instructions to land on a strip just south of Salerno, if the Allies held the area. When we got over it, we found it was in our possession so we landed. We soon discovered that we were no more than two miles from the enemy emplacements. As a matter of fact, two of the boys in our flight picked up some holes in their ships from German field pieces when they got into the traffic pattern to land.

"That was one hell of a place. The Navy was shooting just over our heads all day, the answering fire from the Germans just missed us, and Nazi planes came roaring directly past the field as they went in after the boats.

"We ran a strafing mission under rather unusual circumstances. We were too close to the enemy for a regular take-off, so we got out by spiralling straight up until we were around 6,000 feet. We took off in two-ship elements, climbed straight up and then made a wide turn while we waited for the formation to gather. Then we just nosed the planes right over and went into our dives.

"We sprayed the troops beneath us, hit the deck, made another turn and came back to the field in two-ship elements. The entire operation took only twenty minutes. When we returned, we were told that an enemy counter-attack was feared, so we were ordered back to Sicily. We left that night.

"Two days later, we returned. This time conditions were better—the enemy was now five miles away. We started running pin-point dive-bombing jobs in direct support of the ground forces. Whenever something held them up, we were called in to wipe it out.

"That tobacco factory on the edge of the Salerno plain really took a lacing. All we were told was the general target area



Establishment of airfields was of first importance. Just one mile from the beach aviation engineers selected two adjoining farms for conversion into an emergency landing field. Trees were bulldozed and a fast job with pick axes helped level off the new runway. First to use the field were two P-38s which came in exactly 24 hours after the cotton and wheat fields were taken over by aviation engineers. The task of engineers in advancing our airbases closer to the enemy and his supplies is vital in maintaining control of the battle sky.





In carrying out its bombing mission at Salerno this B-25 was hit by enemy fire and had to make a landing on one wheel. The field was still

under construction, but the pilot managed to balance the plane on one wheel, turn into his port wing and whirl to a stop. No one was injured.

and the fact that it was a big yellow building. Twelve of us went after it. We started our dive from 10,000 feet, dropped our bombs and then continued down to 1,000 to strafe. That was the end of the tobacco factory, the troops in it and the whole hub of the German spearhead which had stopped our ground forces.

"The day after we hit the tobacco factory, we went after another strong German emplacement which was so close to our field that my crew chief climbed on a building and watched us hit the target. This time it was German guns on a hill at the northeast section of the town. Our only information was that the enemy was established in a big green field. We found the field, but they had it so well camouflaged we couldn't see any individual emplacements. But we sprayed the entire area, back and forth, and a short time later our ground troops didn't have any trouble taking it, so I guess we did our job."

**T**HE experience of Lieut. Robert C. Congden, P-38 pilot, indicates the desperate nature of the land battle and also describes further the precise state of cooperation between the air and ground forces. "We were in the protective screen for a short time when we were told to jettison our bombs and go after some MEs," Lieutenant Congden recalls. "We chased them, but they beat it. By this time, we were very low on gas and I told the control station about our predicament. 'Stop worrying,' I was told, 'we got a landing strip for you to come down on.'

"Well, I looked down and there were some scrapers making a landing strip in a wheat field. When we got down to about fifteen gallons, we buzzed the field so that they would get out of the way. Then we landed. Had the enemy been able to break through that protective umbrella, they could have spotted us easily and shot up all of our ships. As it was, we lay in the mud while all sorts of shells exploded nearby and tanks battled only a mile and a half away."

Construction of landing strips began on D plus one by two engineering organizations—the British Tenth Corps airfield construction group working in the northern sector and the U. S. Aviation Engineers in the southern sector.

The situation on the ground, meanwhile, was not well in hand. On September 11, the enemy counterattacked in force and drove the Americans out of the key town of Battipaglia. They pushed south of the Sele River and captured important ground between the Sele and Calore Rivers. The next day, the Germans brought up reinforcements, renewed their attacks and made additional gains. The official communique reported that "the Germans are counterattacking desperately and at certain points have regained some of the ground previously taken by us." The enemy continued his attacks and, on the 15th, the communique stated, "In some places, our troops have been forced to give ground."

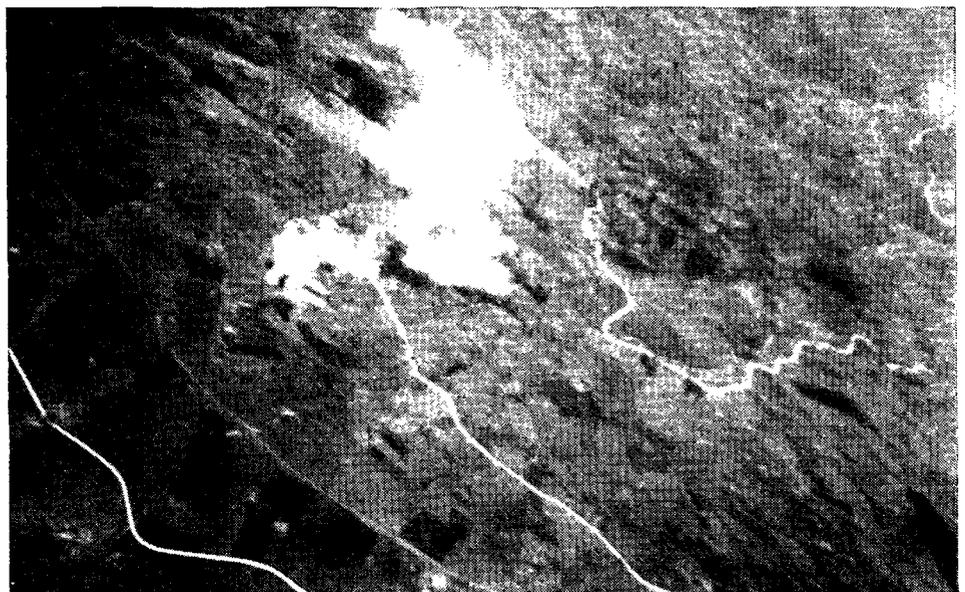
German aerial tactics changed with

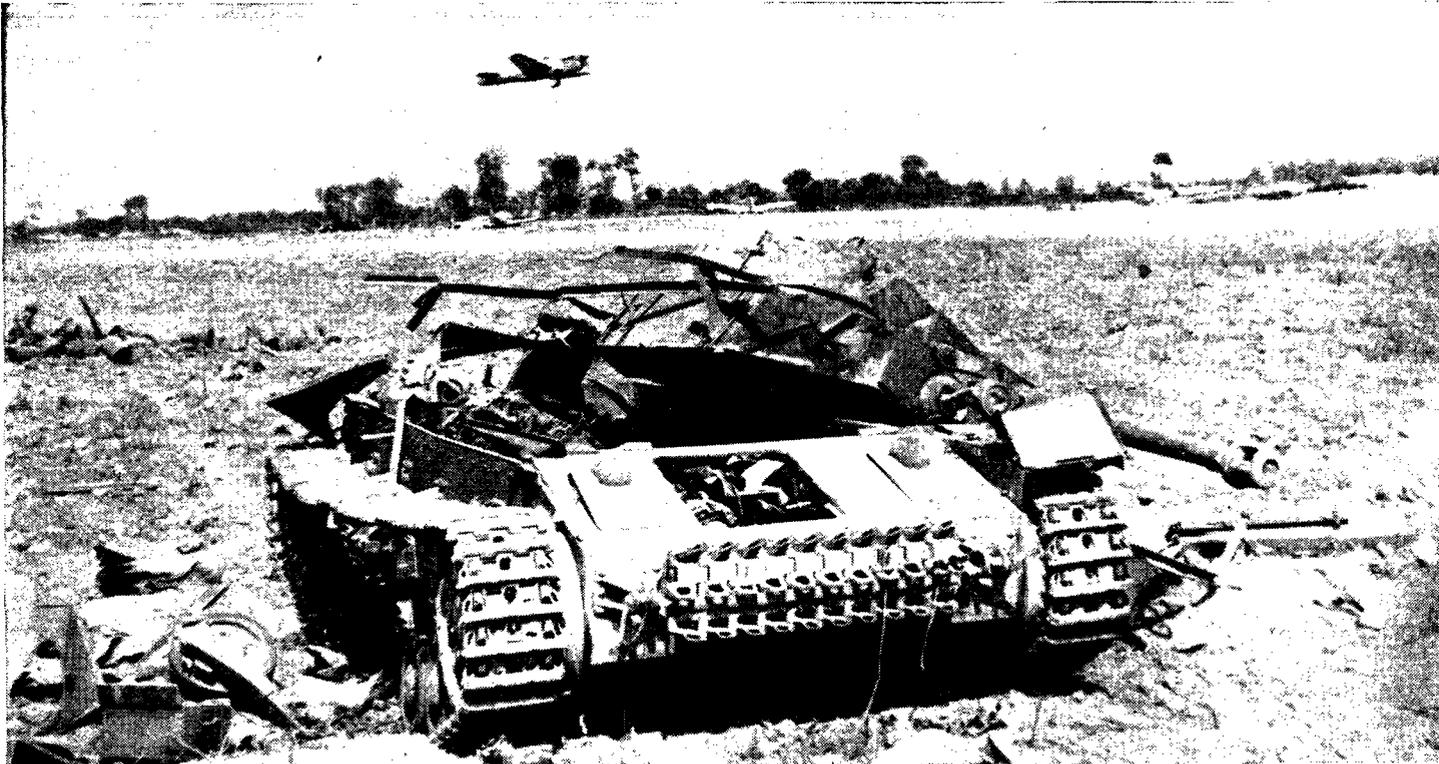
their rising fortune on the ground, and they started sending in large formations of bombers, covered by fighters, in a desperate effort to wipe out our beachhead.

Lieut. Walter Scholl, P-40 pilot, recalls this action. "We were headed north along the beachhead when I saw ten JU-88s at about 5,000 feet with twelve ME-109s escorting at 12,000. The twelve of us dropped our belly tanks and went after the bombers. When we went down on the JUs, the MEs came down on us. Our flights separated with some squadrons going after the bombers and others pulling around to fight the MEs. We kept our formation of four planes each and fought off their fighters, getting four confirmed. Other flights of P-40s came over to help, preventing the Nazis from getting through."

B-25s were called in to prevent German panzer divisions from reinforcing their ground troops. Capt. John Robbins, Mitchell pilot, reports, "Our job was to cut off the 16th Armored Division by creating roadblocks. Thirty-six of us went

German troops harassed by A-36s and P-38s were further pressed by the determined blasting that Allied bombers gave the Italian highways along which supplies were fed to the Germans.





A P-40 takes off behind the wreckage of a German Mark IV tank which was destroyed a few days before. Shown at the left is an anti-aircraft crew on the watch for the attack of enemy planes. Three aircraft are parked along the runway which was cut out of Italian farmland.

out at night in three squadrons of twelve planes each. We took off singly at thirty-second to one-minute intervals and attacked the target individually.

"Even though there was a moon, our target was not lit up very well because it was in a valley. But the A-20s, piloted by South Africans, took care of that. Those boys were perfect. Only about six of them operated with each group, but they were always right on time and right on the target. We were given their estimated time of arrival and I approached the target just as their ETA was up without seeing any flares. A bit worried, I made a 360-degree turn to await developments. When I looked again, the whole place was blazing with flares and incendiaries. They were right on the ball. The flares were dropped from 600 feet and all we had to do was bomb on top of the flares. It was practically automatic.

"After that, we went into daylight work. We were given pin-points and grid coordinates and we bombed from 10,000 feet. Our work was so close to our own lines that the ground forces used various chemical devices to indicate their position. That was what you call precision bombing of the highest order."

The B-26s, based in Africa, were ordered into the battle and also assigned to hit road junctions to prevent panzer divisions from approaching the beachhead.

"The target was seven miles southeast of Salerno," relates Capt. John E. McClure, "and we staggered our sorties so that there were Marauders over the area practically all the time. We kept hitting and hitting those road junctions until we

got tired of seeing the same bomb craters.

"Thirty-six planes went out every time, flying in four squadrons. We bombed from 10,000 feet. A different road was assigned to the various squadrons, and we had a monotonous time beating hell out of our particular road.

"We never saw any enemy aircraft. There were some dual purpose guns firing at us from the ground, but they didn't cause us any trouble."

Lieut. Bertysl Faris adds, "My squadron of B-26s made a great mistake one day. We were assigned to a road and we missed our target completely. It was a crying shame. Quite by accident, we hit an enemy ammunition dump and I think Hitler's mustache waved in the resulting breeze. I was up at 11,000 feet and my plane rocked. Enough errors like that would win us the war."

The B-24s were in action from the beginning of the invasion, although they were not directly over the target area. Their original job was to bomb Foggia to keep the German air force from getting off the ground. The fact that personnel from all the groups reported very little enemy aerial activity is a tribute to the efficiency of the Liberators.

"Sixty B-24s attacked Foggia on the day of the invasion," according to Lieut. Carl F. Root. "We were stacked down in Vs in trail and we bombed from 18,000 to 22,000 feet. Our bases were in Africa so it was a 9½-hour mission, but we were over Foggia for three straight days. On the first day we were attacked by fifteen FW-190s but there were no casualties. On the second and third days the opposi-

tion got tougher but we kept going in. We messed up Foggia so badly that the Germans stopped using the airdromes. I understand that they didn't get a plane out of there after the third attack.

"After Foggia, we switched our attention to Pescara, a port and railroad link on the east coast. We also went after Potenza, another rail marshalling yard. If the Nazis pushed their supplies past Pescara, we got them at Potenza. They just didn't stand a chance. That was their only supply route into Salerno and we blasted hell out of it. There was no aerial opposition at either town and very little flak. We had a picnic."

The job of the African-based B-17s was similar to that of the B-24s—bombing supply centers and road intersections back of the German lines.

"We really made saturation raids," recalls Lieut. Col. Albert Orance, commanding officer of a B-17 squadron. "On our first mission, there were 48 planes from our group, in addition to four other groups, all at full strength. Each ship had twelve 500-pound bombs and we dropped them from as low as 15,000 feet. Usually we ran only one mission a day, but on the fourth day we ran off two."

"I was on both of those missions that day," adds Lieut. Charles F. Downey, "and I can say it was the roughest day I ever spent in my life. Each mission took about six and a half hours, with only two hours' rest between operations. We got up at 0400 hours, took off at 0630 and returned about 1300. Then we had a quick lunch and a short rest before we were briefed for the next mission.

"Actually, I think that day was rougher on our mechs than it was on us. They had to get our ships ready in a hell of a hurry. In fact, fifteen minutes before take-off time, they were still gassing my ship and all the bombs were on the ground underneath it. I got off on time, however.

"The first mission that day was an all-out effort—everything we had went into it. We were after enemy troop concentrations which were uncomfortably close to our own lines. When we returned, we were told that our forces were in danger of being pushed right off the beachhead, so every man who could fly a plane was anxious to go right out again. My ship was ready to fall apart on that second mission, but we got over the target. Each plane dropped twenty-four 100-pounders from 15,000 feet."

Colonel Orance states that there was very little enemy aircraft activity and no flak encountered on most of the B-17 raids. "Apparently the Nazis had leveled out their ack-ack guns to fire on the beachhead. As far as we were concerned, the battle of Salerno was just another attack. Previously, we had bombed from 23,000 feet but our new orders called for 15,000 feet. That made us a little apprehensive at first, until the boys were told the importance of the mission. I was particularly impressed with the fact that we were told the reason why we were being brought down to 15,000 feet. We were informed that the ground forces were in danger of losing their beachhead, and that was enough incentive for us. Actually we didn't have any trouble. There were no planes lost in my group through the entire Salerno engagement."

Action carried out by the Troop Carrier Command also contributed to the overall success of the AAF. About noon on September 13, General Clark sent a special courier by air to headquarters of the 12th Troop Carrier Command in Sicily. He requested the TTC to drop strong airborne reinforcements behind

our own lines to protect an exposed flank.

Captain Armstrong of the tactical reconnaissance group offered an interesting sidelight concerning this message. "It was one of our men—Lieut. J. R. Hamilton—who delivered that request. He made a routine landing at the Paestrum air strip just when General Clark wanted the note delivered. Hamilton took off immediately and went to Sicily in search of the commanding general of the Troop Carrier Command. When he arrived, he found that the general had just taken off on another mission. Hamilton rushed into the control tower and demanded that the general's plane be called back. That was quite a thing—a second lieutenant calling down a general's plane—but it returned and Hamilton delivered his message."

Brig. Gen. P. L. Williams, CG of the Troop Carrier Command, promptly dispatched two members of his staff, who were accompanied by General Gavin of the airborne forces, in a C-47 to coordinate the request with General Eisenhower and General Spaatz.

LIEUT. COL. DAVID LAUX, one of the staff officers, relates, "We landed at the headquarters of General Spaatz where I talked to the assistant chief of staff, A-3." He called General Spaatz and Air Marshal Sir Arthur Tedder and received immediate approval. Meanwhile, the C-47 with the other officers had continued to the headquarters of the Army Group where overall approval was obtained and instructions dispatched to all units, coordinating the proposed mission. Within three hours after General Clark's message was received, he was informed that all coordination had been effected and that the mission would be run that night, as requested."

Shortly after dusk, three pathfinders with fifty paratroops took off from Sicily and set up directional beacons for the mission. Eighty-seven C-47s followed within three hours, carrying 750 paratroops and

their equipment. No aircraft were lost.

On the following night another mission was conducted by the TCC. Approximately 1,400 Airborne Troops were ferried to the Paestrum air strip. Again, the operation was conducted without any aircraft loss.

In addition to bringing in paratroops and airborne infantry, the TCC also evacuated the wounded. From September 11 until September 24, 1,503 patients were removed in TCC planes.

Much needed supplies also were delivered by the TCC. On September 16, thirty C-47s landed in the Salerno area, bringing equipment to the troops in the Sele River sector. On the following day, forty-four planes brought in ammunition for the forces they had previously ferried to the area. On the 18th, fifty aircraft carried strong reserve personnel for the original airborne divisions. Daily movements continued thereafter.

The concentrated pounding from the air was not long in taking effect, and on September 16 the ground troops were able to counterattack in force, retaking important enemy positions.

By the next day, the tide of the battle had definitely turned. General Clark in his order of the day, said, "We have arrived at our initial objective — our beachhead is secure. Additional troops are being landed every day and we are here to stay. Not one foot of ground will be given up."

By September 17, the Allied ground wedge had been driven to the depth of eleven miles and on the following day, the enemy began to withdraw. The battle had been won.

Summing up the activities of the AAF in the battle of Salerno, General H. H. Arnold commented:

"There was no resisting an effort of that magnitude. The Army Air Forces did more than save the day at Salerno. The breach it helped to make on the European fortress can never again be sealed." ☆

Shot down in the previous day's fighting this P-40 is silhouetted against the early morning sky as infantrymen advance to beach positions.



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# PREPARE FOR INSPECTION



## TIMELY ADVICE FROM THE AIR INSPECTOR

Administrative • Technical •  
Communications • Tactical

*Material presented here is not intended solely  
and exclusively for the benefit of the service.*

► **On Your Tails:** Have air crews been trained to keep their eyes open on missions into enemy territory?

Tactical inspectors consider this a highly important question to be answered in the affirmative. It is good "life insurance" to keep looking around when coming home from a mission—or at any other time when enemy aircraft might be lurking in the vicinity. Crews must "cover" each other continuously.

Capt. Richard L. Bong, fighter pilot formerly in the Southwest Pacific, has this to say on the subject of looking around:

"One time I turned around to argue with a Jap who had been on my tail. But instead of one clown, there were nine after me now. I hadn't been looking around. But, as I had committed myself, I had to fly right through them. I set two on fire and left a third smoking. But they shot me up plenty. They knocked out the cooling fluid in the left engine and put some bullets in the other engine, the wings and the tail. Luckily, by fire-walling everything, I made it home. After that experience, I always looked around."

► **Parachute "Commandments":** Here are some "commandments" pertaining to parachutes and their use:

(1) A parachute will be assigned and satisfactorily fitted for each person making airplane flights.

(2) A parachute will be conveniently located to the normal position of the oc-

cupant to whom it is assigned or a position known to the individual.

(3) Occupants in aircraft will be familiar with the operation of parachute equipment.

(4) Occupants will have knowledge of the operation of emergency exits and their location.

(5) Occupants will be assigned a particular exit for use in case of emergency.

(6) Occupants will be familiar with emergency signal and "abandon ship" procedures.

Reports reaching AAF Headquarters indicate that these commandments are not being "obeyed" completely. The penalty for disobedience may be quick and severe. (AAF Memo, 121-32, 13 December 1943, a Special Instruction for Air Inspectors.)

► **Orientation with "Sergeant Quiz":** "Why are we fighting?" is a \$64 question in the Army, and the Aircraft Warning Unit Training Center at Drew Field, Tampa, Fla., has adopted the quiz program idea as one method of answering it. The Air Inspector is passing along the suggestion on orientation for the benefit of other commands.

The Drew Field weekly quiz program is conducted by Sgt. Fred Friendly (that's his real name), who comes from Providence, R. I., where his radio program was featured on the New England Yankee network.

A Tampa newspaper reporter describes the sergeant's show as an H. V. Kaltenborn news commentary, a March of Time radio program and a Ralph Edwards "Truth and Consequences" all rolled into one. Cartons of cigarettes go to the members of the winning teams, and a door prize is given for the nearest correct answer to a question.



The program has both personality and originality. Sergeant Friendly, who is all that his name implies, stays awake nights thinking up new stunts.

One of his latest is designed to help the men distinguish between enemy and allied nations. Friendly reads off a list of countries, and the contestant is supposed to murmur "God Bless America" for the

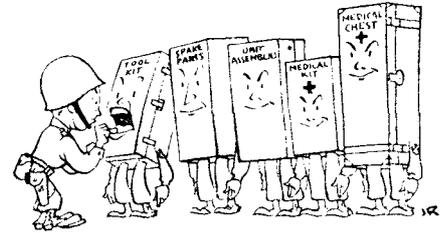
Allies, and kick a saw-hus fringe of Hitler in the rear for the enemies.

For another stunt position, the versatile sergeant assumes the role of a Nazi intelligence officer, and the contestant becomes a prisoner of war. In answer to any questions other than those concerning his name, rank and serial number, the contestant is supposed to thumb his nose.

Feminine interest is added, too. Girls dressed in sarongs, or wearing veils or some other distinctive item of clothing, walk out on the stage. As each one appears, the contestant is asked to name the theatre of war she represents and its commanding general.

"There's been a lot of talk about the American soldier not knowing what he's fighting for," comments the sergeant, "but not one contestant has failed to identify the Four Freedoms."

The training center has other orientation mediums. Included are a reporter's weekly review of the news, combined with an interpretation of the war's background and presented for one hour to every enlisted man and officer, and a "rumor clinic," where men may call to have rumors confirmed or killed by the substitution of facts. The "Sergeant Quiz" program, however, rates No. 1 in popularity and does an outstanding job of orientation.



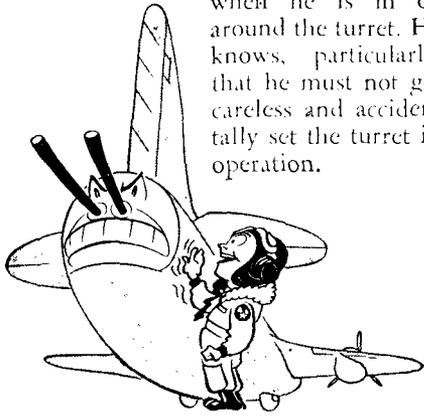
► **Tool Chests and Medical Kits:** Have you ever had a flat tire while driving in the country and found you had left the jack in the garage at home? That is not half as bad as finding yourself minus a part or tool for a major item of equipment in combat. Spare parts, unit assemblies and tool kits should be checked constantly. Failure to do so has caused many items of equipment, from machine guns to airplanes, to become "casualties" in action.

A medical officer making inspections in the Central Pacific area also reported that many medical kits and chests were arriving overseas incomplete. The diary of a fighter pilot who had to ditch his plane in the Pacific tells of the difficulty he had in caring for his wounds because his kit was lacking just one item—adhesive tape.

► **Tail Turret Safety:** Tail turrets on bombers, like folding deck chairs on boats, won't give any man trouble if he knows how to handle them. But if he doesn't, he may get himself all tangled up. Whereas folding chair difficulties may

be exasperating, trouble in the tail turret may be fatal.

Adequate safety devices have been installed in tail turrets, and a properly instructed crew member is perfectly safe when he is in or around the turret. He knows, particularly, that he must not get careless and accidentally set the turret in operation.



Inspection of tail turret training should be on the check lists of tactical inspectors.

► **Headset Hazard:** Attention, pilots: If your headsets and throat microphones are permanently fastened to your plane, you are flying with a serious hazard in the event of an emergency. Not only is the practice dangerous but the disconnecter units, if taped, may corrode and result in unreliable communications service.

TO 08-5-2 directs that "disconnecter units will be used in the cord of each radio headset and throat microphone, and no modification of these units which would interfere with their functions will be made."

Checking on compliance with this directive was made a "Special Instruction for Air Inspectors" in AAF Ltr. 121-6, 6 January 1944.

► **Items Requiring Conservation Emphasis:** As a major factor in winning the war, the AAF is stressing conservation of all types of equipment. Inspectors frequently receive queries as to just what particular items should be given emphasis. The answer is contained in such recent directives as the following:

Solid tires for power operated industrial materials handling equipment. (Sec. VI, WD Cir. 344, 1943.)

All types and sizes of ball and roller bearings. (Letter AG 112.5 (4 Nov. 1943) OB-P-SPMNT-MB-A, 12 Nov. 1943.)

Motor vehicles. (AAF Memo 75-4 and WD Cir. 277, 1943.)

Shellac. (TO 07-1-6.)

Paper. (Sec. II, WD Cir. 302, 1943.)

► **Is Your Gun Ready for the Enemy?** Many individual weapons of officers and men are arriving at ports of embarkation in need of repairs. Some weapons must be replaced. A marine considers his rifle his best friend, and AAF personnel should think no less of it. Weapons always should be in fighting shape. ☆

## INSPECTING THE INSPECTOR

Is the ability of pilots in your organization being measured in the amount of successful missions accomplished? There is a tendency sometimes to measure ability primarily in the terms of hours flown, which is too often a poor criterion.

Are commanding officers taking the necessary action, prior to departure of military personnel from home stations for overseas duty, to insure that all such personnel are afforded an opportunity to initiate or increase their class B allotment for the purchase of War Bonds? (Sec. VIII, WD Cir. 335, 1943.) Personnel bound overseas should be reminded of the following:

Desirability of each officer and enlisted man to make provision for his future financial security.

Limited need for expenditure of funds abroad.

Additional pay to be received for foreign service.

Have you checked recently to see

whether all court-martial forfeitures are actually being collected as prescribed by approved sentences?

Is prompt action being taken by your headquarters to appoint investigating officers to determine the line of duty status of personnel who incur injuries under circumstances which require investigation by an officer? (Sec. III, WD Cir. 342, 1943.)



Is continuing emphasis being given to the AAF physical fitness program? Physical fitness is too important to be excused by the alibi, "Our heavy training program doesn't allow time for it."

Is emphasis being placed on squadron and group assembly, and formation flying?

## HERE ARE THE ANSWERS

Q. Do regulations require that enlisted men be inspected as they go on and return from pass or furlough?

A. Yes. Men who do not present a neat appearance will not be allowed to depart, and men who return in an untidy or dirty condition will be disciplined. All officers will observe the appearance of the enlisted men seen on pass or furlough and will report those who are in an untidy or dirty condition. (Par. 16b, AR 600-40.)



Q. Is it possible to receive a furlough in excess of fifteen days when considerable travel time is involved?

A. Under the provisions of Par. 2, AR 615-275, an enlisted man may be granted a furlough of not to exceed fifteen days at any one time. This restriction works a hardship on individuals who are stationed a long distance from their homes. Commanding officers within the continental United States who are authorized to grant furloughs will give consideration to this factor and, when practicable, may for this purpose grant furloughs in excess of fifteen days by the amount of rail travel time involved. (Sec. III, WD Cir. 10, 1944.)

Q. How frequently should the first-aid aeronautic kit be inspected?

A. It should be inspected at the regular daily inspection. (TO 01-1-117, 3 December 1943)

Q. When enlisted men are transferred from one organization to another, what disposition is now made of the unit fund?

A. The fund remains intact with the organization to which it pertains. No funds will be transferred when enlisted men are transferred as part of a cadre from a unit for the purpose of organizing a new unit, or when men who form part of the actual strength of a unit having a fund are transferred to another unit, or when any part of a medical detachment or other Medical Department establishment leaves its station under command of a medical officer for service in the field. (Change 9, Par. 14, AR 210-50, 13 November 1943. Change 9 does not affect or suspend the provisions of Par. 15, AR 210-50, concerning the transfer of funds when a unit is transferred to or from the inactive list.)

Q. The numbering of AAF Letters has been changed. What directive explains the new system?

A. AAF Reg. 5-2, 9 December 1943.

Q. Where is the use of the new Driver's Trip Ticket and Preventive Maintenance Service Record (WD Form 48) explained?

A. In TM 9-2810 entitled, "Motor Vehicle Inspections and Preventive Maintenance Services." The manual also explains Preventive Maintenance Service and Technical Inspection work sheets (WD AGO Forms 461, 462 and 463.)

Q. Does the Red Cross still make loans to enlisted men for the purpose of furloughs?

A. Effective 15 January 1944, the Red Cross discontinued making loans to soldiers for the purpose of furloughs except in cases of emergency which have been investigated as provided in Pars. 6c and 7c, AR 850-75. The Red Cross has been compelled to restrict its loans because of the drain on its funds during the past year by soldiers going on furlough prior to embarkation for overseas. (Sec. II, WD Cir. 333, 1943.)

# Roll of Honor

A MONTHLY RECORD OF DECORATIONS AWARDED  
TO PERSONNEL OF THE ARMY AIR FORCES

## MEDAL OF HONOR

Kearby, Neal E., Col.  
Zaner, Jay, Jr., Maj.  
(Also SS. PH. & AM with 2 OLC)

## DISTINGUISHED SERVICE CROSS

Cox, Leonard L., Capt.  
Kaufman, Robert B., Sgt. (Also PH)  
Pnst, Arthur L., Maj. (Also DFC & AM)  
Waskowitz, Frank T., Lieut.

## DISTINGUISHED SERVICE MEDAL

Canda, Robert C., Brig. Gen.  
Collins, J. Lawton, Maj. Gen. (& OLC)  
Royce, Ralph, Maj. Gen.

## LEGION OF MERIT

Beery, Levi L., Col.  
Butler, William O., Maj. Gen.  
Godfrey, Stuart C., Brig. Gen.  
Hills, John P. T., Lieut. Col.  
Huff, Sargent P., Col.  
Kraigher, George, Col. (Also AM)  
Kristofferson, Henry C., Lieut. Col.  
Langmead, Edmund C., Col.  
Luedcke, Alvin R., Lieut. Col.  
McCoy, George, Jr., Brig. Gen.  
Moore, Aubry L., Col.  
Paulhamus, Joseph R., T/Sgt.  
Puryear, Romulus W., Col.  
Raymond, Harry A., M/Sgt.  
\*Wash, Carolye H., Brig. Gen.  
\*Yeaman, John H., Lieut. Col.

## SILVER STAR

Anderson, Edward W., Col.  
Arnold, George M., Lieut.  
Backus, Edward N., Col.  
Barber, George A., Lieut.  
Barber, Rex T., Lieut. (& OLC)  
\*Barley, John L., Lieut. (Also AM)  
Beck, Francis H., Lieut.  
Bolton, Willard L., Lieut.  
Boudreaux, Patrick N., Sgt.  
Brown, Mason O., Lieut.  
Brown, Noble, S/Sgt.  
Daniels, Patrick H., III, Lieut. (Also PH)  
Davis, Robert E., Lieut.  
Dearth, Charles H., Lieut.  
Dennis, Stephen C., Lieut.  
Downs, Emory Myron, Lieut.  
Ferguson, James A., Lieut.  
Fiagg, Walter Edwin, Capt.  
Gulsha, Harry L., Capt.  
Green, Louis E., Lieut.  
Greene, Theodore S., Lieut.  
Grottle, George T., Lieut. (Also AM)  
Hagan, Crandall H., Lieut.  
Hambaugh, Robert F., Lieut.  
Hamilton, Merle C., Capt.  
Hartzel, James H., Sgt.  
Harvey, Frank A., Cpl.  
Hedrick, Donald W., Lieut.  
Hippert, Robert D., Lieut.  
Hoffman, Arthur E., Maj.  
Holloway, Bruce K., Col.  
Jantzen, Charles D., Lieut.  
Jeffreys, Truman O., Capt.  
Kimball, Robert E., Maj.  
Kirkland, Lloyd E., Jr., Lieut.  
Kirkland, Arvis R., Lieut.  
Klemann, Robert B., Lieut.  
Koyal, Samuel O., Sgt.  
Lambert, John L., Maj.  
Lauder, R. H., Lieut.  
McClellan, Wilbur A., T/Sgt.  
Madson, Francis Sisman, Capt.  
Matson, Rex E., S/Sgt.  
Millikin, Robert P., Capt.  
Norgaard, Arthur E., S/Sgt.  
Patton, Charles H., S/Sgt.  
Peck, Alson E., Lieut.  
\*Penney, John S., Sgt.  
Pettigrew, Wesley N., Lieut. (& OLC)  
Provenzale, Peter F., Lieut.  
Radney, Douglas V., S/Sgt.  
Ray, James Andrew, Lieut.  
Regan, John M., Maj.  
Reiswig, Ralph R., Sgt. (Also DFC & AM)  
Rhodes, Earl D., S/Sgt.

Ridings, Donald E., Lieut. Col. (& OLC)  
Roberts, John O., T/Sgt. (Also AM)  
Robinson, James D., Cpl. (Also AM)  
Rodriguez, Alexander G., Lieut.  
(Also DFC & AM)  
Rogers, Albert G., Lieut.  
(Also DFC & AM)  
Rogers, Gerald Talbot, Lieut.  
Roman, Stephen J., T/Sgt. (Also AM)  
Rowe, William H., Lieut.  
Rucker, Jed M., T/Sgt. (Also DFC & AM)  
Ruse, John C., Capt.  
Sanford, James T., S/Sgt.  
Scally, Vincent J., Lieut.  
Schater, Robert T., S/Sgt.  
Schestopof, Abe, Lieut.  
Schick, Frederick W., Sgt. (Also AM)  
Schieff, Frank, Maj.  
Schmitt, Arthur W., Maj.  
Scott, John W., Cpl.  
Shaffer, Joseph D., Lieut.  
Sloum, Paul J., Capt.  
Smith, Richard E., Lieut.  
Smith, Seaborn F., T/Sgt.  
Sparks, Kenneth C., Lieut.  
Stacy, William W., T/Sgt. (Also AM)  
Stapp, Charles B., Lieut.  
\*Steele, (Also DFC & AM)  
Stefanchick, Joseph T., Sgt. (Also AM)  
Stewart, John C., Capt.  
Stiifler, Norman E., Sgt.  
(Also DFC & AM)  
Stoner, Edgar R., Lieut.  
Stowe, Joe D., Sgt. (Also AM)  
Stratford, Malcolm G., Lieut. (Also AM)  
Street, Clifford G., S/Sgt. (Also AM)  
Summers, Clarence E., Capt.  
(Also DFC & AM)  
Summers, Julius B., Jr., Lieut.  
Taber, Morris F., Lieut. Col. (Also DFC)  
Tahir, Joseph, S/Sgt.  
Tarbox, Elmer L., Lieut.  
Thomas, Rowan T., Capt. (Also AM)  
Thompson, Herman A., Cpl.  
Thompson, John A., Capt.  
Toomey, John Marshall, Maj.  
(Also DFC & AM)  
Traylor, John H., Maj.  
Tubb, Douglas B., Lieut.  
Tyson, John, Lieut.  
Uber, Clyde S., Lieut. (Also DFC & AM)  
Uebel, Edward A., S/Sgt.  
Wagner, Furl S., Capt.  
Walker, Ronald R., Col.  
Walsh, Joseph Timothy, S/Sgt.  
(Also DFC & AM)  
Walters, James D., Lieut.  
Ward, Charles U., S/Sgt.  
Watkins, James A., Lieut.  
Webb, Allen S., Capt. (Also AM & 2 OLC)  
Weiss, Harry J., Jr., Lieut.  
(Also DFC & AM)  
Welfars, Douglas S., Lieut.  
(Also DFC & AM)  
Wellensiek, Otto H., Lieut.  
Whitaker, Nance, Maj. (& 2 OLC)  
White, Sam B., Jr., Capt. (Also DFC)  
Wiese, Edward B., S/Sgt. (Also AM)  
Williams, Adam R., S/Sgt.  
Williams, Lee R., Jr., Lieut.  
(Also DFC & AM)  
Williams, William H., Sgt. (Also PH)  
Williamson, Luther R., T/Sgt.  
(Also DFC & AM)  
Wilson, Robert C., T/Sgt.  
(Also DFC & AM)  
Wolfman, Frank H., Lieut.  
Wood, Harold E., Cpl.  
Yokopenic, Stephen, S/Sgt.  
(Also DFC, AM & OLC)

## PURPLE HEART

Adamski, Joseph W., S/Sgt.  
Ahlberg, David A., Cpl.  
Ahlbin, Bjorn, Lieut.  
Albert, James F., Lieut.  
Amsterberg, Howard A., Pvt.  
Anton, Soren E., Lieut. (Also AM)  
Aptleman, Don E., Sgt.  
Armigo, Lewis, Jr., Pfc.  
Armstrong, Howard A., T/Sgt.  
Arnkil, Thor V., Lieut.  
\*Arrison, Frank R., Jr., Lieut.  
(Also AM)  
Ascol, Holiel, T/Sgt.  
Baker, Robert G., Lieut. (Also AM)  
Barr, James W., Lieut.  
\*Bauhof, Arthur Ray, Lieut.  
(Also AM)  
Beard, John B., Lieut.  
Bement, Kenyon T., Maj.  
Beig, George G., Pfc.  
Berkey, Robert D., Pfc.  
Brady, Francis M., Brig. Gen.  
Cadwallader, Ward K., T/Sgt.  
Caldwell, Charles H., Lieut. Col.

Carothers, William I., Pvt.  
Carpenter, Walter G., Sgt.  
Connor, Elmer, Cpl.  
Crews, John P., W/O  
Daugherty, Daniel J., Pvt.  
Densmore, Raymond A., Sgt.  
Dipaola, August A., Pfc.  
Drake, Samuel A., Pvt.  
Dyn, Roscoe J., Sgt.  
Einenkel, Max W., Pfc.  
Essen, Ernest, Pvt.  
Filippi, Anthony, S/Sgt.  
Forinash, Cecil L., Capt.  
Gagnet, Thomas R., Pvt.  
George, Harold H., Brig. Gen.  
Gonzalves, Gordon B., Pvt.  
\*Gradwohl, Jacob, Sgt.  
(Also DFC & AM)  
Hampton, Edgar W., Maj.  
Hanson, Leonard N., Pvt.  
Hardin, Steve A., Pvt.  
Hattell, Kenneth D., T/Sgt.  
Harrington, Leo E., Pvt.  
Huquet, Ross N., Capt.  
Jordan, Henry E., Pfc.  
Kraus, Leon L., Sgt.  
Kulesza, Charles, Jr., Pfc.  
Lamb, Samuel S., Lieut. Col.  
Lambert, Richard, Sgt.  
Larkin, Ralph W., Pvt.  
Laster, Floyd F., Sgt.  
Lewellyn, Norman J., Maj.  
Liden, Arthur V., S/Sgt.  
Lynd, William E., Brig. Gen.  
McCloud, Simon, Pvt.  
McDonald, Cecil H., Pvt.  
McDonald, Robert J., Pvt.  
McKinney, Ross E., T/Sgt.  
McLain, Dennis O., Sgt.  
Martin, James E., Pfc.  
Matter, Kenneth E., Pvt.  
Merrigan, Daniel G., S/Sgt.  
Miller, Wilbur Grant, Maj.  
Montgomery, Robert L., Lieut.  
\*Nelson, Samuel R., Lieut. (Also DFC)  
Nelson, Don L., Sgt.  
Nemer, Frank F., Pvt.  
Nicholson, Kenneth E., Cpl.  
Paddy, William H., Pvt.  
Peterson, Orville J., Pvt.  
Peterson, Miland L., Cpl.  
Pilson, William H., Pvt.  
Porter, John E., Pfc.  
Pritchard, Thomas W., Cpl.  
Rice, Arthur, S/Sgt. (Also AM)  
Robbins, John R., Lieut. (Also AM)  
Roberts, Ralph, Jr., Cpl.  
Robertson, Donald A., Pvt.  
Robinson, Gwynn Herndon, Lieut.  
(Also AM)  
Rosherg, Nils H., S/Sgt.  
Roszowski, Joseph W., Sgt.  
Rouse, Kenneth, Pvt.  
Safran, William, S/Sgt.  
Saunders, Laverne G., Brig. Gen.  
(& OLC)  
Schwartz, Monroe P., Lieut. (Also AM)  
Seaton, Weldon R., S/Sgt.  
Shorthill, Ellis E., Pfc.  
Shortridge, William R., Sgt.  
Siino, James, Pvt.  
Sisneros, Felipe G., Pvt.  
Smith, Lewis, Jr., Pvt.  
Smith, Samuel S., Pfc.  
Snyder, Harry E., Pfc.  
\*Sowers, Donald P., T/Sgt.  
(Also DFC, AM & 3 OLC)  
Stafford, George, Pfc.  
Stanley, Gregory Q., Lieut.  
Stone, John N., Col. (Also OLC to AM)  
Storms, Donald Royal, Pvt.  
Terrell, Jennings B., Jr., Lieut.  
Toka, Andrew, Jr., Pvt.  
Vanhouten, George F., Pvt.  
Vassy, Louis P., Cpl.  
Vaandrino, Donald, Cpl.  
Watkins, Percy B., Lieut.  
Wayman, Oliver, Lieut.  
Wehner, Henry B., Cpl.  
Whitt, Donald L., Sgt. (Also AM)  
Zitzka, George M., Pvt.

## DISTINGUISHED FLYING CROSS

Abbott, Hershell L., Capt.  
(Also AM & 3 OLC)  
Abbott, James M., S/Sgt.  
Aguayo, George, T/Sgt.  
Anchando, Rudolph O., T/Sgt.  
Anderson, Davis G., Lieut.  
Ashkins, Milton H., Maj.  
Amsussen, John D., S/Sgt.  
Augar, Clifford M., Sgt.

Baird, Donald C., Jr., Lieut.  
Baker, Addison E., Lieut. Col.  
Baker, Ralph, Lieut.  
(Also AM & 2 OLC)  
Barnard, Robert K., Sgt.  
Barnum, Robert A., Capt.  
(& OLC, AM & 3 OLC)  
Bator, Stanley J., Jr., T/Sgt.  
Baunian, Francis A., T/Sgt.  
Beahan, Kermit King, Lieut.  
Beaudry, Theodore C., T/Sgt.  
Beekman, Milton R., Lieut. (& OLC)  
Bristol, Eugene F., Sgt.  
Bullows, Donno C., Lieut.  
Benfield, Francis D., S/Sgt.  
Berry, Harold F., Capt.  
Beuter, Oren A., Jr., T/Sgt.  
Bilby, Glade B., Maj. (Also AM & 6 OLC)  
Blakely, Warren A., Lieut.  
Blauer, Oscar G., Lieut.  
(Also AM & 3 OLC)  
Brady, Francis T., Maj.  
Bright, John G., Maj.  
Calkins, Lloyd, S/Sgt.  
Carney, Roy, S/Sgt.  
Cass, George Davis, Lieut.  
Castellotti, Julio G., S/Sgt.  
Clay, Herman C., Lieut.  
Clinger, Dallas A., Lieut. (& OLC)  
Colvin, John R., Lieut.  
Cox, John F., S/Sgt.  
Creef, Linton G., S/Sgt.  
Crisler, Charles W., Jr., Lieut.  
Crooks, William R., Capt.  
Cross, Howard L., T/Sgt. (Also AM)  
Cummins, John F., Lieut.  
Darr, Glenn D., S/Sgt.  
Davignon, Norman L., T/Sgt.  
De Armond, Donald A., Lieut.  
Decrito, Anton R., Lieut.  
Decrovel, Charles F., S/Sgt.  
Dent, William M., T/Sgt.  
Deptula, Anthony T., Capt.  
Dick, Thomas C., Lieut.  
\*Dillon, Barclay H., Jr., Capt.  
Dudley, Dana F., Lieut.  
Dufour, Jerome P., Lieut.  
Edwards, Charles E., S/Sgt.  
Epp, Daryl E., Lieut.  
Faith, Edgar C., S/Sgt. (& OLC)  
Felling, Leslie W., Capt.  
Fino, John A., Lieut.  
Fisher, Robert L., Lieut.  
Foley, John P., Lieut.  
Folks, Lowell A., T/Sgt. (& OLC)  
Fry, Clyde C., T/Sgt.  
Gaines, Harry D., Maj.  
Galluzzo, Marino R., S/Sgt.  
Giblin, George F., Lieut.  
Gilmore, Byron H., Capt. (Also AM)  
Gioana, Guido, Lieut.  
Godde, Russell H., Lieut.  
Greenhalgh, Arthur D., T/Sgt.  
Gruha, Warren H., Lieut.  
Gronhaus, Robert J., Lieut.  
Guiford, George E., T/Sgt.  
(With OLC, AM & 3 OLC)  
Gunn, Paul I., Lieut. Col.  
Hadden, Will A., Jr., Capt.  
Haley, Robert B., Lieut.  
Haller, Edward J., T/Sgt.  
Hamilton, Otis T., Lieut.  
Harrod, John H., S/Sgt.  
Hawk, Preston L., Lieut.  
Hayles, Morris D., T/Sgt.  
\*Hempe, Herbert F., Lieut. (Also AM)  
Hendrickson, Reuben W., Lieut.  
Horing, Fennard L., Jr., Lieut.  
Hexberg, Caspar J., Lieut.  
Higgins, Bernard A., T/Sgt.  
Higginfall, Thompson N., Lieut.  
Horn, Thomas C., Capt.  
Hughes, Charles E., Lieut.  
Hyde, Thomas I., Lieut.  
Johnson, Robert J., Lieut.  
Jones, Harold Hill, Jr., Capt. (& OLC)  
Jordan, George W., Lieut.  
Karp, Arthur D., Lieut. (& OLC to AM)  
Kasparian, Jack W., T/Sgt.  
Kendall, Harold K., Lieut.  
Kirk, Robert M., T/Sgt. (& OLC)  
Kooker, Warren K., S/Sgt.  
Koontz, Glenn L., S/Sgt.  
Kullman, Martin L., Lieut.  
La Morge, Vincent J., T/Sgt.  
Lascurettes, George A., Lieut.  
Lee, Stanley, Lieut.  
Ljunggren, Ernest N., Maj.  
Love, William F., Lieut.  
MacKay, John A., Lieut.  
McCaffery, Robert A., Lieut.  
McCash, David E., Lieut.  
McDonald, John O., Lieut.  
McDonough, John M., Lieut.  
McMullen, William K., Lieut.  
McNamara, David A., Lieut.  
McDonald, John A., Lieut.  
Maier, Walter, Sgt.  
Malinay, Edward B., M/Sgt.



S/Sgt. Jerome St. John



Col. Neel E. Kearby



Maj. Gen. W. O. Butler



Brig. Gen. G. McCoy, Jr.



Maj. Jay Zeamer, Jr.



Sgt. W. W. Pharr

Mallett, Frank, Sgt.  
 Marshall, Stanley L., S/Sgt.  
 (Also AM & OLC)  
 Marshall, Stanley L., T/Sgt.  
 Mason, Harley B., Lieut.  
 Meseke, Granville E., S/Sgt.  
 Meyer, Norman L., S/Sgt.  
 Miller, James, Capt.  
 Minogue, John, Lieut.  
 Mooney, Joseph E., T/Sgt. (& OLC)  
 Murphy, Lloyd J., Capt.  
 Newbury, Edward S. E., Capt.  
 Newton, Leroy, S/Sgt.  
 North, Alexander F., Lieut.  
 Norton, Frank E., Pvt.  
 Norvelt, John W., Lieut. Col. (Also AM)  
 O'Brien, John P., Jr., Lieut.  
 O'Hiffe, Victor R., Lieut.  
 Padgett, Kenneth, Lieut. (& OLC)  
 Palmer, Frederick H., Lieut.  
 Palmtag, Herbert M., Lieut.  
 Parker, Charles M., Lieut.  
 Pate, Leonard S., T/Sgt.  
 Pawlowski, Edward J., Lieut.  
 Perry, Clayton L., S/Sgt.  
 Petersen, Alan E., Lieut. (& OLC)  
 Peterson, Maurice J., T/Sgt.  
 Pleasant, Floyd M., T/Sgt. (& OLC)  
 Pool, James F., OLC & AM  
 Potter, Richard E., Lieut.  
 Prothe, Kenneth C., T/Sgt.  
 Redfield, Joseph G., T/Sgt.  
 Reinhardt, Elmer H., Lieut.  
 Rhoades, Richard Lively, Lieut.  
 (Also AM)  
 Riordan, Robert P., Lieut.  
 (Also AM & 3 OLC)  
 Rizzo, Armando P., Sgt. (Also AM)  
 Ritchie, Perry J., Maj.  
 Roberts, James F., Jr., Capt.  
 Robertson, John M., T/Sgt. (Also AM)  
 Robinson, John W., Maj.  
 Robinson, William S., Lieut. (Also AM)  
 Rodgers, Fenton, Lieut. (Also AM)  
 Rodriguez, Frank L., S/Sgt.  
 Rolley, Milton, T/Sgt.  
 Rumsey, Edwin L., Jr., Lieut.  
 Saia, Joe C., S/Sgt. (Also AM)  
 Salmon, Charles E., Jr., S/Sgt. (Also AM)  
 Sawyer, Charles W., Capt.  
 Sayre, Fred E., Lieut.  
 Schmidt, Ferdinand R., Lieut. (Also AM)  
 Schroyer, Dorling D., T/Sgt. (Also AM)  
 Schwanebeck, Alfred L., Lieut. (Also AM)  
 Scullion, Donald, Lieut. (Also AM)  
 Searle, Harold K., Jr., Lieut. (& OLC)  
 Sharman, Ernest M., Lieut. (Also AM)  
 Sheffield, Frederick, Lieut.  
 Shirley, Clarence H., Lieut. (Also AM)  
 Shryock, Harry L., Lieut. (Also AM)  
 Sibert, James William, Capt.  
 Siegfried, William E., Lieut.  
 Simeral, George A., Lieut.  
 Simmons, William J., T/Sgt.  
 Simpson, Robert V., Lieut.  
 Smith, James C., Lieut.  
 Smith, Thomas A., S/Sgt. (Also AM)  
 Smith, Virgil H., Lieut.  
 (With 3 OLC, AM & 3 OLC)  
 Snyder, Milton A., Jr., S/Sgt.  
 (Also AM & OLC)  
 Snyder, Robert R., Lieut.  
 Solen, Joseph J., S/Sgt. (Also AM)  
 Sparks, Edwin R., T/Sgt. (Also AM)  
 Spawen, Douglas W., Capt.  
 Stark, Harold F., T/Sgt.  
 Strand, Harry A., T/Sgt.  
 Sullivan, David L., Lieut. (Also AM)  
 Susman, Manford C., Lieut. (Also AM)  
 Sutton, William E., Capt. (Also AM)  
 Svoboda, Milton J., Lieut. (Also AM)  
 Swanson, Robert, Cpl.  
 Tahseuang, Meech, Lieut. (Also AM)  
 Tamon, Harvey S., Lieut.  
 Taubee, Joseph F., Lieut. (Also AM)  
 Taylor, Harold R., Lieut. (Also AM)  
 Taylor, Roy R., S/Sgt. (Also AM)  
 Teague, Howard J., S/Sgt.  
 Thacker, Bily, S/Sgt. (Also AM)  
 Thomson, Walter, Lieut.  
 Thompson, Wayne W., Capt.  
 (With OLC & AM)  
 Todd, Joseph M., Lieut.  
 Tower, Donald O., Maj.  
 Townsley, Joseph B., Lieut.  
 (With OLC, AM & OLC)  
 Troyanowski, Joseph, S/Sgt. (Also AM)  
 Tully, Bernard M., Lieut. (Also AM)  
 Tunno, David A., S/Sgt. (Also AM)  
 Turner, William J., Lieut. (Also AM)  
 Tuttle, Richard E., T/Sgt.  
 Vanness, Harold C., S/Sgt. (Also AM)  
 Vastrez, Harold E., T/Sgt. (Also AM)  
 Walker, Harold L., Lieut.  
 Walker, John R., S/Sgt. (Also AM)  
 Walters, John I., T/Sgt.  
 Walters, Louis L., T/Sgt. (Also AM)  
 Warf, Phineas Y., T/Sgt. (Also AM)

Wash, Allan James, Jr., Lieut.  
 (Also AM & 3 OLC)  
 Watson, James Tod, Lieut.  
 Watson, Ralph John, Capt.  
 (With 3 OLC, AM & 3 OLC)  
 Watson, Russell J., S/Sgt.  
 Weingart, Edward F., S/Sgt. (Also AM)  
 Welts, Oscar D., Sr., S/Sgt. (Also AM)  
 Westheimer, David K., Lieut. (Also AM)  
 Westlund, Sidney, Lieut.  
 Wheeler, Clermont E., Maj. (Also AM)  
 Whiffen, Charles F., Jr., Capt.  
 Whitley, Lacey A., T/Sgt. (Also AM)  
 Whitlock, George B., Capt. (Also AM)  
 Whitlock, Hubert H., Lieut.  
 Wightman, David L., Sgt.  
 Wilcox, John R., Lieut. (Also AM)  
 Wilcox, William W., Maj.  
 Wilkinson, John W., Capt. (Also AM)  
 Williams, Douglas H., T/Sgt. (Also AM)  
 Williams, George J., T/Sgt. (Also AM)  
 Winchell, Lyle S., S/Sgt. (Also AM)  
 Winger, Edward H., T/Sgt.  
 (Also AM & OLC)  
 Witham, Elmer E., T/Sgt. (Also AM)  
 Wood, Jack M., Lieut.  
 (With OLC, AM & OLC)  
 Wyson, Robert, T/Sgt.  
 Yates, William James, Capt. (Also AM)  
 Yaska, Victor A., Lieut. (& 2 OLC)  
 Zant, Robert W., Lieut. (Also AM)  
 Zealor, John D., S/Sgt. (Also AM)

### OAK LEAF CLUSTER TO DISTINGUISHED FLYING CROSS

Cole, Richard E., Lieut.  
 Humphries, John R., Jr., Lieut. (Also OLC to AM)  
 Scott, Robert L., Jr., Col.  
 Trice, Felix A., S/Sgt. (Also 3 OLC to AM)  
 White, John B., Lieut.

### SOLDIER'S MEDAL

Anderson, Harold F., Lieut.  
 Arvin, Eugene R., T/Sgt.  
 Bledowsky, William J., S/Sgt.  
 Birmingham, John W., Sgt.  
 Bishop, Douglas F., Cpl.  
 Blessing, Kenneth V., Cpl.  
 Britt, George E., S/Sgt.  
 Byers, Ashby C., Jr., Lieut.  
 Eggers, Fred E., Pvt.  
 Finch, Stanley, S/Sgt.  
 Fletcher, John R., Cpl.  
 Garrison, John E., S/Sgt.  
 Gifford, William H., Cpl.  
 Johnson, Harold G., S/Sgt.  
 Katapodis, George, Cpl.  
 King, Thomas R., Cpl.  
 Ledford, William A., Pvt.  
 Lockwood, Lyman B., Maj.  
 O'Bryan, William, Lieut.  
 Pharr, Walter W., Sgt.  
 Richman, Sidney M., Lieut.  
 St. John, Jerome, S/Sgt.  
 Schutrum, Raymond, Sgt.  
 Scott, Ralph J., S/Sgt.  
 Shields, Clyde Stanley, Lieut.  
 Sontag, William, S/Sgt.  
 Werneken, Frank E., Lieut.

### AIR MEDAL

Abels, Joseph L., Lieut.  
 Adams, Donald W., Lieut. (& 2 OLC)  
 Adams, Howard F., Capt. (& OLC)  
 Ade, Robert H., S/Sgt.  
 Adkins, Lee H., Lieut.  
 Aitken, John, Jr., Lieut. (& 10 OLC)  
 Aldrich, Hart W., Lieut.  
 Alford, Ieal W., Lieut.  
 Alford, Pierre L., Lieut.  
 Alger, Harry R., T/Sgt.  
 Allen, John T., Lieut. (& 6 OLC)  
 Allman, Harry G., T/Sgt.  
 Allen, Delbert S., Sgt.  
 Alfred, Alfred N., Lieut.  
 Altizer, Robert C., S/Sgt. (& OLC)  
 Ambrose, Vernon L., R., Sgt.  
 Ames, Roger J., Lieut.  
 Amick, Cecil Denham, Lieut. (& OLC)  
 Ammerman, Floyd B., S/Sgt. (& OLC)  
 Anderson, James E., T/Sgt. (& 3 OLC)  
 Anderson, Joseph B., S/Sgt.  
 Anderson, Lewis C., S/Sgt.  
 Anderson, William L., Lieut.

Andrews, James A., Jr., Lieut. (& OLC)  
 Arabin, F., Lieut. (& OLC)  
 Anex, Arnold P., Lieut. (& OLC)  
 Anstine, Robert M., Lieut. (& OLC)  
 Antwerp, Valain A., S/Sgt.  
 Archer, Ripley B., Lieut. (& 3 OLC)  
 Arens, Herbert W., Lieut. (& 3 OLC)  
 Armstrong, James J., Lieut.  
 Armstrong, Robert E., Lieut. (& 8 OLC)  
 Armstrong, Wallace L., S/Sgt.  
 Arnold, William H., Lieut. (& OLC)  
 Arnot, David B., M/Sgt. (& 2 OLC)  
 Asbury, Theodore R., S/Sgt.  
 Ashley, Milton V., Lieut.  
 Atack, George J., T/Sgt.  
 Atteberry, Lloyd E., Lieut. (& 5 OLC)  
 Austin, William E., S/Sgt. (& OLC)  
 Averitt, Lawrence, Sgt.  
 Avery, Lyndall J., Capt.  
 Babel, John S., Lieut.  
 Bagley, Thomas G., Capt.  
 Bailey, Buster, S/Sgt.  
 \*Bailey, Harold M., Lieut. (& 7 OLC)  
 Bailey, Sherrill T., Capt. (& OLC)  
 Baird, Guy P., Jr., Capt. (& OLC)  
 Baird, James K., Capt.  
 Balcombe, Clayton S., S/Sgt. (& OLC)  
 Bales, James Y., Cpl. (& OLC)  
 Balkus, Joseph J., Sgt.  
 Ballew, Oscar E., S/Sgt. (& 3 OLC)  
 Balzanelli, Joseph W., Lieut.  
 Banta, Jack O., Sgt. (& 3 OLC)  
 Barber, Lavern B., M/Sgt.  
 Barker, Rex O., T/Sgt.  
 Barnes, Leonard M., Jr., Cpl.  
 Barnes, William S., Lieut. (& OLC)  
 Bannette, Earl R., S/Sgt. (& OLC)  
 Barnwell, Charles M., Lieut. (& 2 OLC)  
 Barrere, Robert A., Capt.  
 Bartlett, Keith O., Lieut. (& OLC)  
 Barbo, Frank J., Sgt. (& 2 OLC)  
 Barton, Theodor, Lieut.  
 Battenfeld, Amos G., Lieut.  
 Battersby, Hiram E., Lieut.  
 Bauer, Claude M., T/Sgt. (& 2 OLC)  
 Bliven, Walter L., Jr., S/Sgt.  
 Bock, Frederick C., Lieut. (& OLC)  
 Bogdon, Charles, S/Sgt. (& OLC)  
 Bohl, Joseph P., Maj.  
 Bohland, Richard L., S/Sgt. (& 3 OLC)  
 Bombenek, Philip Y., Lieut. (& OLC)  
 Bonawitz, Norval C., Lieut. Col.  
 Booker, Cleiburn U., S/Sgt. (& 3 OLC)  
 Bourgeois, Girard W., Lieut.  
 Bromley, John, Jr., Capt.  
 Brown, Leonard H., Lieut. (& 6 OLC)  
 Brownell, Lloyd G., Lieut.  
 Buell, Rudolph L., Lieut.  
 Burchette, Robert W., S/Sgt.  
 Burns, Robert W., Lieut. Col.  
 Butters, James H., Jr., S/Sgt. (& 2 OLC)  
 \*Butterbach, John R., S/Sgt.  
 Cain, Clarence C., Capt.  
 Campbell, Richard A., Lieut. (& 15 OLC)  
 Carpenter, Donald, S/Sgt. (& 2 OLC)  
 Carpenter, Woodward B., Capt.  
 Caraway, Alfred B., S/Sgt.  
 Carringer, James J., Lieut.  
 Carroll, Wesley M., Lieut.  
 Chobkowski, Stanley R., S/Sgt.  
 Cleri, Eugene L., Cpl.  
 Claggett, Henry C. B., Jr., Capt.  
 Coleman, Robert M., Lieut.  
 Conklin, Howard E., Capt.  
 Conley, Allen Joseph, Capt.  
 Connally, Adrian, S/Sgt.  
 Copeland, Robert D., S/Sgt. (& 2 OLC)  
 Correll, James E., W/O (jg) (& 2 OLC)  
 Courcelle, Frederick M., T/Sgt.  
 Cox, Morgan H., Jr., Capt.  
 Crane, Paul Clinton, Lieut.  
 Dabrowski, Steven J., Lieut.  
 Dahlquist, Stanley T., Lieut.  
 Dallmann, Orrin F., S/Sgt.  
 Damm, Vergil, S/Sgt.  
 Daniel, William G., S/Sgt.  
 Davis, Francis A., Lieut.  
 Davis, Samuel Jefferson, Col.  
 Deaton, William W., Capt.  
 Deleclercq, Donald A., Lieut.  
 DeJanoy, Charles W., Lieut.  
 \*De Masters, Earl N., S/Sgt. (& OLC)  
 Demchok, Andrew J., S/Sgt.  
 De Moss, Lloyd K., Capt. (& 11 OLC)  
 Denegate, Frank C., S/Sgt.  
 Deuching, Daniel S., Lieut.  
 Dickerson, Jack M., Capt.  
 Diehl, George R., S/Sgt.  
 Dietz, Linas E., Sgt.  
 Domjan, Leo, Capt.  
 Dorgan, Harold K., Lieut.  
 Dougherty, Russell R., Lieut.  
 Downing, Wilbur S., T/Sgt.  
 Dutafut, William F., Capt.  
 Dumas, Haisay W., S/Sgt. (& OLC)  
 Dunlap, Marcus M., T/Sgt.  
 Duster, Leonard F., S/Sgt. (& 2 OLC)  
 Dutton, Carleton C., Capt. (& OLC)

Dykes, Leo M., Lieut. (& OLC)  
 Dykstra, George E., Lieut.  
 Eley, Carl W., Lieut.  
 Elliott, Dana B., Capt.  
 Elliott, George E., Lieut.  
 Elrod, Carlyle C., S/Sgt. (& 2 OLC)  
 Erickson, Carl E., Lieut.  
 Erickson, Edward J., S/Sgt. (& 2 OLC)  
 Esmond, Thomas M., Lieut. (& OLC)  
 \*Ewold, Allan J., Lieut. (& 4 OLC)  
 Feddersen, Glenn M., Lieut.  
 Fenton, Donald C., Lieut.  
 Field, Richard A., Capt.  
 Firestone, Clinton D., Jr., Capt.  
 Fisher, Sheldon, Lieut.  
 Flahaven, Buford E., Lieut.  
 Flautt, Jack Graham, Lieut. (& OLC)  
 Flood, William S., Lieut.  
 Florczyk, Edwin A., Lieut.  
 Focht, Richard F., Lieut.  
 Foley, Robert Patrick, Lieut. (& OLC)  
 Forehand, Charles C., Jr., S/Sgt.  
 Foster, Charles E., T/Sgt.  
 Foster, Stanley M., Lieut.  
 Fowler, Robert Allen, Lieut. (& OLC)  
 Frame, Vernon M., S/Sgt.  
 Franche, Lawrence F., T/Sgt.  
 Gallup, Golden M., S/Sgt.  
 Garafino, Thomas J., Lieut.  
 Gatt, Charles, Lieut.  
 Gell, Thomas W., Capt.  
 Gentry, Edgar N., Lieut.  
 Germain, Arthur M., S/Sgt.  
 Gett, James L., T/Sgt.  
 Giffiland, James V., Lieut.  
 Ginnane, Edmund G., Lieut.  
 Glassman, Frank S., Sgt. (& OLC)  
 Glaubitz, Rale A., S/Sgt. (& OLC)  
 Goldsmith, Merle A., T/Sgt.  
 Goodman, William, T/Sgt.  
 Granahan, Patrick J., T/Sgt.  
 Green, Edwin S., Maj. (& OLC)  
 Greenwald, Henry J., Lieut.  
 Greengy, Samuel T., Lieut.  
 Griffin, William J., Sgt.  
 Grimes, Corwin C., Capt.  
 Grissom, Paul D., T/Sgt.  
 Guiberson, Nathaniel G., Jr., Lieut.  
 Haarron, Robert J., Lieut.  
 Hamilton, Ray T., S/Sgt.  
 Hans, William E., Capt. (& 11 OLC)  
 Hannah, Mantion, Jr., Lieut.  
 Hansen, Svend J. W., Sgt. (& 3 OLC)  
 Hanson, Wayne A., Maj.  
 Harp, Del, S/Sgt.  
 Hartley, John A., S/Sgt. (& OLC)  
 Hawkins, Waldemar L., Jr., Capt.  
 Heacock, Amos E., Capt. (& OLC)  
 Hennefert, Karl O., Capt.  
 Herbert, Alvin Edward, Lieut. Col.  
 Henry, Cecil Paul, Lieut. (& OLC)  
 Hidayok, Hector R. Vega, Sgt.  
 Hilgort, Patrick J., S/Sgt. (& OLC)  
 Hoefler, George E., Lieut.  
 \*Hoke, Walter L., Lieut. (& 8 OLC)  
 Holland, Robert W., Lieut. (& OLC)  
 Holloway, Raleigh W., S/Sgt. (& 3 OLC)  
 Homeyer, Marvin F., S/Sgt. (& OLC)  
 Hood, Ray A., S/Sgt.  
 \*Hooper, George E., Sgt. (& 2 OLC)  
 Hopper, Troy A., S/Sgt. (& OLC)  
 Howell, Donald J., S/Sgt. (& 2 OLC)  
 Hriczko, Michael, Jr., Lieut.  
 Hughes, Bill Dean, Lieut.  
 Iverson, Orville K., S/Sgt.  
 Iwins, Anthony H., Capt.  
 Jenkins, Robert H., Lieut.  
 Jett, James L., T/Sgt.  
 John, Harry P., Lieut.  
 Jones, Harry S., Lieut.  
 Johnson, Charles R., Sgt.  
 Johnson, Johannes H., T/Sgt.  
 Jones, Henry J., Jr., Capt.  
 Jones, Wendell L., Capt.  
 Judson, Curtiss, T/Sgt.  
 Kamhi, Ralph, Lieut.  
 Kearns, Thomas E., Lieut. (& OLC)  
 \*Kemp, E. H., T/Sgt.  
 Kennworthy, Charles L., T/Sgt.  
 Kenworthy, Charles C., Jr., Capt.  
 (& 2 OLC)  
 Kilpatrick, Kenneth F., Lieut. (Inf.)  
 Kirby, David J., Capt.  
 Kissel, Robert J., Lieut.  
 Kizer, Curtis Alden, Lieut. (& OLC)  
 Klump, Virgil, Lieut.  
 Knip, Arthur J., S/Sgt. (& OLC)  
 Knox, William A., Lieut.  
 Kozon, Lutz A., Lieut.  
 Krebs, Laurence F., Capt.  
 La Montagne, Robert L., Lieut.  
 Latimer, Will F., Jr., Capt.  
 Laughlin, Fentice L., S/Sgt.  
 Lavalie, Carl J., Lieut.  
 Lawley, Robert L., Jr., Capt.  
 Le May, Curtis E., Brig. Gen.  
 Lewis, Roy, S/Sgt.

(Continued on Next Page)



Maj. A. L. Post



Capt. F. S. Wagner



Lt. P. B. Watkins



Capt. W. J. Yates



Lt. R. W. Zant



T/Sgt. V. C. Manuel

# Roll of Honor

A MONTHLY RECORD OF DECORATIONS AWARDED TO PERSONNEL OF THE ARMY AIR FORCES

Lieb, John J., Lieut.  
Lindblom, Ernest O., Capt.  
Linnecott, Elwood T., Capt.  
Loneragan, Robert L., Sgt.  
Long, Lewis C., Capt.  
Low, Zehnder S., Sgt.  
Lund, Nicholas H., Lieut.  
McCloskey, James R., Lieut. (& OLC)  
McConnell, Harold H., Lieut.  
McCrary, Robert B., Capt.  
McDonnell, Joseph L., Sgt.  
McGahey, Robert B., Lieut. (& OLC)  
McKee, George B., S/Sgt.  
McNamara, Francis P., S/Sgt.  
McNeese, Harold G., Lieut.  
Mackinnon, Rodrick P., Lieut.  
Magness, Woodrow W., Lieut.  
Mahon, James E., Capt.  
Manogue, Lloyd K., Lieut. (& OLC)  
Massengale, William M., Lieut. (& OLC)  
Mays, James H., S/Sgt.  
Mazonowski, Raymond J., Lieut. (& OLC)  
Mead, John G., Lieut.  
Mellor, Harrison C., Lieut.  
Merrifield, Lewis B., Jr., Capt.  
Miedowski, Stanislaus J., T/Sgt.  
Milledge, Henry L., Capt. (& 2 OLC)  
Miller, Arthur L., Capt.  
Miller, Robert F., Lieut.  
Moore, Jason H., Capt.  
Moore, John W., Capt.  
Morris, Loren, S/Sgt.  
Murphy, John J., Lieut.  
Nelson, Robert P., Lieut.  
Newman, Jeff D., Lieut.  
Newman, Uimer J., Capt.  
Newton, Jack A., Lieut.  
Nichol, John D., Jr., Lieut.  
Nicholson, James W., Lieut.  
Nickels, Loren S., Capt.  
Nowell, John M., Jr., Lieut.  
O'Donovan, Edward D., Lieut.  
O'Neill, Charles T., Lieut. (& 2 OLC)  
Osborne, Frank E., T/Sgt.  
Osborne, Glenn C., Lieut.  
Osborne, Ivan M., Lieut. (& OLC)  
Owen, Albert E., Sgt.  
Owings, Sheldon S., S/Sgt.  
Parker, David E., Lieut. (& OLC)  
Pascual, Raymond, Lieut.  
Patton, William W., Capt. (& OLC)  
Payton, Moses, Lieut.  
Pendleton, Alexander B., Lieut. Col.  
Perry, Roy G., Capt.  
Peters, Andrew S., Lieut.  
Pierce, Fleming D., Jr., Lieut.  
Pinney, Norman W., Jr., Lieut.  
Platts, Howard M., Lieut.  
Price, Andrew H., Capt.  
Putnam, Henry W., Capt.  
Putney, William W., Lieut.  
Radford, George G., Lieut.  
Ralph, John H., Lieut.  
Ray, Wilbur Richard, Capt.  
Redick, Thomas W., Lieut.  
Reed, Bill J., Lieut. (& 3 OLC)  
Reed, James H., Lieut.  
Reid, James H., Lieut.  
Reiss, Wilfred C., Lieut. (& OLC)  
Remlinu, Milton L., Lieut.  
Reynolds, Giles W., Lieut.  
Rich, Nelson V., S/Sgt. (& OLC)  
Riley, Edward A., Lieut. (& OLC)  
Riley, Robert Kenneth, Sgt. (& 3 OLC)  
Robbins, Edward F., Sgt.  
Robbins, Herbert, T/Sgt. (& 3 OLC)  
Roberts, Aaron B., S/Sgt.  
Roberts, James C., T/Sgt.  
Roberts, William K., Lieut. (& 3 OLC)  
Robinson, George L., Lieut. Col. (& OLC)  
Robinson, Robert T., Lieut.  
Robinson, William E., Jr., S/Sgt.  
Roddy, Vincent J., Lieut.  
Roemer, Clinton H., Lieut.  
Roers, James J., Lieut.  
Rollings, Raymond S., Lieut.  
Ross, Willys Wayne, Sgt. (& 3 OLC)  
Roten, John H., Lieut.  
Rowe, Russell W., Lieut.  
Rowland, James McDonald, Lieut.  
Roy, Joseph Stanley, Sgt. (& 3 OLC)  
Rucht, James F., Lieut. (& 2 OLC)  
Rueffner, Daniel C., Sgt. (& 2 OLC)  
Rugez, John W., Capt.  
Rushing, Ben H., Lieut. (& 2 OLC)

Russell, Norman, Lieut.  
Rutt, Donald H., S/Sgt.  
Rybarzyk, Luke S., Lieut.  
Ryden, Donald A., Lieut.  
Sachs, Morton L., Lieut.  
St. Pierre, Arthur M., S/Sgt.  
Salmon, Walter, Jr., S/Sgt.  
Salvo, Alberto, Sgt. (& OLC)  
Salvo, Samuel J., Sgt.  
Sama, Frank, Capt.  
Sammons, James Nile, Lieut. (& OLC)  
Sanders, John J., Lieut.  
Sanny, Max J., Lieut.  
Saries, John E., Lieut.  
Sarpolus, Sam T., Sgt. (& 3 OLC)  
Saunders, Herb A., Lieut.  
Schafer, Robert T., S/Sgt.  
Schapse, Paul, Sgt.  
Scherff, Raymond G., Lieut.  
Schippang, Alvin T., S/Sgt. (& 3 OLC)  
Schmelzer, Cooper M., Lieut. (& 3 OLC)  
Schmelzer, Paul C., Sgt. (& OLC)  
Schonzeit, Marvin, Lieut.  
Schreiber, Stanley E., Lieut. (& OLC)  
Schuerman, Donald S., Lieut.  
Schuman, John P., Lieut.  
Scott, Richard E., Lieut.  
Seamans, Robert R., Lieut.  
Seddon, Oscar E., Sgt.  
Seelmann, Frederick G., Jr., Lieut.  
Seelos, Robert, Lieut. (& 3 OLC)  
Sekac, Vincent F., S/Sgt.  
Sellars, Fred J., Lieut.  
Sevenson, Orlando W., Lieut.  
Seymour, Charles L., Lieut.  
Shaffer, Abram B., Lieut. (& OLC)  
Shaffrath, Paul W., Lieut.  
Shain, Victor W., Lieut.  
Sharp, Mylus O., Jr., Sgt. (& OLC)  
Shaughnessy, James V., Sgt. (& 2 OLC)  
Sherman, Donald S., Lieut.  
Shipman, Mark K., Lieut. (& 3 OLC)  
Shirley, Wayne T., Lieut.  
Shoaff, Douglas K., Pfc.  
Shores, Von Roy, Jr., Col.  
Shull, Charles G., Jr., Lieut.  
Shumard, Richard E., S/Sgt. (& 2 OLC)  
Shurjo, Robert Charles, Lieut. (& 2 OLC)  
Shy, William M., Lieut.  
Silverstein, Seymour, Lieut.  
Simmons, Mabry, Capt.  
Simons, Norton, Sgt.  
Simpson, Edward W., S/Sgt.  
Simpson, Robert M., Lieut.  
Simpson, Robert T., IV, Capt.  
Singleton, John W., Lieut. (& 3 OLC)  
Skeltton, Earl, F/O  
Skinner, Carl F., Lieut.  
Slaughter, Charles W., Lieut. (& OLC)  
Slenz, John H., T/Sgt.  
Smith, Brandon C., Lieut.  
Smith, Clark W., Lieut. (& OLC)  
Smith, Faud J., Sgt.  
Smith, Lawrence P., Lieut.  
Smith, Wallace M., Sgt. (& OLC)  
Smith, William A., Lieut.  
Snook, Luster B., Sgt. (& 3 OLC)  
Snyder, Howard H., Lieut. (& 3 OLC)  
Snyder, Raymond J., Jr., Lieut.  
Soberg, Frederic, S/Sgt.  
Somerville, Everett R., Lieut.  
Sorenson, Victor H., Lieut.  
Soutter, Paul B., Jr., Sgt.  
Southard, Harold Lucas, Lieut.  
Spafone, Charles D., Lieut.  
Spellman, John F., Jr., Sgt. (& 3 OLC)  
Sperber, Michael, Lieut.  
Spetch, Edward T., T/Sgt. (& 3 OLC)  
Spindler, Frank L., S/Sgt.  
Spratley, Richard S., T/Sgt. (& OLC)  
Sreen, Myron C., Sgt. (& 2 OLC)  
Staerk, James C., S/Sgt.

Stanczyk, Bruno C., S/Sgt. (& OLC)  
Standart, Joseph G., Capt.  
Stapleton, Melto, T/Sgt.  
Stearns, William A., S/Sgt.  
Stebbins, John H., Lieut.  
Steers, Frank B., Jr., Sgt. (& 3 OLC)  
Steffens, Debert G., Sgt. (& OLC)  
Stefonowicz, Clifford L., Lieut.  
Steege, John A., Lieut. (& 2 OLC)  
Steineder, Wayne G., Lieut.  
Steinemann, Frank C., Lieut.  
Stephens, Joseph J., Capt.  
Storkel, Harry A., Lieut. (& OLC)  
Stevens, Edgar L. H., Jr., Lieut.  
Stewart, William, III, Lieut.  
Stoltz, Hyman, S/Sgt.  
Stinson, Walter Dale, Sgt. (& 3 OLC)  
Stockton, Donald E., Lieut. (& 3 OLC)  
Stocum, Donald Gordon, Lieut. (& 3 OLC)  
Story, Daniel A., Lieut.  
Strange, James W., S/Sgt.  
Stuart, Aurel E., Lieut.  
Stubbs, James Woodrow, Lieut. (& 3 OLC)  
Sullivan, Arthur A., Sgt. (& 2 OLC)  
Sullivan, Woodruff, Jr., Lieut.  
Sutton, Joseph, T/Sgt.  
Swift, Gerald E. F., Sgt. (& 3 OLC)  
Swindle, Robert J., Lieut.  
Taber, Edwin L., Lieut.  
Tackett, Cecil E., Capt.  
Tainsh, Alexander S., Capt. (& 3 OLC)  
Talbert, Julius A., S/Sgt.  
Tarnoski, John A., Pvt.  
Tate, Clark A., Lieut. (& 2 OLC)  
Taylor, Arthur G., Capt.  
Taylor, Earl K., T/Sgt.  
Taylor, Horace C., Lieut.  
Taylor, James P., Lieut.  
Terry, Charles R., T/Sgt. (& OLC)  
Terry, Harvey N., Jr., T/Sgt.  
Terry, Robert D., Lieut.  
Tetiva, Ervin J., Capt. (& OLC)  
Thacker, Clarence L., Lieut. (& 3 OLC)  
Thayer, Harold A., Lieut.  
Thomas, Clarence W., Capt.  
Thomas, George P., T/Sgt.  
Thompson, Berry P., Lieut.  
Thompson, Donald Lee, Lieut.  
Thompson, Earl William, Sgt. (& 3 OLC)  
Thompson, Jack P., Lieut.  
Thompson, John T., Lieut.  
Thompson, Kermit N., T/Sgt.  
Thornton, Allan C., Pfc.  
Tibbitts, Thomas P., Sgt.  
Tikotsky, Stanley S., Lieut.  
Tollen, James R., Lieut.  
Tomlin, Aubrey C., S/Sgt.  
Townsend, Franklyn, Sgt. (& 3 OLC)  
Trapani, Philip P., Sgt. (& 2 OLC)  
Treasce, Albert, Capt.  
Truswitt, Edward, S/Sgt.  
Turner, Alfred George, Lieut.  
Tuttle, Richard B., Lieut.  
Tyka, Adolph A., S/Sgt.  
Tyrrell, Vern H., T/Sgt. (& OLC)  
Unruh, Jonas C., S/Sgt.  
Urigas, Valentino M., Capt. (& OLC)  
Valtorani, John J., Sgt. (& OLC)  
Van Buskirk, Alden L., Capt.  
Vandergriff, Harry I., Sgt. (& 2 OLC)  
Vanderslice, Harvey R., Lieut.  
Vangilder, Taylor H., T/Sgt.  
Van Horn, Max E., S/Sgt.  
Van Valkenburg, Edgar, S/Sgt. (& OLC)  
Ventres, Domercq Ralph, Lieut.  
Verner, William L., S/Sgt.  
Vick, Glen F., Capt.  
Vilenes, Colin O., Lieut.  
Voellmeck, Joseph W., Lieut.  
Voxary, Leonard L., T/Sgt.  
Wade, Charles R., Lieut.  
Wadlin, Robert F., Lieut.

Wagner, Earl L., Sgt.  
Wagner, Lee H., Lieut.  
Wagner, Lloyd E., S/Sgt.  
Waibel, Edward J., Sgt. (& 3 OLC)  
Walker, Chauncey Leavan, Lieut.  
Walker, George T., Capt.  
Wallace, Hampton K., Capt.  
Wallis, Wade C., Jr., Capt. (& 3 OLC)  
Walsh, Harold F., Lieut.  
Walsh, Mortimer V., Lieut. (& 2 OLC)  
Walthers, George A., Lieut.  
Walthers, William, F/O  
Wangeman, Herbert O., Maj. (& 3 OLC)  
Ward, Whitney M., S/Sgt.  
Watson, James T., Lieut. (& 3 OLC)  
Watson, James Wilson, Lieut.  
Watson, William S., Lieut.  
Weakland, Walter L., Lieut.  
Weaver, Paul B., Jr., F/O  
Webb, Watemann J., Lieut. (& OLC)  
Wechsler, Lawrence A., Lieut. (& OLC)  
Weems, Thomas M., Jr., Lieut.  
Weilbacher, Karl A., Capt. (& OLC)  
Weirback, Roland C., Lieut.  
Welkis, Eli, Cpl. (& OLC)  
Weller, Charles E., Lieut.  
Wellin, Seymour W., Lieut.  
Wells, Delos L., Sgt.  
Wekwert, Erwin, Sgt.  
Wells, John C., Jr., Lieut.  
Westerman, Bernard T., Lieut.  
Wetzler, Donald M., Lieut.  
Wheaton, Robert M., Lieut.  
Wheeler, Ray L., T/Sgt.  
Whitaker, Lawrence G., Capt.  
White, George T., Lieut. (& OLC)  
White, Raymond S., T/Sgt.  
White, Zelma E., Sgt. (& 2 OLC)  
Whittington, Leonard H., Lieut.  
Wilkinson, Steven R., Capt.  
Wilkins, Russel E., Lieut.  
Williams, Carl T., Jr., Lieut. (& OLC)  
Williams, Dave W., Lieut. (& 3 OLC)  
Williams, Donald G., Lieut.  
Williams, Edler D., S/Sgt.  
Williams, Frank E., Lieut.  
Williams, George R., Sgt.  
Williams, Leo M., Lieut.  
Williams, Lester H., T/Sgt.  
Williams, Robert T., Lieut. (& OLC)  
Willis, H. G., Lieut. (& OLC)  
Wilson, Donald E., Lieut.  
Wilson, Frederick M., Sgt. (& 3 OLC)  
Wilson, Wilbert L., Lieut.  
Winchell, Clarence H., S/Sgt. (& 3 OLC)  
Winey, Wilford J., Pvt.  
Wintermyer, Norman W., Lieut.  
Wirt, Richard K., Sgt.  
Wohlers, Albert H., Capt.  
Wolf, Gomer A., Lieut.  
Wood, Allen H., Lieut. (& OLC)  
Wood, William H., Lieut. (& 3 OLC)  
Woodhull, Benjamin I., Lieut. (& OLC)  
Woods, Lyle C., T/Sgt. (& OLC)  
Woodward, Ellis M., Lieut.  
Woodward, Robert H., Lieut. (& OLC)  
Woody, John K., Lieut. (& 2 OLC)  
Wort, Harrison G., Capt.  
Working, William H., Lieut. (& 3 OLC)  
Worrell, Samuel H., Jr., Cpl. (& OLC)  
Wright, Ellis W., Jr., Capt.  
Wright, John R., Capt.  
Wright, Robert W., Lieut.  
Wright, Wilbur J., Sgt. (& 3 OLC)  
Wronski, John T., Sgt. (& 3 OLC)  
Yuravich, Joseph A., Capt.  
Wuethrich, John W., Jr., Lieut.  
Wunneberger, Arnold L., Lieut.  
Wyatt, Bert W., Lieut.  
Wyatt, Kenneth C., S/Sgt.  
Wylie, James W., Capt. (& OLC)  
Wyman, George H., Capt.  
Wynne, Henry Champagne, Sgt. (& 3 OLC)  
Yandala, Gust J., Lieut.  
Yates, Leo M., Lieut. (& OLC)  
Yates, Milton, S/Sgt.  
Yinger, Robert L., T/Sgt.  
Yost, Clifford H., Sgt. (& 3 OLC)  
Young, James E., Lieut.  
Yuravich, Joseph A., Capt.  
Zaorski, Roman R., T/Sgt. (& 3 OLC)  
Zaresky, Jack, Sgt.  
Zepkin, Joseph J., S/Sgt. (& OLC)  
Zeran, Royaltan, Sgt. (& OLC)  
Ziegler, Paul A., Jr., Lieut. (& 2 OLC)

S/Sgt. E. Van Valkenburg



Maj. J. M. Toomey



Lt. Clyde S. Uber



Col. B. K. Holloway

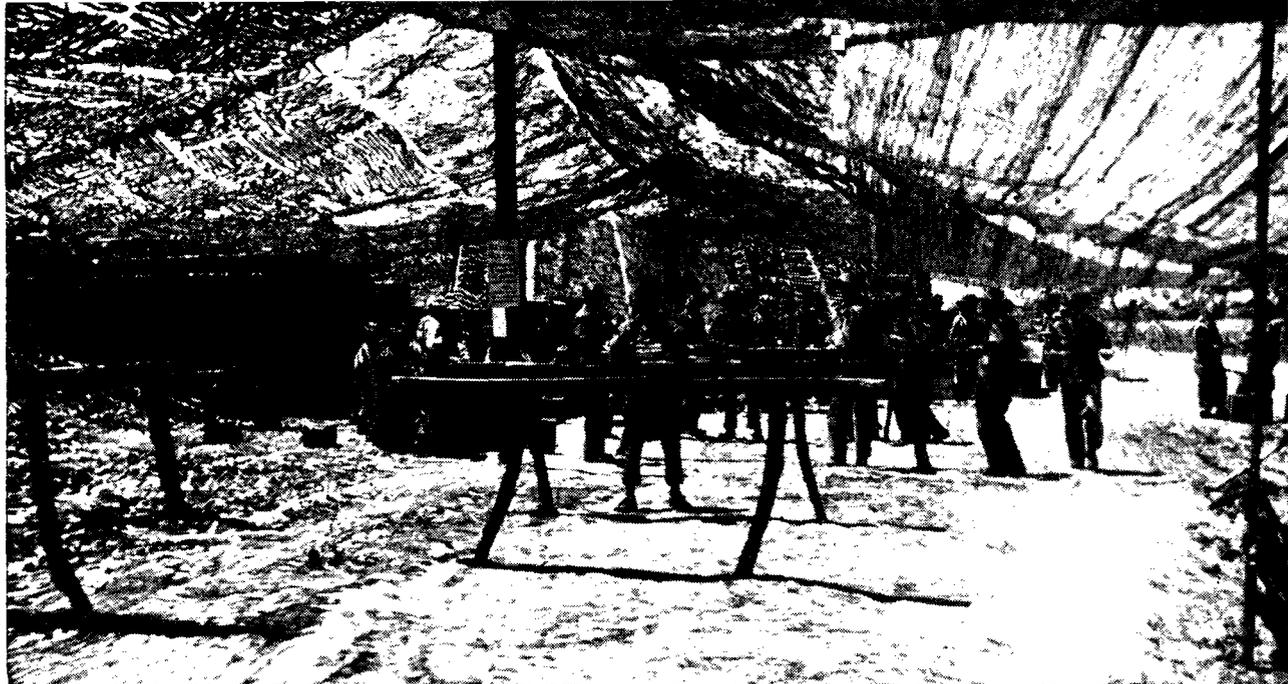


Maj. W. A. Hanson



Lt. P. F. Provenzale





## CAMOUFLAGE WITH HORSE SENSE

By Lieut. Col. Merrill E. DeLonge

AAF REPRESENTATIVE, ENGINEER BOARD, FT. BELVOIR, VA.

CAMOUFLAGE, as the lecturers in basic training point out, is *protective concealment*, and its practice and theory in a theatre of war depends on the use of a large amount of horse sense. The whole idea is to make it hard for the enemy to see you, and to bomb or strafe you. The art of deception is also an integral part of camouflage and it can prove of value during offensive operations as well as when defensive measures are necessary.

In the Mediterranean and Pacific theatres we have found out a number of things about camouflage—what it can and can't do. For example, it was noted that for a while artificial concealment wasn't used to any extent by AAF personnel, and, too, that many men were indifferent to all kinds of concealment, natural or hand-made. Quite a few of these diffident characters are now dead or in hospitals.

Some of this indifference toward camouflage may have resulted from the uncontrolled enthusiasm of the men who first expounded the art of hiding objects from the enemy. A few of the pronouncements of these men led to the mistaken idea that they could make things invisible: a few dabs of paint here, a fishnet waved around a few times and buildings, airplanes and mechanics would be whisked from view. Just like that.

However, if a person will listen closely to the camoufleurs, he will find that they don't expect miracles and that they do have some ideas which will keep the Jap and Germans from breathing down our necks. He will find, too, that the ideas of the camouflage personnel are relatively simple and are based on good sense.

The protective concealment they speak of is, actually, *self-preservation* and *deception*. The idea is to make it difficult for the enemy to locate and bomb concentrations of airplanes, equipment or men. There also is the important point of misleading him as to just how many men there are at an installation, what planes are on the field and how much gasoline, bombs and other equipment is on hand.

A good way to judge how important the basic elements which are closely associated with camouflage are to your survival is to look over a few of the enemy's mistakes. Think of that fine target a bunch of JU-88s made for a squadron of B-26s one day. The 88s were lined up close, almost wingtip to wingtip, and as the Marauders laid sticks of 300-pound bombs among them there went a group of Germany's most valuable planes, caught on the ground. Think, too, of bomb and gasoline dumps going up in

great explosions, of hundreds of Japanese killed by one strafing mission over a tent bivouac area.

Not long ago, a flight of P-40s, hitting the deck all the way out, came right up on a battery of ack-ack on a hill, and every one of the enemy's guns and all their crews were put out of action. This attack wasn't just a piece of good luck. It came about this way: A photo reconnaissance plane had run a strip over that part of the island, looking for such defenses. The battery showed up bright and clear because the gun crews had been lazy and had liked to take short cuts. There were three well-marked trails up the hill, pointing straight to the positions. Besides, the crews had been careless about tramping around the guns, and white patches showed in the photo just where the AA guns were located.

With all those markings, it was a relatively easy job for the P-40s to head right for the battery and knock it out. The Jap gunners are dead because they were indifferent about some of the first rules of protective concealment.

When the enemy bombs you, he is after three things: planes, other equipment and personnel. One way to cross him up is to scatter everything over the landscape. It may be a bit inconvenient, having 55-



There was a definite lack of camouflage discipline at this airfield in North Africa. Notice the scarred areas around the B-17s and tent

bivouac and note especially the telling trails. Good dispersal of the bombers minimizes the probable damage in the event of an air attack.

gallon drums of gasoline placed yards apart over a large area, but it is better than having all your gasoline go up with one bomb hit. If reasonable dispersion has been carried out at a forward base, it will be tough for the enemy to knock the fields out of action. And then if the same precautions are taken with tents and shelters in the bivouac, an enemy is going to have a hard time doing much anti-personnel work with his machine guns.

**WHEN** you move into a new field, it is a good idea to look around a little and pick out a spot where you can dig in or be covered so that a Jap or a German can't see you from a couple of miles away. This sounds a little easy, but it takes time and careful planning to do it right—and it's the job of everyone in the new area.

Artificial cover is helpful, but it takes a lot of time and work to put up fishnets, garnish them properly and, as the months go by, change the garnishing to fit the seasons—green for spring and summer, brown for fall and winter. For similar reasons, large scale airfield camouflage is even more difficult to do. So if possible, seek areas where there is natural cover and save all the trees and local garnish you can.

Airplanes and equipment hidden among trees are almost impossible to see from the air, and if care is taken they will not show up on a photographic plate.

Another good rule after a bivouac has been set up is to avoid cutting too many trails and roads which can be seen from

above. Sometimes it isn't easy to find localities with good natural shelter, and in those places some effort should be made to cover equipment and buildings with garnished nets. The main idea is not so much to hide whatever you are covering but to make it less noticeable to a reconnaissance plane. An airplane's shadow stands out as clearly, or more so, than an airplane. So reduce the shadow.

While you can see through a garnished net from below, it does a lot of good in absorbing the shadows or breaking the lines of a truck or plane as seen from above. It is important when using a net that it be stretched over the object, and, better, yet, even raised so it does not rest on the tent ridge, or truck top, or the top

point of whatever you are concealing. If there aren't enough nets to go around, it is best to use them over tech vans, radio trucks and equipment that is hard to replace if destroyed.

Use all existing buildings and roads. Where new buildings are constructed, design and arrange them so that they will appear to be a part of the area. Any painting that is done should either blend the buildings into the background or make them appear like any other buildings in the vicinity. These basic rules hold true in China, New Guinea, Italy and wherever else the AAF is fighting.

This all sounds pretty fundamental, and it is. It might even mean saving your neck. ☆

Little or no natural cover was available at this bivouac on a North African airfield but the men moving in had to make the best of it. They had to keep living quarters separated and installations dispersed so that bombers or strafing planes would not have concentrated targets.





An excellent job of garnishing is being done on this drape job over an operations tent of a heavy bombardment group. The net has been spread so that outlines are vague when seen from the air and the garnish has been dyed to blend well with the terrain. No telltale shadows are cast.

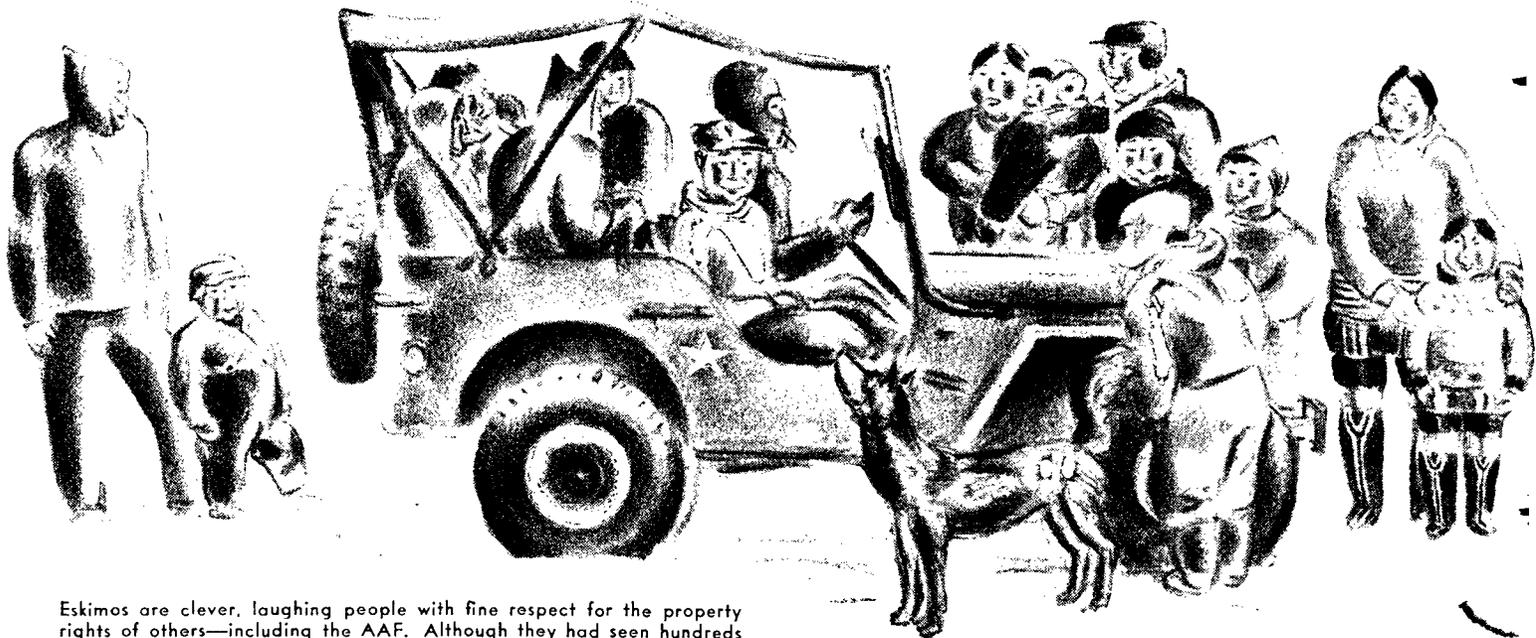


Replacement engines are rare and valuable in places like New Guinea and the ground men learn to protect them. In this case, the engines have been well scattered. The covering gives concealment and protection against weather. This is better than storing the engines side by side in a small area where a well-placed bomb has a chance of destroying the entire stock.

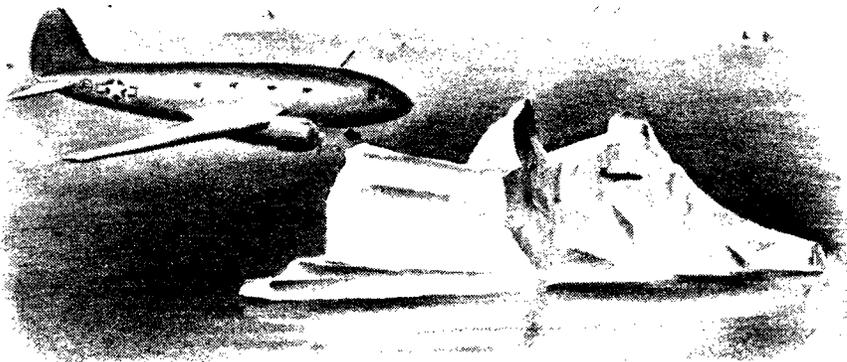


Whoever chose this spot for the maintenance area of a fighter squadron on Oahu appreciated protective concealment. The trees offer excellent cover against observation from the air, yet there is room enough for the mechs to work. Besides it is cool, a luxury not often enjoyed in this area.





Eskimos are clever, laughing people with fine respect for the property rights of others—including the AAF. Although they had seen hundreds of planes, the jeep was something entirely new. They enjoyed their ride.

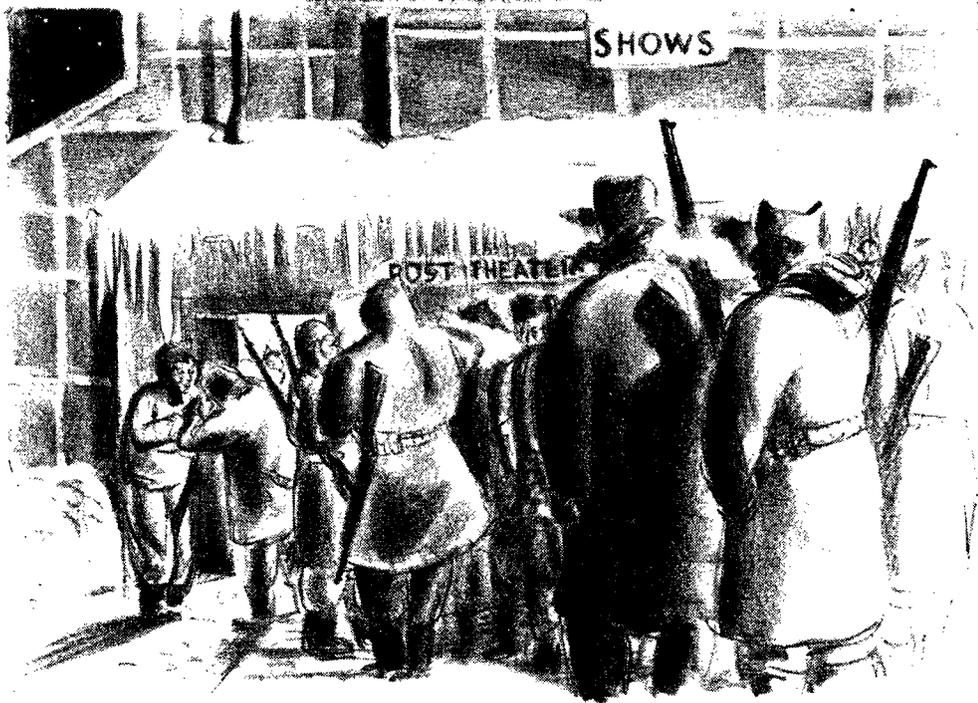


## AIR W... IN THE

On the flight from the States to Blue West One airbase in Greenland scenes like this one form a panorama of interesting patterns, glittering mountains of craggy ice afloat on the dark, dull blue water of the North Atlantic. It was the gliding shadow of the plane on an iceberg which inspired this sketch.



Cockburn  
Greenland 44

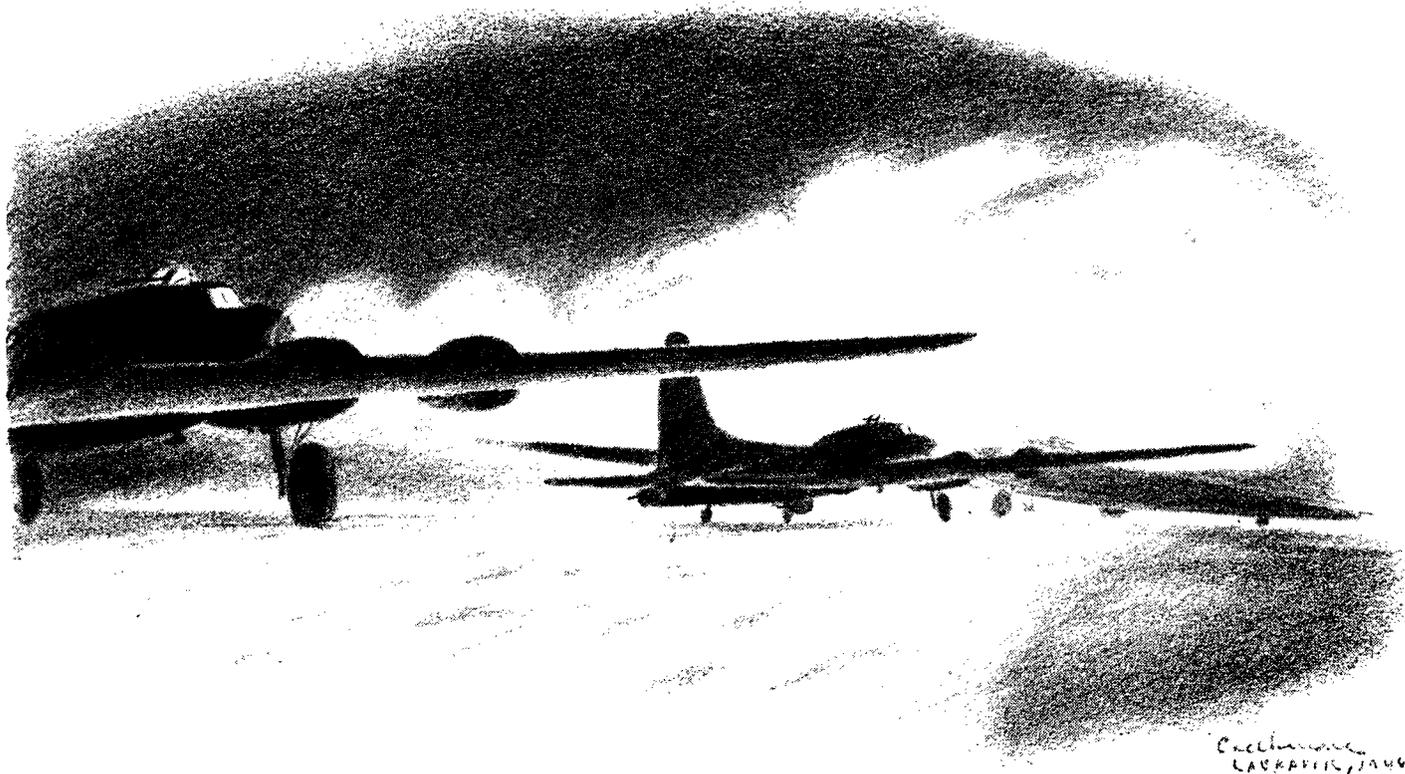


Armed like Pilgrims going to church, these officers and men of the Army Air Forces in Greenland are always mindful of the enemy and go prepared to protect their base from air or sea-borne invaders. In this snow-blanketed, wind-whipped land the principal diversion is the post theatre which takes on a Klondike aspect with the big coats, heavy boots and abundance of shooting irons. Pop corn sold at the PX across the street.



This combat crew was holding a bull session before take-off hour at an AAF airbase somewhere in Labrador.

This night scene in Labrador was sketched while some Flying Fortresses were tuning up for their long hop across the North Atlantic to England or Scotland. Revving motors swirl up high clouds of dry snow which are illuminated by the lights of other planes. Ground crews do a topnotch job despite these conditions.



Cockburn  
LABRADOR, 1944

# WHEELS OF THE AAF

By Lieut. Col. William B. Droge

CHIEF, VEHICLES AND POWERED GROUND EQUIPMENT BRANCH, AIR SERVICE COMMAND



More than 400 B-17s of the 8th Air Force have been made to fly again by motorized repair shops. The first of these MRUs (mobile repair units) took to the field in 1943, equipped with repair trailer accompanied by a 2½-ton truck and, naturally, a jeep.

**A**N RAF officer stood talking with an American colonel on the hard runway apron which webbed out over the big AAF Service Command depot area somewhere in mid-Africa. The Britisher's eyes moved rapidly across the field, first toward a huge crane that was hoisting a wounded P-40 fighter onto the scrap heap, then to a big six-wheeled tanker truck moving in to feed a thirsty Liberator. He was amazed at the operation. This was his first glimpse of American motorized ground units.

"You chaps have a regular traveling circus," he told the colonel. "By George, you have a pair of wheels for everything."

That is not an understatement. Today the Army Air Forces operating at home and abroad have thousands of specialized vehicles, each designed for a special job pertaining to the servicing or maintenance of our fighting planes. In all, there are

more than 300,000 motorized units in operation and a like number on order in factories or en route to airbases. Of equal importance is the fact that hundreds of thousands of trained personnel are operating these mobile units on all battlefronts and home fields.

Charged with the responsibility of seeing that these vehicles and their operators are made available to our AAF units overseas and in the continental U. S. is the Air Service Command.

The command has hauled giant tankers, truck-tractors, bulldozers, ambulances and other such equipment to airfields in the jungles of New Guinea, the desert of Africa, the shell-torn fields of Sicily and the almost inaccessible landing strips on the Gilbert Islands.

By ship and by plane our AAF units are supplied with motorized equipment

that is the best in the world, the product of the American automotive industry which before the war made eighty percent of the world's motor vehicles.

In China recently ground crews and airmen were startled when they saw 2½-ton cargo trucks roll out of the big doors of cargo planes that had just landed. Immediately the trucks were put to use hauling hundreds of pounds of supplies to the field. The motorized supply operation is a continuous cycle. The ground motorized units keep the airplanes in the air, and often the airplanes bring in the fuels and parts that keep the ground units operating.

These ground units have saved the day on many occasions. In North Africa, for instance, when the advances and withdrawals were quite frequent, when small forces fought each other for mere spots of

From cover this refueling truck services the more active vehicles in an airbase area in India. Here a weapons carrier takes on gasoline.



This land freighter is a 4-5 ton tractor attached to a low-bed trailer. The machine is called a tractor because it is a prime source of power.



ground that helped to decide the final victory, there was one case when a 2½-ton cargo truck saved thousands of pounds of AAF bombs and ammunition. The "ammo," on flat cars, had just been moved in, and the locomotive had chugged off to another job. Suddenly the enemy was reinforced, and it became necessary for our forces to withdraw. Our men didn't want to destroy the ammunition because it was too hard to get. Nor did they want the enemy to get it. Some quick-witted sergeant solved the problem: He put the cargo truck on the tracks and pushed the flat cars out of the danger zone, thus saving their precious contents for use later in blasting the enemy out of its position.

In the Southwest Pacific theatre our forces had established a landing strip on one of the small islands, but the Japs kept away our supply boats and our forces had all they could do to cut their strip out of the jungle so planes could fly in. When the planes did come, float drums of gasoline had to be floated ashore at night on the other end of the island and men had to carry them several miles through the jungle. That is, they did until motorized vehicles were brought in to cut a roadway and haul the fuel to our planes.

The colonel in command of the expedition said that his men were so glad to get the motorized units that one sergeant waved his .45 and shouted to the group: "Shoot anyone that doesn't treat these trucks like he would the Old Man's car."

"And," the colonel added, "I believe he would have done it."

That's how important the motorized ground equipment is to the men who are utilizing it on our fighting fronts. They keep the ships ready for offensive thrusts or for defensive action because they have ground vehicles with which to do the job. In a sense, these ground-bound trucks, trailers, tractors and all the others are the life lines of the Army Air Forces. Consider that for every B-17 or B-24 approxi-

mately seven ground vehicles are necessary to keep the big ship serviced and in the air. For every medium bomber there must be five. Every pursuit ship needs at least four. Such is the magnitude of the job of keeping ground units mobile.

Most of the vehicles which are peculiar to the AAF, such as crash trucks, mobile work shops, fuel and oil servicing trucks are designed and developed by the engineers of the Materiel Command at Wright Field. When they approve new equipment for specific jobs, the ASC distributes it.

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Perhaps the most common of all the AAF motorized units is the tug, which looks somewhat like a farm tractor minus treads and takes over the job of moving the airplane between hangar and flying field. The name "tug" comes natural since this vehicle does a similar job to that of the small tugboats when they move the big liners to and fro in a harbor. Special tow roads have been developed which allow great maneuverability for the tug in pulling airplanes around the field.

A larger version of the tug is the cletrac which is essentially the nursemaid for the cargo plane or the bomber. It is a combination of machine and service station for

it has an energizer which can be used in starting the plane's engines. It is also equipped with air compressors which will inflate tires.

In the Southwest Pacific this air compressor was used to put compressed air into the torpedoes which our planes used against the Jap armada in the Bismarck Sea victory. Primarily, however, the cletrac serves to start planes, run blowers to clean the ship's engines and do other jobs which require power on the ground. In effect, it is "ground power" for the bomber or transport, which obviates the need to run the plane's engines.

**C**LETRACS were indispensable in the African desert. These power units started airplane engines when dust had nearly ruined their individual starter mechanisms. They also proved easier to operate than tugs in the soft sands when planes were forced down. Frequently they made their way over dunes and hills to haul distressed planes back to their bases. In Sicily cletracs equipped with scrapers helped ASC personnel to clear Axis-shelled runways so our transports and bombers could land with a greater degree of safety. They proved ideal for the job.

Criss-crossing this country and many overseas areas are the AAF's own truck-trailers. These units haul aircraft engines and wing assemblies. Sometimes they take airplanes or gliders to factories for final assembly, or to airfields for assignment to personnel squadrons. The truck-trailer combination is a five-ton affair. The long flat-car trailers are designed to hold complete airplane fuselages or wing sections, and, together, flat-car and tractor are probably the biggest motorized units used by the AAF today, with the exception of the wreckers. An unusual feature about the truck-trailers is that these units are so designed that a trailer can carry two of its own tractors — an astounding test of weight carrying capacity, but highly useful

The tug is similar to a farm tractor and performs a work comparable to that of harbor tugboats. It tows airplanes between hangar and field.

The AAF C-2 wrecker is used for salvage operations, and wherever the usual operational mishaps occur the tractor-crane is on the scene.



in solving transportation problems. The tough, rugged fuel trucks of the AAF are the biggest, most efficient in the world. There is, for example, the big 4,000-gallon capacity F-2 fuel servicing truck, a truck-trailer combination. This unit can service as many as four airplanes at once. It is equipped with four hose reels, two in the rear compartment and two in side compartments, each with a fifty-foot hose, and two gasoline-driven fuel pumps.

Our most common in-use fuel truck is the F-2. With a commercial four-wheel drive, it is a 21½-ton unit with a 131-inch wheel base powered by a six-cylinder, ninety-horsepower engine. It has eight speeds, six forward and two reverse. The cab of the tractor unit is set directly over the engine, increasing maneuverability and vision for the driver. Overall length of the truck and trailer is 35 feet and the weight of the combination loaded is 20,000 pounds. The tractor-trailer will speed as fast as 45 miles per hour on the highway, or it can negotiate nearly any road or trail in ordinary open country.

In addition to the gasoline tanker there is also an oil truck, the L-1, which was designed because of the inconvenience and delay resulting from servicing both oil and gasoline from the same unit, which previously was the practice. An interesting feature of the L-1's design—brought about because of long-haul supply problems—is that the chassis of the L-1 is interchangeable in whole or in part with that of the big F-2 fuel truck. The oil tank of the L-1 has a capacity of 660 gallons of lubricating oil, housed in three compartments, the center one of 100-gallon capacity being insulated and having electric immersion heaters which keep the temperature at 110 degrees by thermostat control regardless of outside temperatures. Power is obtained either from outside sources or from 2500-watt generator plant installed in the truck. In addition to heating the tank, the plant may also be used for operation of electric hand-tools and other equipment.

Besides fuel, our bombers and fighters need striking power and that means bombs and bullets. To get bombs into the bellies of our heavies or hook them to the wings of our fighters, it was necessary to design motorized vehicles for the job. Thus did the small bomb trucks and trailers come into being—the M-5 bomb trailer and M-6 bomb servicing truck.

The M-5 bomb trailer is a flat, tricycle-gear, four-wheel affair. Its description may sound confusing but its two forward wheels are mounted side-by-side to give the whole unit a tricycle effect. This piece of equipment, though small, is well built and sturdy. It will hold at one time four

the wrecker takes them home for repairs.

Similarly used, except for larger planes, is a thirty-ton bomber crane. It is a four-wheeled unit with dual tires on the rear axis. The rear tires are six feet in diameter and three feet wide and front tires, eight feet in diameter. Its long boom that serves as a hoist extends almost thirty feet into the air. A Diesel engine which weighs more than a ton furnishes the power and operates the crane which can pick up a B-24 as easily as it can a P-38.

WHEREVER our planes fly it is necessary that they have repair shops for their instruments and other small auxiliary parts. For this purpose the AAF has designed a portable instrument repair unit. It is a machine shop on wheels. Outwardly it looks like a large moving van or a trailer on a freight truck line. Inside it has a lathe, polisher, grindstone, drill and other machines necessary to the maintenance of aircraft parts and instruments. Many of these mobile mechanics' homes in the fighting zones have been responsible for keeping our planes in the air when they otherwise would have been grounded.

In listing the many items of motorized equipment used by the AAF the ordinary field service truck must be mentioned. It is a troop carrier, a mobile mess kitchen, a dump truck or a cargo carrier. In addition, there are the special Army buses designed for transporting workers to and from the continental airfields, the small pilot wagons and modified jeeps which transport plane crews to the operations offices. These have come in especially handy in foreign fields where the distance to the headquarters from the runway is sometimes more than three miles.

Although it doesn't have its own motor and, therefore, cannot qualify as a motorized unit, the bicycle also is playing an important part in the AAF ground-motivation program. It, too, has been redesigned. The AAF has introduced a folding bike which fits inside a common cargo plane. Latest reports show that almost every transport going overseas is equipped with one or more of them. ☆

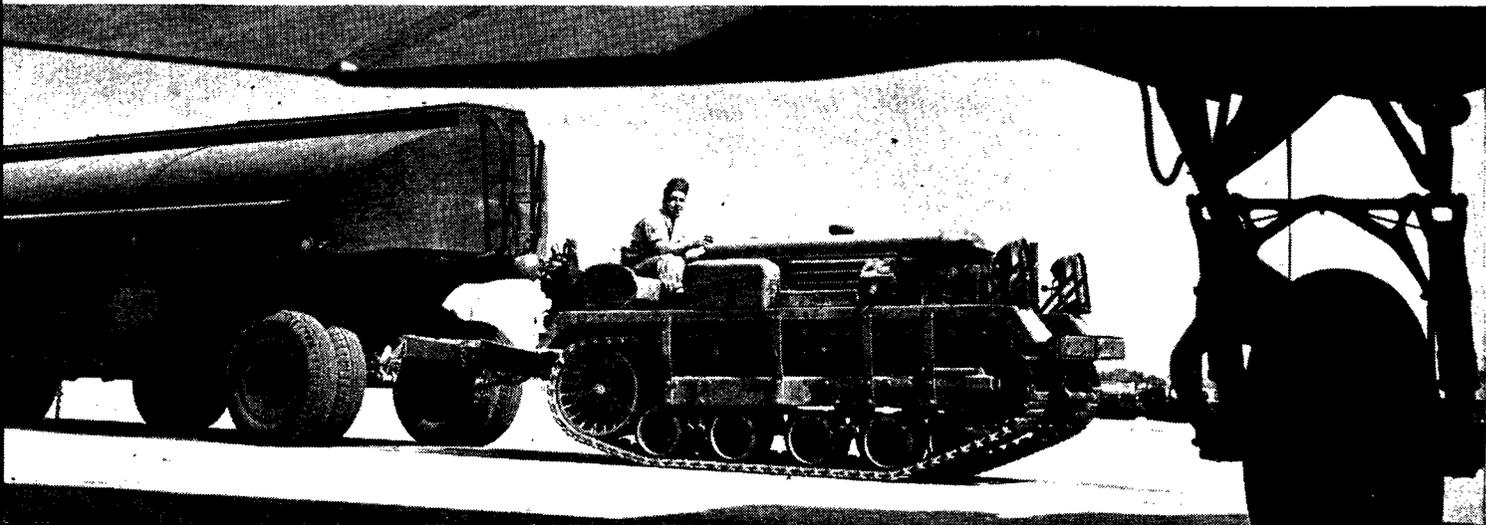
## PLEASE . . .

pass on this copy of AIR FORCE as soon as you've read it. We depend on each of you to share the service journal with the others in your unit.

## READ IT . . . PASS IT ON!

2,000-pound bombs, or two 4,000-pounders. There also is a small lift truck on which individual bombs are placed for loading. It is a three-wheeled unit, which is without its own motive power. The bombs move from truck to lift-truck to bomb bay. The M-6 has its own power unit and hoist for lifting the heavy bombs into their nest racks.

Another vehicle common to most airfields is the AAF C-2 wrecker, a giant six-wheeled tractor-crane combination. As its name implies the wrecker is used for AAF salvage operations. When planes are forced to make wheels-up landings, or when they get almost home and crash, or when the usual operational mishaps occur, the C-2 wrecker is on the job. Its crane picks them up, puts them on a trailer, and





# HERE'S WHERE YOUR MAIL GETS ACTION

"I HAVEN'T received my allotment check," writes the mother of an AAF enlisted man overseas.

"Three months ago my wife entered the hospital and I haven't heard from her since," writes a sergeant in India.

"Our boy was lost in Italy. How can we obtain his personal effects?" ask a pilot's parents.

"I'm sure my boy is overseas. What is his APO number?"

"My husband is missing."

"Where can I get a job?"

"No letters have come from my son in three months. Where is he?"

Every day scores of dispatches like these from AAF men overseas and the families they left behind are received at a Washington office known as the Personal Affairs Division, Headquarters, AAF, where a small group of volunteers—all of them wives of AAF officers—give personal attention to inquiries involving allotments, maternity cases, employment and a dozen other problems. This section, which until recently was the Headquarters Section, Air Forces Branch of Army Emergency Relief, has handled 7,000 cases within the past year.

Men stationed from Iceland to the Fijis who may wonder exactly what happens when they write merely to "Headquarters, Army Air Forces" concerning matters purely personal are assured that no matter what the inquiry, it gets prompt and individual attention from one of 75 AAF women volunteers assisting Mrs. H. H. Arnold in the overseas section of Personal Affairs Division many hours each week.

When the letters arrive at this section, they are recorded and numbered. The executive secretary consults Mrs. Arnold concerning the necessary action for each. Volunteers note suggestions regarding the answer or action to be taken as a result of each letter and give each case personal attention until it is finished. When the answers are prepared they are returned to Mrs. Arnold's desk for final checking and signature, and so into the mails.

Problems of family allowances are referred to the Office of Dependency Benefits, and if help is needed by the applicants in assembling any necessary papers they are assisted by volunteer members of this section.

If a new baby is expected and the

soldier's wife, aware that she will need help with doctor and hospital bills, writes to the Personal Affairs Division, she is told of the emergency maternity and infant care for families of enlisted men in the armed forces. This program is being carried on in most sections of the country by State Health Departments, and the mother-to-be is given the name and address of the director of maternal and child health in her state who will furnish upon request application blanks for this free care. Layettes made by volunteer workers are provided when needed.

INFORMATION is obtained from the Adjutant General's office to answer queries of "where is my soldier son or husband?" Each letter of this kind is answered immediately, emphasizing the fact that no news is generally good news and that the absence of letters usually means the soldier is being transferred. The anxious wife or parent is told that the correct address will be sent as soon as it can be found. It is usually not long before a "thank you" note arrives informing the office that letters are again coming from the soldier.

Families at home often worry because Insurance Certificates are slow in coming and are grateful for information obtained for them from the Veterans Administration. Many write also to learn when their War Bonds will be received.

Many women wanting to contribute their share in the war effort on the home front have been placed in jobs in defense industries through the placement branch of the Personal Affairs Division.

In some instances families who were self-supporting and needed no help from soldier sons when they left for duty outside the United States, have later encountered acute financial need through illness or the death of a parent. When such conditions arise which entitle them to receive family allowances under the Servicemen's Dependents Act, application forms are sent to them to be filled out and forwarded to the Office of Dependency Benefits.

The personal effects of a soldier lost in battle are most desired by his family. If they are not received, the family is told to write to The Quartermaster, Army Effects Bureau, Kansas City Quartermaster Depot, Kansas City, Mo.

A family writing to inquire where it can learn more details in connection with the death of a husband or son is instructed to write to the Chaplain of his unit.

Whatever the nature of the problem, AAF personnel overseas can know that these officers' wives in Washington—many of whom themselves have been left behind—are working daily to relieve the many worries that beset a soldier or his family in time of war. ☆

Location and file number of cases handled by women volunteers for overseas personnel and their families are displayed on a wall map, being kept up to date by Mrs. O. W. Picher, Mrs. H. W. Grant and Mrs. W. C. Sweeney.



## WHAT'S WRONG WITH THIS PICTURE?

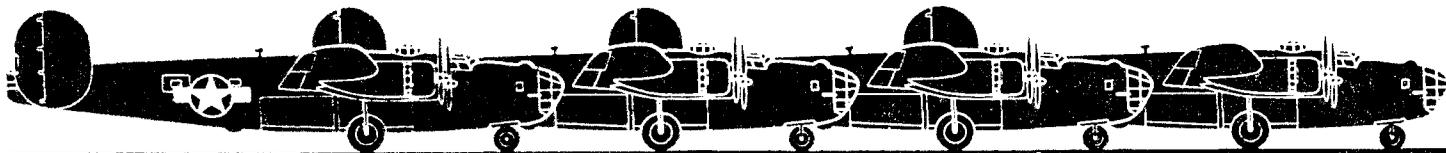


THE necessary equipment to install a cell properly is conspicuously absent in this month's picture. Installation is comparatively simple when done the right way, yet these mechs show some relation to circus jugglers.

Installation charts make the procedure easier and they're yours for the asking from unit FASC5-8E2, Fairfield Air Service Command, Ohio. Charts now ready are: B-24 main, COI-5E-1; B-24 auxiliary, COI-5E-2; P-39, COI-11-E-1;

B-17 main, COI-20E-1; B-17 auxiliary, COI-20E-2, and B-25A and B, COI-60G-1. Others will be available soon.

To lend a hand to promote rubber conservation and combat mishandling of fuel cells this picture was posed by (left to right) Pfc. Urban Weber, Sgt. Robert Wilson, Pfc. Victor Bender and Sgt. Carl Elmore of the 478th Air Base Squadron, Patterson Field. Eight boners in the photograph are listed on Page 64. Do you find any more?



## ON THE LINE A MONTHLY MAINTENANCE ROUNDUP PREPARED IN COLLABORATION WITH THE AIR SERVICE COMMAND AND THE TECHNICAL INSPECTION DIVISION, OFFICE OF THE AIR INSPECTOR

### SPOT LIGHT ON FUEL CELLS . . .

Constantly harping about the critical rubber shortage may become a little tiresome, but like the war itself, something, everything has to be done to lick it.

The big headache in the rubber conservation program is fuel cells. Efforts of rubber experts are of little consequence if men ON THE LINE continue to mishandle cells. See 03-10J series TOs.

Fuel cell failures, past and present, are caused largely by faulty and careless methods of installation and removal. The worst pitfall is on a collapsible type, where improper manipulation in common practice beats hell out of the cell.

Here are some suggestions on this problem:

*Cells Require Proper Inspection*—When inspecting molded type self-sealing fuel cells used in B-25s and P-38s irregularities on interior are often mistaken as cracks or splits. Thus, cells are needlessly returned to the depot as faulty. Proper inspection then reveals this pleated appearance to be merely sharp folds and crevices which are a result of manufacturing method and construction.

If cracks or splits are genuine and gasoline penetrates into sealant layers, the cells are unfit and must be repaired or scrapped. Inspection must be accurate.

*On Tightening Fuel Cell Bolts*—Beware of bolting down access door of a fuel cell too tightly; twenty to thirty inch pounds is adequate (see revised TO 03-10J-3). Tighten properly just once. Re-checking is not recommended because synthetic or natural rubber will fool you. Tightened access door bolts after a short period of time will indicate a decrease in inch pounds.

*Tank Vent Fittings*—Intensive pressure on fuel cells and connections is caused by side-slips, steep banks and dives. Such maneuvers bring about flexing action and may rupture synthetic rubber nipple of tank vent fitting (see TO 03-10J-4) and result in gas fumes filling the cockpit and gasoline splashing on electrical equipment.

TO 01-65B-10 must be complied with! Failure to install new tank vent fittings may cause cell to become inoperative, endanger pilot and plane and cost many hours of labor.

*Never Use Knife*—The expensive and wasteful practice of cutting cells out of cell cavity with a knife is deplorable. New

cells cost \$300. Never force cells out, collapse them to avoid damage.

*Crate with Care*—The correct crating of cells requires that fittings be secured and cell does not sag. Cells should be stored and shipped in original containers if possible. Never stack crated cells so high that the bottom one is under pressure.

Careless handling of uncrated cells administers a terrible beating to them. *Do not stack uncrated cells.* Use individual spaces and place them on the widest surface so they are supported from the interior and don't sag under their own weight.

Fuel cells are harmed greatly by any change from the original shape, whether from warping, bending, twisting or improper collapsing. TO 03-10J-5 tells the whole story.

### MECHS CHANGE OLD WING FOR NEW BEHIND THE JAP LINES . . .

A "hopelessly damaged" transport plane, stranded on an emergency airfield behind the Jap lines during the recurring pushes from Port Moresby to Buna and Gona and beyond, was put back into the air by ingenious Air Service Command mechanics—and the repair job involved the shipment, by air and under the belly of another transport plane, of a complete new wing which was flown over New Guinea's worst mountains and jungles.

The story begins with an accident which disabled two C-47s at an advanced airstrip deep in the rugged interior of Dutch New Guinea. The field was actually behind the lines of the Japs, who at that time still held the coast positions of Buna and Lae and their forces in the Markham Valley were only fourteen hours away.

To recondition one of the two smashed planes, parts were stripped from the other. The repaired transport took to the air and was flown out. But the other, according to official report, was "damaged beyond repair" in the following sections: left

wing, right wing tip, right aileron and right propeller.

Responsible for making a decision on what to do with the hulk was the 5th Air Force Service Command. Its mechanics insisted they could put the C-47 to rights if only necessary parts were brought in.

The problem, however, was to get a complete wing from Port Moresby over the Owen Stanley range and into the little Bena Bena field, more than 5,000 feet high.

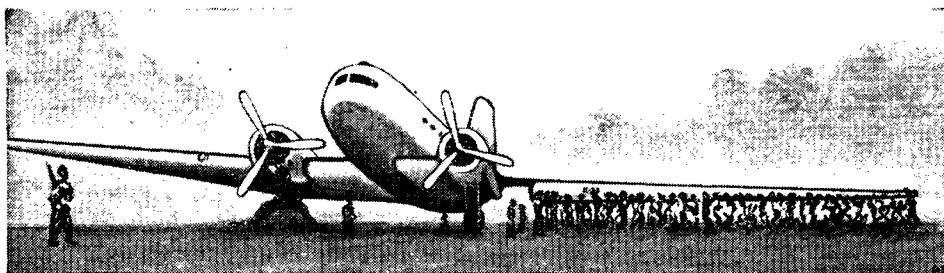
No transport was large enough to stow another transport wing, but the repairmen at Port Moresby improvised an external rig on a C-47 by which the wing was slung under the belly and cabled to the plane's bulkheads. So that the open root of the wing would not set up impossibly high air resistance, it was faired—streamlined—by means of a false framework rounded off with fabric and dope.

A new aileron, wing tip and disassembled propeller were loaded inside the transport and the flight to Bena Bena was made without incident.

But the work of the ASC mechs there had only begun. To install the new prop it was necessary to cut great bundles of jungle grass as a mound to stand on—a wilderness substitute for a crew chief's stand. The next job was to mount the wing without benefit of a wing sling. Manpower made up for lack of equipment. More than 100 natives were drafted into service. Raising the wing on their backs, they walked it into place while mechanics made the junction.

The entire task, which had the effect of adding another precious transport to the none-too-large supply of the then struggling 5th Air Force, was accomplished in four days after the wing and other parts had been flown to the landing strip behind the Jap lines.

Hats off to the mechs, for another job well done. ☆



A periodic 'breather' in New Zealand does wonders in keeping our airmen in the South Pacific keen, alert and ready for combat.

# TIME OUT FOR REST

By Maj. James E. Crane

FLIGHT SURGEON, 13TH AIR FORCE REST AREA

THAT "3,000-mile look," a symptom displayed by men in the South Pacific at about the same time they "feel trees moving in on them," is being cured these days at rest homes established in New Zealand by the United States Armed Forces and Headquarters Service Command.

Wherever possible, a flyer completes a tour of duty in the South Pacific area when he obtains a score of ten points. The points are computed by the number of hours flown divided by one hundred, plus the number of missions divided by ten, plus the number of months in the area divided by three.

We have found, however, that it is not advisable for a man to fly continuously until the total is reached. Such a steady strain and grind would result in great loss of physical and mental efficiency. So, in order to aid our men in working toward the two things they want most to do—destroy the enemy and return home—we give them periodic leaves to visit a rest area. Squadrons rotate their duty and each outfit spends nine days in a climate and environment much different than the forward bases. Special Services of the Service Command set up the rest areas, and its personnel now handle all the supply facilities, maintain the rest camps and attend to administrative duties.

To iron out his flying kinks, this airman is enjoying a vacation in New Zealand. He has found a bicycle at a rest home and a girl at a date bureau, and everything is wonderful.



On arrival at the airfield at the start of the rest leave, all personnel check in with the Special Service officer who billets the men and hands out mimeographed sheets containing information of the available local facilities such as restaurants, cafeterias, dances, theaters and churches.

Enlisted men are issued any uniforms they might need. All men can draw partial payments from the Finance Office. Rules and regulations are kept to a minimum, and everything is made as simple and convenient as possible. The enlisted men usually go to Western Springs, and the officers to Kia Ora or Maungakiakai. No one is compelled to live at any of these places. If a man wishes he can live in a hotel in the center of the city. Some men, after months at a forward base, simply like to stand on the busiest street corner they can find and drink in the sight and sound of the street cars, autos and passing people.

Most of the men, however, prefer the rest homes which are about as interesting a joint service operation as can be found anywhere. These homes were planned by the Army and built by Navy Seabees. Some are operated by Special Services, with the Red Cross running the mess and providing the recreational program. Others are operated wholly by the Red Cross



**A Report on Army Air Forces Training Devices**

▶ **The Shadowgraph for Recognition Training**

**T**HE Shadowgraph is a device to project on a screen the shadow of an aircraft plastic model held at any angle which the instructor desires. The shadow thrown by a model on a flat surface gives a more realistic representation of the aircraft in flight than the model itself.

Among the Shadowgraph's principal advantages are simplicity of construction, realism of aircraft images, ease with which views of aircraft may be changed or contrast made between types, number of students who can view screen at same time and unlimited variety of views it affords for tests.

The screen of the Shadowgraph, which may be made from an old sheet or table cloth, should be hung much like a movie screen or stretched tightly across a frame. Preferably a rod should be attached to the top and bottom to keep it taut. A large screen is necessary in order to hide the instructor from the class and thus permit him to manipulate and change models without "giving away" the next one to the class.

Standard AAF aircraft models, scale

1:72 are used. These models may be kept on a table behind the sheet. A stand or a piece of stout wire is necessary to hold the model for projection. A number of devices may be used as the source for light. The SVI projector supplied in the AAF Recognition Kit will work well. An opaque projector or a "tin-can spotlight" may be used. An old automobile headlight with the lens removed will serve if it is placed inside a black box with about a three-inch hole cut in front for the source

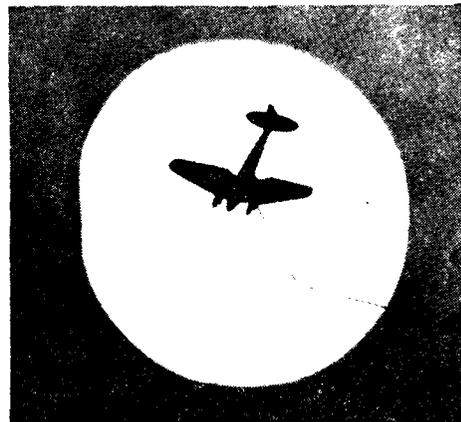
of light. Regardless of the light source, the distance of the light behind the screen will alter the diameter of the circle of light thrown on the screen. This distance should be adjusted to give approximately a three-foot circle of light.

The room need not be completely darkened. When the model is held between the light and the screen, the aircraft's shadow or silhouette thrown on the screen is visible from the opposite side. There will be some distortion of the shadow if the model is not held fairly centrally in the patch of light on the screen. A compromise will have to be made between holding the models too close to the screen, which produces a sharp image but considerable perspective distortion, and having them too close to the light, which cuts down on distortion but creates a fuzzy image.

Great care must be taken to explain to students the exact position of flight. From their side of the screen they see the airplane as though they were looking at it from the source of light. When the model is facing the light it appears to be approaching the students; if the light shines on the under surface of the model, then



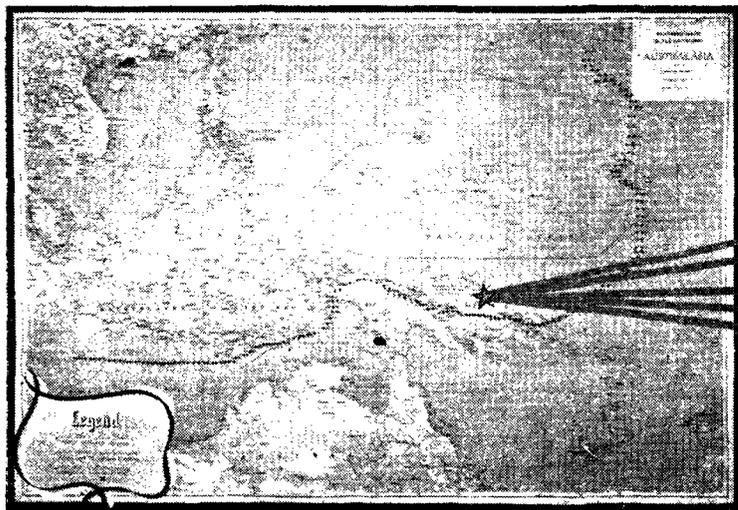
Behind the screen.



Before the screen.

These posters are reproduced from a graphic portfolio prepared by the ASF for first aid instruction. The series consists of fifty pages in color,

each illustrating step-by-step first aid procedure in combat. The accompanying poster presentation, appearing on the bulletin board



it appears as if seen from below, and so on.

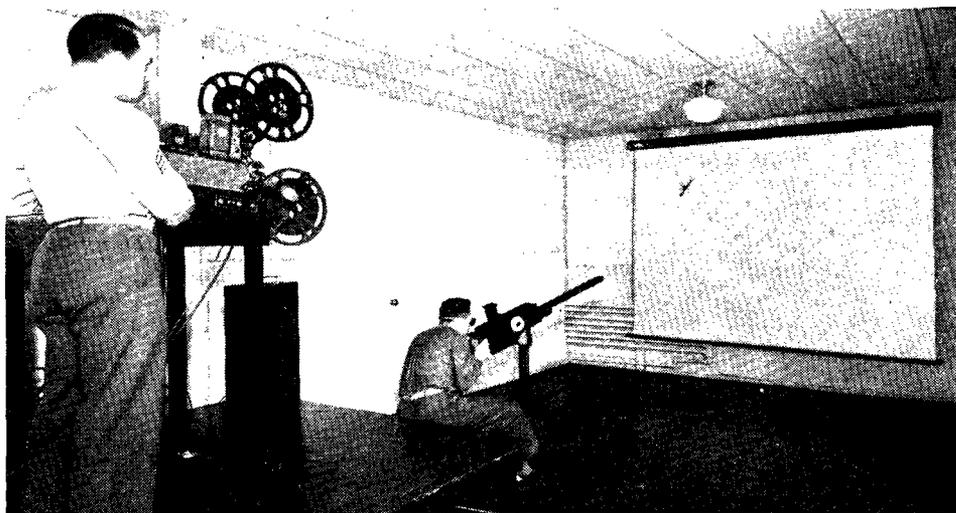
An unlimited variety of tests can be given with the Shadowgraph. For simple tests the aircraft image may be moved slowly across illuminated part of sheet, giving an average of three seconds exposure. This can be speeded up to one second or even less for advanced students. Attempt should be made to simulate correct attitude of flight in the interest of realism.

By varying intensity of light, different luminosity effects may be reproduced. Students should be kept at least six feet from screen and not too near the sides of the room. Combat crew members must be trained to recognize aircraft at any angle for 700 to 1,000 yards range. If a 1:72 scale model is used near the screen in a large classroom, this range is simulated to students sitting from thirty to forty feet from screen. In alert rooms or other convenient places, points equivalent to ranges of 400 to 1,000 yards may be marked on the floor, wall or ceiling.

### ► Gunnery Trainer

THE worst that can happen to a student gunner in the Aerial Gunnery Trainer (E-14, Jam Handy) is that he "gets the gong" instead of hot lead if he misses the attacking enemy plane. This device is designed to teach all phases of aerial flexible gunnery, without any hazard, by allowing student gunners to shoot at motion pictures of attacking aircraft in accurately simulated combat.

The gunner sits behind a mock-up .50 caliber machine gun, or in a mock-up turret, facing a screen upon which are projected motion pictures of attacking aircraft. When an attacking plane appears, the gunner recognizes it, estimates its range and opens fire exactly as he would do in combat. If the target plane is within range, the gunner hears the sound of his



The E-14 Aerial Gunnery Trainer.

own guns; if it is out of range, he hears a loud gong or siren. In addition, the sound of the engine of his own plane is present if desired for realism.

Two 16 mm sound movie projectors are used in this device. One throws on the 7 by 9-foot screen the picture of sky-scape, ground-scape, attacking fighter and a portion of the defending bomber to permit orientation. The other projects a ring sight which shows continuously throughout an attack the correct point of aim.

A reflector sight with a 101 mm diameter is mounted on the gun. A gun light mounted in the barrel of the dummy machine gun shows the student and instructor where the gun is pointed. An automatic timer for ammunition is provided.

The gun or turret is placed so that the sight is 10 feet from the screen. This view gives the gunner a coverage of 40 degrees vertical and 52 degrees horizontal. The projectors are 15 feet from the

screen mounted on a locally constructed stand to project the pictures over the student's head. Observers or students waiting their turn can be seated beside the projectors.

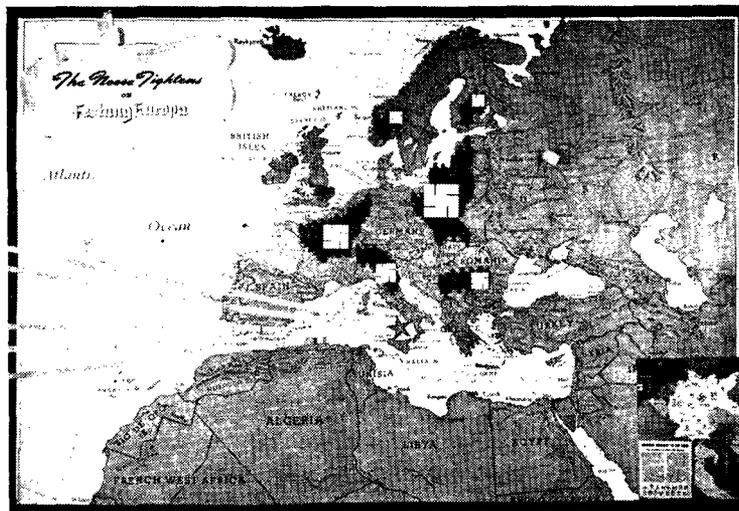
All films issued for use with this device have been prepared with the utmost care and are based upon exact mathematical calculations. The points of aim for each attack have been computed on the basis of the latest ballistic tables and other approved mathematical data. Films are provided with each trainer. ☆

### WHERE TO GO

Information on the availability of training films and film strips, aircraft recognition materials, training devices and training publications may be obtained from the Chief, Training Aids Division, Army Air Forces, 1 Park Avenue, New York 16, N. Y., upon request through channels. AAF Regulation No. 50-19 explains fully the functions of the Training Aids Division.

it AFTAD, illustrates a secondary use of the posters—to impress personnel in this country that "this is our war, too." At either end of the

display are maps of Europe and the Pacific. The portfolios may be obtained by eligible military units through AGO sub-depots.



## AID FROM THE SKIES FOR THE YUGOSLAVS

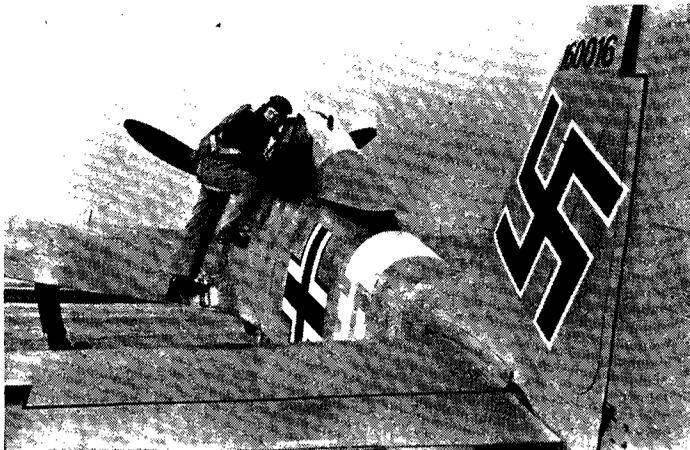


Since the capture of airfields at Foggia, AAF planes have hopped across the Adriatic Sea in repeated strikes against enemy positions in the Balkans. Some of the most telling blows have been directed at German troop concentrations, transportation centers and harbors along the Dalmatian coast and in the Yugoslav interior. In this photo B-25s are

shown peeling off to bomb enemy forces at Travnik which had been taken over by the Nazis as a headquarters for one of their divisions. This 12th Air Force attack aided Yugoslav Partisans in delaying the German advance until Marshal Tito's troops, at nearby Jajce, could withdraw. Heavies and bomb-carrying fighters have joined in the Yugoslav attacks. ☆

# TECHNIQUE

A Review of Technical Developments in the Army Air Forces



Captured Focke-Wulf 190 fighter-bomber is being put through the paces by Materiel Command. Lieut. Col. Barney Estes (right), chief of fighter branch, inspects the landing gear. Note similarity to P-51 in background.

## FLIGHT TESTING the Focke-Wulf 190

A German FW-190 which was captured during the battle for Naples is now undergoing tests by the Materiel Command at Wright Field, where the aircraft is revealing the traits which have given it prestige over Europe.

Lieut. Col. Barney Estes, chief of the fighter branch of the command, took the plane aloft on its initial flight in the States and had this to say: "It's no wonder the boys flying the ditch have a wholesome respect for the Focke-Wulfs."

This particular plane might be called the counterpart of our P-38s, P-40s and A-36s. It carries two wing tanks, has long range and the standard practice of the Germans is to carry a bomb in a rack beneath its fuselage. Although the range with this gas capacity is not known, the British have found the droppable tanks scattered all over England.

The FW-190 requires no mixture control, and proper fuel to the engine is handled automatically. It does not have the usual hydraulic pressure gauge carried by most American-built planes and, like the B-17, the FW-190 uses an all electrical system for its retractable landing gear, flaps and bomb releases.

The German fighter is powered by a Bavarian Motor Works 14-cylinder, twin-row radial engine rated at 1,750 horsepower. The ship weighs five tons, has a 34½ foot wing span (dwarfs the light ME-109) and is similar in weight and size to the P-47.

Firepower of the FW-190 is limited principally because the weight once used for its defensive action in guns and bullets has been replaced by its light bomb load. It has two 20 mm cannon built into the wing roots, electrically synchronized to fire through the propeller. No data has been released on its speed and altitude. Pilots say it is extremely maneuverable.

— Lieut. Laurence B. Krogh, Materiel Command, Wright Field.



## Growth of Aircraft Generators

Seven years ago, the largest generator used by the Army Air Forces was rated 750 watts and the electrical load it supplied consisted of the plane's radio and lighting. Today, generators rated 9,000 watts are in use on our new combat ships and the electrical load they supply has grown to include landing gear retraction motors, automatic pilot equipment, multiple-gun turrets, heated clothing, windshield wipers and many other pieces of equipment.

The development of aircraft generators has not been merely a matter of increasing size to increase electrical output, for the consideration of weight has become more important with each succeeding year. Today's 9,000-watt generator, weighing well under fifty pounds, represents an increase in power of 1,100 percent, yet it is only 25 percent heavier than our generator of seven years ago. This remarkable improvement in the ratio of output to weight has been made possible by a variety of new features.

The materials used in present construction permit the generator to be operated at higher temperature without exceeding the limitation of the insulation used. This permits a higher load to be drawn for the same size and weight machine. Cooling of the generator, which up to a few years ago was accomplished by a fan on the armature, is now provided by an air blast duct supplying cool air at the high pressure due to the

forward motion of the airplane. Again, this permits a higher load current to be drawn from the generator without exceeding the allowable temperature limitations.

An important contribution to generator progress has been the development of improved voltage regulations. The voltage regulator varies the resistance of the generator shunt field circuit automatically, to maintain a constant voltage regardless of changes in load or speed. Earlier voltage regulators of the vibrating contact type could handle field currents up to  $1\frac{1}{2}$  amperes. The present regulators, of a new carbon-pile type, can safely handle field currents up to eight or nine amperes. The increase in allowable field current has made possible a considerable reduction in generator weight, since the field coils can now be wound with fewer turns of wire and the magnetic field strength will still be the same.

Larger generators have required a departure from the simple shunt generator construction, and largest machines today contain compensating windings and interpoles, insuring against sparking between the brushes and commutator at any load or speed. This also helps to keep down the temperature within the brushes and commutator and permits a greater load current to be drawn for the same size machine.

A great weight reduction in our larger generators is achieved by the use of higher operating speeds, which reduce the amount of iron and copper needed in the magnetic and electrical circuits.

But the problem has involved more than merely increasing electrical capacity and keeping weight down. Conditions of operation have become ever more severe. Today we talk of long-range flights at 30,000 feet and higher. The effect of high altitude on generator brushes was to produce an abnormally high rate of wear until about a year ago when a successful means of treating carbon brushes to prevent excessive wear at high altitudes was developed by industrial research scientists in collaboration with the AAF Materiel Command at Wright Field. The aircraft engines on which the generators are mounted have become increasingly more powerful and with the higher engine powers has come greatly increased vibration. This has required careful design of the mechanical structure of the generator.

It is unlikely that Germany has a 9,000-watt generator weighing less than fifty pounds since the largest generator yet to be found on a German plane that came within American gunsights was rated 3,000 watts and weighed 38 $\frac{1}{2}$  pounds. Comparing favorably with this is the AAF Type O-1 generator, also rated 3000 watts, but weighing only 26 $\frac{1}{2}$  pounds and capable of delivering its rated load over a much wider speed range. The Type O-4 generator is standard equipment on several of our single-engined fighters. — **Lieut. Col. T. B. Holliday, Chief, Electrical Branch, Equipment Laboratory, Materiel Command.**

## Jeep Camera-Carrier

A simple means of converting a jeep into a camera equipment carrier has been designed by the United States Army Signal Corps Photographic Center, Astoria, N. Y. This jeep carrier provides a means of transporting camera equipment for field units and serves as a platform on which equipment can be set up and operated.

The equipment necessary to make these facilities consists of two laminated plywood platforms with hooks, clamps and web belts attached. The main platform fits on the rear of a standard jeep behind the front seats and rests on the wheel wells. A



This jeep has been converted into a traveling platform for field photography. Space is also provided for carrying camera supplies.

smaller platform, mounted on the hood just in front of the dashboard, provides a means for holding one of the tripod legs. Both platforms clamp onto a jeep without the use of tools, and there are no holes drilled nor other alterations made to the vehicle. The complete installation can be attached within a few minutes and web belts with snap catches provide a flexible means of securing equipment cases to the boards. Equipment which may be carried includes the camera cases, magazine cases, standard and baby tripods, batteries, extra film magazines and standard crew field equipment such as bed rolls and rations. — **Col. Roy M. Jones, AAF First Motion Picture Unit, Culver City, Calif.**

## Brake-Bleeder for P-47

A Thunderbolt brake which formerly would have taken thirty minutes to three hours to bleed can now be finished in three minutes or less by a method devised by Master Sgt. Alfred J. Gouba of Shenandoah, Pa., maintenance chief of an 8th Air Force fighter squadron.

The sergeant's idea for such a device was given impetus when a technical order called for the modification of the de-icer systems on the P-47s. He built his machine from one of the discarded pumps. The small motor on the pump is driven by an energizer, an apparatus used to supply current to start airplane engines.

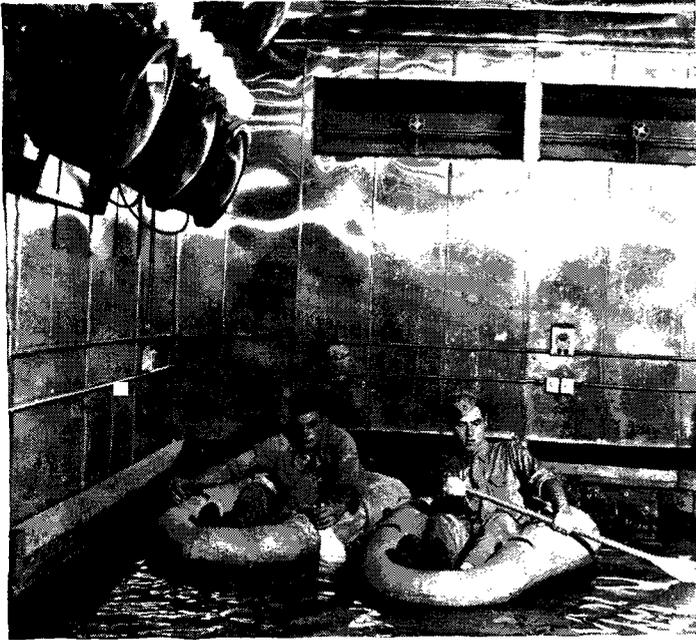
The pump forces the brake fluid from an attached can through a hose into the hydraulic system of the wheel. The old fluid and air bubbles are forced out of the drain in the master brake cylinder in the cockpit. The machines are a marked improvement over the GI brake bleeder, which consists merely of a large drum of fluid. Air pressure in this drum is built up with a tire pump, the pressure sending the fluid into the hydraulic system. The machine solves the problem of providing a more uniform pressure than is possible with the GI outfit and accounts for a marked saving in time during cold weather when the brake fluid is thicker. — **Cpl. Gerald C. Peterson, 8th Air Force Fighter Station, England.**

## The World in a Room

A room which will manufacture any kind of weather from Arctic cold to desert sandstorms will soon be in full operation at Materiel Command headquarters, Wright Field. So versatile is this all-weather chamber that Army equipment developed to meet climatic conditions anywhere in the world can be tested there. The chamber will produce temperatures 60 degrees below zero, and 150 degrees above. In between it will reproduce hailstorms, rainstorms, sandstorms, sleet, fog and jungle humidity. It can even be converted into a foot-deep pond for testing life-rafts and water emergency equipment.

Two blowers furnish wind velocity to match that of any habitable area of the earth, and these will be used to enable engineers to study the reaction of equipment when operating under severe wind conditions. Showerheads on the walls permit engineers to create rainstorms with drenching realism, and the temperature, of course, can be accurately regulated. If something stormier is desired the blower is turned up and the room is swept by a full gale. Swirling sandstorms can be made by simply opening a hopper and dumping imported desert sand into the windstream. Heat is provided by several batteries of sun lamps.

Humidity can be created and controlled to any degree, such conditions simulated by means of an electrically heated humidifier and controlled air pressure. Fog can be produced by water spurted through specially made nozzles across the roof of the chamber. Two-way communication allows persons participating in the tests to maintain constant contact with an observer.



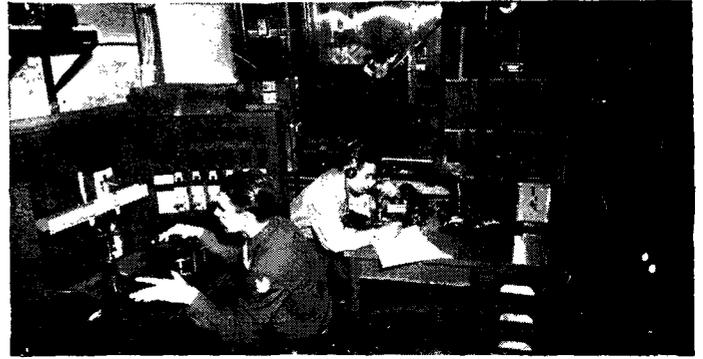
Blizzards rage and storm winds blow in the all-weather chamber of the Aero-Medical Laboratory at Materiel Command headquarters. Testing life rafts is one of many uses made of this storm center at Wright Field.

In cases where a subject is forced to remain inactive for long periods in the room, a music recording device is hooked up to provide entertainment.

For converting the chamber into a lagoon, a special rubberized lining has been built for the floor. With this lining in place the room can be flooded with one foot of water for making life-raft and related tests.

Refrigeration machinery for producing Arctic conditions consists of two individual compressors, although one will whip up enough cold for ordinary tests. Both are employed to hit the low of sixty below zero. Defrosting can be accomplished in a matter of minutes.

Elaborate instrument panels will permit operators to use



The enlisted man with earphones is talking to the man inside chamber and observing his reactions to sub-zero temperatures while operating a machine gun. Thermometer showed forty below zero when picture was made.

either manual or automatic controls for all apparatus governing the chamber, and complete control within the chamber will be in the hands of an operator at all times. Recording devices will record to one-half percent of absolute accuracy any changes exhibited by the personnel inside, and often such changes will be recorded by the graphs before the person himself is aware of them. — T. A. Berchtold, Materiel Command, Wright Field.

## Tin Cans and Blackouts

Two tin cans, four discarded bolts, a pair of tin shears and a few daubs of black paint recently were combined to produce a new headlight shade now providing maximum road light for jeeps in Britain's blackouts.

Designed by Maj. Robert H. Savage of Rivera, Calif., ordnance officer at an 8th Air Force Service Command depot, the new gadget takes advantage of the coincidence that a number ten can is the same size as a jeep's headlight opening.

Designed to provide an absolute minimum of road light, when the shade is installed no part of the headlights can be seen head-on, although the driver has good vision for approximately fifty feet. Full use of dimmers is permitted.

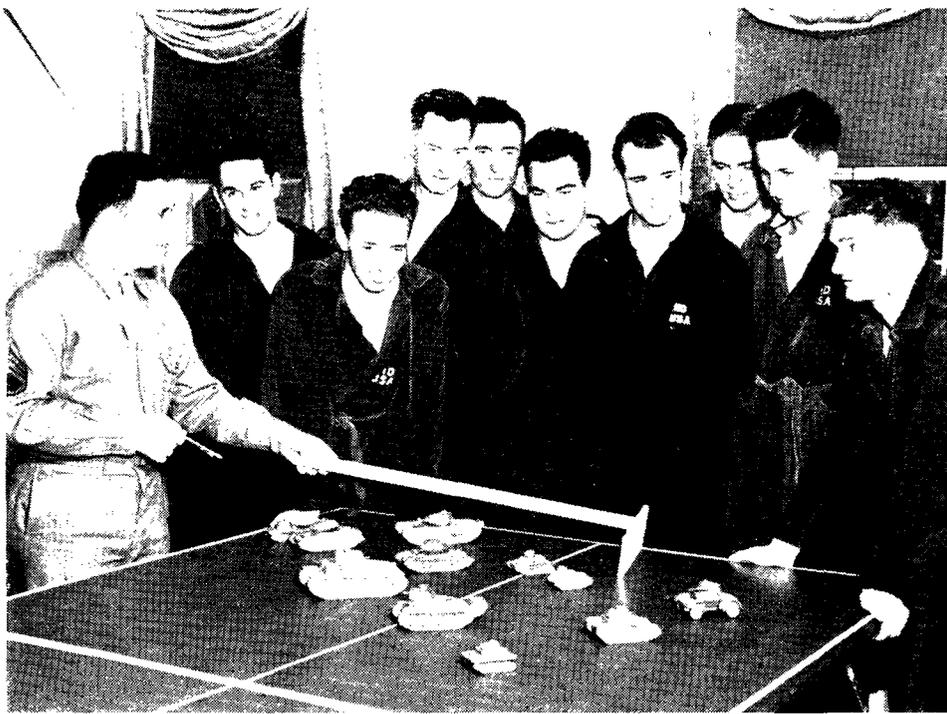
An experienced maintenance worker can complete a set of shades in thirty minutes, although Major Savage, working with jigs and fixtures has cut the time to ten minutes. After cutting the can (which is six inches in diameter) to a height of four and a half inches, ordnance workers use a templet to measure off a face opening three inches deep, then cut away the marked-off area. This leaves a full circular strip one and a half inches wide around the bottom of the can.

The second can is reduced to an inch and a half strip which runs its full circumference, and half of the circular bottom is cut out. Holes are then drilled in both sections at points marked by the templet. The smaller section is fitted inside the larger section, hole to hole, and fastened to the headlight opening and to each other with four bolts.

Extreme care is taken in installing the shades so that the top and bottom sections form a horizontal plane, thereby preventing a direct view of the headlights. The shade fronts are then blackened and the jeep is ready for the blackest blackout.

— Public Relations Section, Service Command Depot in England.





Informal discussions on military tactics spring up at will in the Convalescent Training Program. Arguments are always lively, often heated, as GI strategists hold forth on air power, or when we'll lick Japan. In this case, tanks are under heavy verbal fire at Hondo Army Air Field, Texas.

## LEARN WHILE YOU HEAL

(Continued from Page 16)

ing general medical officers, surgical, orthopedic and psychiatric specialists who keep careful tab on the clinical improvement of the men. Equally careful attention is paid to the vocational side of the picture by a trained staff who give instruction in the AAF's synthetic training devices.

These convalescent centers have this objective: To return as many men as possible to their previous AAF assignment, or to some *other* assignment in the Air Forces. Should this be either impossible or impracticable, each center has a staff of qualified specialists who provide transitional vocational instruction, job analyses and general education to enable men to make the best social and economic adjustment possible when they are discharged from military life.

Although the activities are supervised and selected with purpose, there is a welcome absence of regimentation. Facilities for recreation vary, of course, with the locale, but no bets are missed. Sun-bathing, swimming, tennis, golf, softball, good food, comfortable lounges for relaxation and reading make healthy inroads against operational fatigue and help considerably to speed GI convalescence.

Frills, maybe, but there's a method in this morale-building. All the officers associated with the CTP are firm believers in the value of the extra-curricular, usually-overlooked items which they consider of great therapeutic value. "Everybody bothers about the big things,"

Colonel Rusk says. "As a result, there's not enough attention paid to the little ones. Sometimes they are the things that will speed a patient's recovery just as much as the right kind of medicine."

It's not all play—as patients will emphatically tell you. Whether a soldier is hospitalized for a day or for three months, whether he's in a station hospital or a convalescent center, he's constructively working and learning day after day in almost

While recuperating today, patients may learn something that may save their lives later. Lessons on tropical medicine, booby traps, gas protection are high on the list of CTP "musts."



every spare minute of his waking hours.

Convalescent education as developed and practiced by the AAF has already proved to be one of the soundest adult education ventures to come out of the war. Its scope is limitless. The subject range is as broad as the AAF itself, and the instruction can be adapted to any sized group or any educational level.

Special classes designed to teach self-protection are given to men in basic training centers. The CTP slogan to these men is: "While you're flat on your back today you may learn something that may save your life at some future date." Gas warfare, camouflage, map reading, Judo and first-aid are high on the list of "musts." Classes in booby traps are popular—and to the point.

In sunrooms filled with odors of paint and glue, half a dozen men in familiar grey pajamas and red robes may be building model planes while another paint-dobbed group may be learning techniques of camouflage. Patients able to walk to auditoriums and lecture rooms get training films, geopolitical movies, lectures on weather, decontamination, land mines, Arctic and jungle medicine, tips on the care of teeth in the tropics, what to do for sunburned lips and a host of other subjects that may not be stressed in other types of training.

But if the patients can't go to the program, the program is brought to the patients. It's as simple as that. In one ward a 16 mm movie may be on the screen; in another, men propped up in bed may be learning to make camouflage nets by tying special knots in pieces of string, or listening to a current events lecture or daily

news summary in still another ward, or watching a group of wandering patient-troubadours in action, or learning 150 key words of a foreign language from phonograph records or brushing up on math and physics.

Where weather permits, classes are also held out of doors, and it's not an uncommon sight to see a group of students studying aircraft recognition beneath palm trees on a strip of Florida sand, in a sun-drenched patio on a California desert or beside a cool lake in New England. Citizens of Miami Beach presented the hospital there with a number of small boats and instructors have made the most of this "convalescent fleet" and nearby lagoons to teach patients life-saving aquatics, how to handle themselves in shark-infested or oil-covered waters, or how to swim away from a shipwreck.

Since the advent of the CTP, hospital libraries have reported a 100 percent increase in the demand for technical books. Hospitals serving technical schools give patients a chance to keep up with their technical skills. Men lose their code speed, it is found, after a week without practice. To enable students upon discharge from the hospital to take up where they left off in their classes, special code receiving sets and sending keys have been placed by the patient's bedside. For at least thirty minutes each day, wards are blacked out and code is received from special blinker sets—simple but practical mechanisms made from ice cream cartons. Gadgets abound in the CTP and help to sugar-coat the teaching.

Keynote of the instruction is its informality. If the alert CTP officer finds he has among his patients a chemical warfare expert or a former political science professor, chances are that he will quickly organize classes in these subjects and ask these patients to conduct them. Seventy-five percent of the instructors are convalescent patients, either men who have seen foreign service or specialists in civilian or military subjects. It's good therapy for the teacher and a tremendous morale factor to the student-patients.

Each hour a patient spends taking necessary physical and mental instruction is a valuable man-hour saved. Multiply that by the number of hospitals throughout the AAF and the number of patients in each and you get a general idea of the part the CTP is playing.

On discharge from the hospital, each man who has received at least ten hours of instruction takes back to the commanding officer of his unit a certificate of his work under CTP, and it becomes part of his service record.

"The program has had a tremendous soldier reception," General Grant says. "Convalescents once did nothing but lie in bed bored stiff. Now the almost universal reaction is, 'Why didn't somebody do this before?'" ☆

# What's Your AIR FORCE I.Q.



1. The distance from Attu to Tokyo is approximately
  - a. 500 miles
  - b. 2,000 miles
  - c. 3,500 miles
  - d. 950 miles
2. You are most likely to find an isobar
  - a. Wherever liquor is sold
  - b. On the dashboard of a B-24
  - c. In Iceland
  - d. On a weather map
3. The Aegean Sea is located between
  - a. Sardinia and Italy
  - b. Greece and Turkey
  - c. Norway and England
  - d. New Guinea and Australia
4. The C-87 is a transport version of the
  - a. B-24
  - b. B-17
  - c. B-18
  - d. B-19
5. The Jap aircraft popularly referred to as Oscar is a
  - a. Single engine fighter
  - b. Twin engine bomber
  - c. Twin engine fighter
  - d. Four engine bomber
6. The commanding general of the 10th Air Force is
  - a. Maj. Gen. Howard Davidson
  - b. Maj. Gen. Claire Chennault
  - c. Maj. Gen. George E. Stratemeyer
  - d. Maj. Gen. Nathan Twining
7. If you are flying at 300 mph indicated at 20,000 feet, your true air speed is between
  - a. 300 and 315 mph
  - b. 325 and 350 mph
  - c. 400 and 415 mph
  - d. 385 and 400 mph
8. Trux Field is located nearest to
  - a. Baton Rouge, La.
  - b. Fort Worth, Texas
  - c. Madison, Wis.
  - d. Stockton, Calif.
9. The island of Truk is located
  - a. South of New Guinea
  - b. North of New Ireland
  - c. West of the Philippines
  - d. East of the Gilbert Islands
10. The hygrometer is used to
  - a. Determine wind drift
  - b. Measure the degree of moisture in the atmosphere
  - c. Determine the temperature of the air around the engine
  - d. Indicate the oil pressure in the lubricating system
11. From January 1, 1939, until November 30, 1943, the AAF trained approximately how many pilots
  - a. 100,000
  - b. 50,000
  - c. 25,000
  - d. 150,000
12. The Seafire is
  - a. The American version of the Spitfire
  - b. A weapon devised for antisubmarine activity
  - c. The British carrier-based version of the Spitfire
  - d. An American naval reconnaissance plane
13. Which of the following colors are found on the Distinguished Service Cross Ribbon?
  - a. Yellow
  - b. White
  - c. Red
  - d. Blue
14. The International radio code indicating an air raid is in progress is
  - a. QOZ
  - b. QQW
  - c. QOX
  - d. QQQ
15. Whiskey is a recommended treatment for snakebite.
  - a. True
  - b. False
16. The MIG-3 is a
  - a. German tank
  - b. Navy scout-bomber
  - c. Designation for an anti-personnel bomb
  - d. Soviet fighter plane
17. Which word is out of place in the following group?
  - a. Wewak
  - b. Gaymata
  - c. Madang
  - d. Buna
18. Mustard gas has an odor resembling
  - a. Mustard
  - b. Garlic
  - c. Geraniums
  - d. Hay

19-20. Identify these planes:



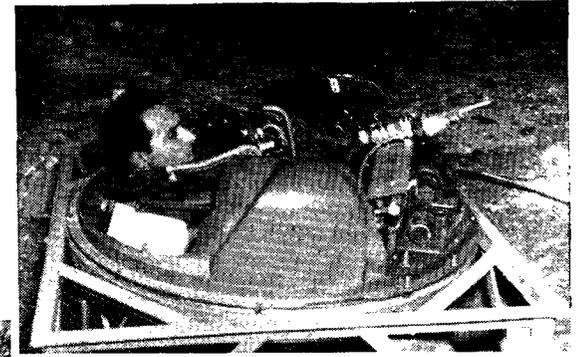
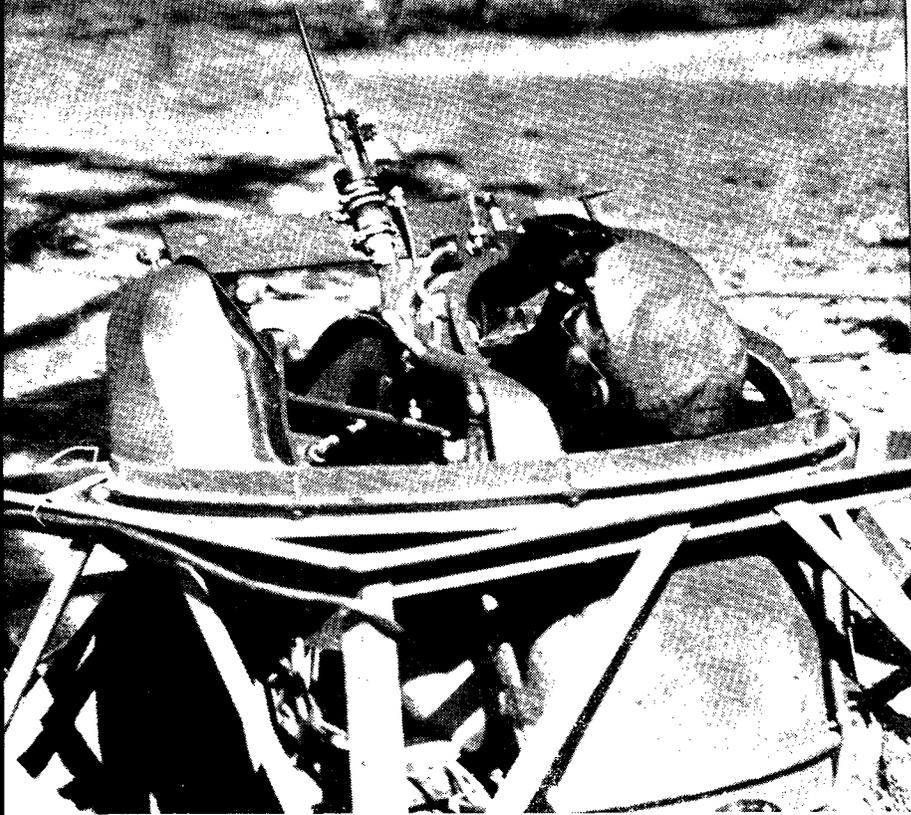
# WATER FIRE

ON Guadalcanal they are shooting down Zeros with a water gun. Airmen who have just arrived in the combat zone, or those who have been flying on strikes over enemy targets for months, are introduced to the gunnery contraptions which you see on these pages, and given a minimum of fifteen hours practice in smacking a Zero model in the eyes with a stream of water which is forced through a turret nozzle by means of compressed air.

The device was contrived by Col. Marion D. Unruh, Commanding Officer of a Bomb Group, who got the idea for the trainer while watching a unit of men experiment with model planes used for target practice in Hawaii. At present, the Guadalcanal Gunnery School offers Belly Turret, Nose Turret, and Top Turret courses, with a Master's Degree *cum laude* for the combination curriculum.

The scenes presented here were taken by an AAF Combat Camera Unit. ☆

Salvaged from a wrecked B-24 and fitted snugly into a nest which has been dug for it, this turret has a nozzle assembly in place of .50 caliber machine guns. Aside from spitting water, however, the operator could just as well be handling a back turret on a Liberator.



As the "Zero" streaks by at a speed which has been compared with that of an actual enemy fighter plane travelling 300 mph, its erratic course simulates the conditions this gunner will encounter when he battles a Nikajima 01 — at which time the ammunition will not be "wet."

This "battle" shot shows the left wing of the attacking plane in the process of being thoroughly demolished by the stream of "bullets." An air compressor at the foot of the gunner's turret forces pressure through a hose from a salvaged water tank behind the compressor. The stream is thereby forced from the tank into the nozzle on the turret and then released when the practicing gunner presses the regulation machine gun firing button.





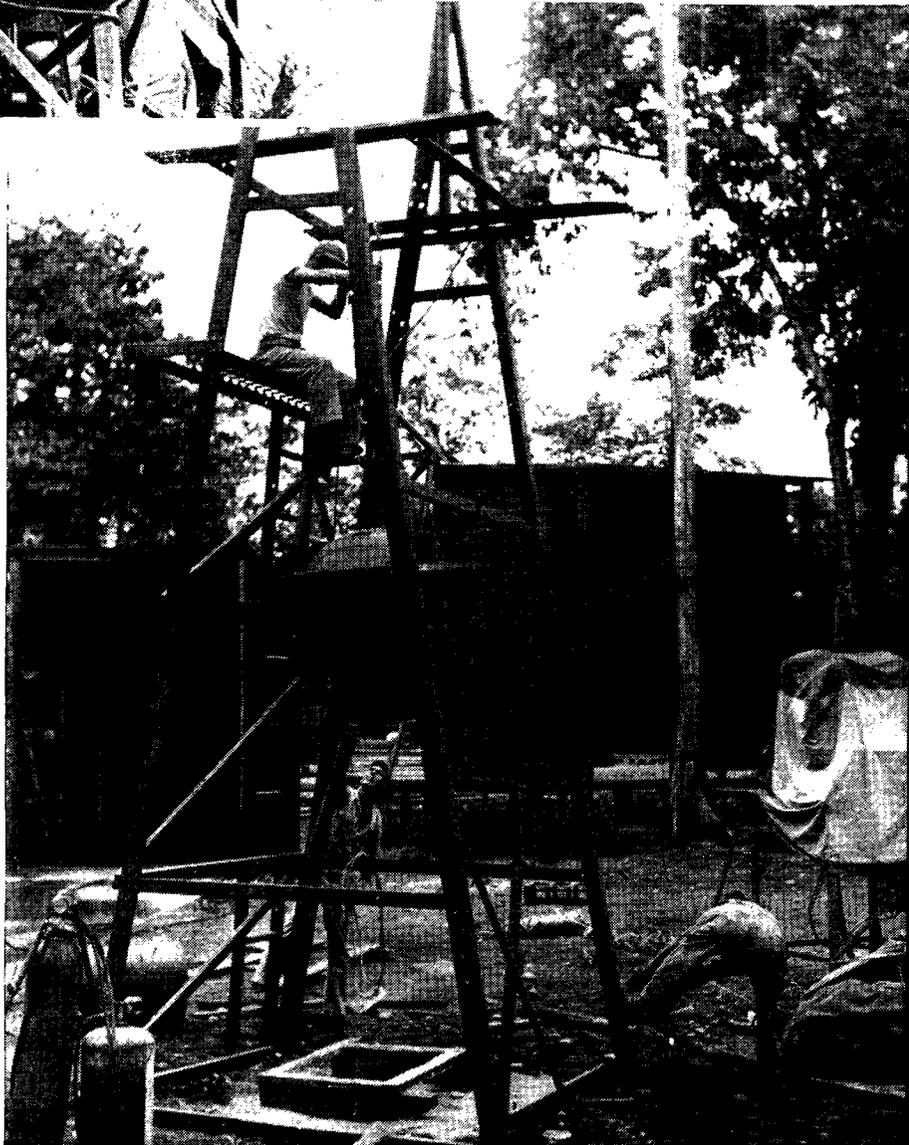
After Colonel Unruh had perfected the operation of the top turret assembly, he installed a nose turret which may be seen on the platform in the background.

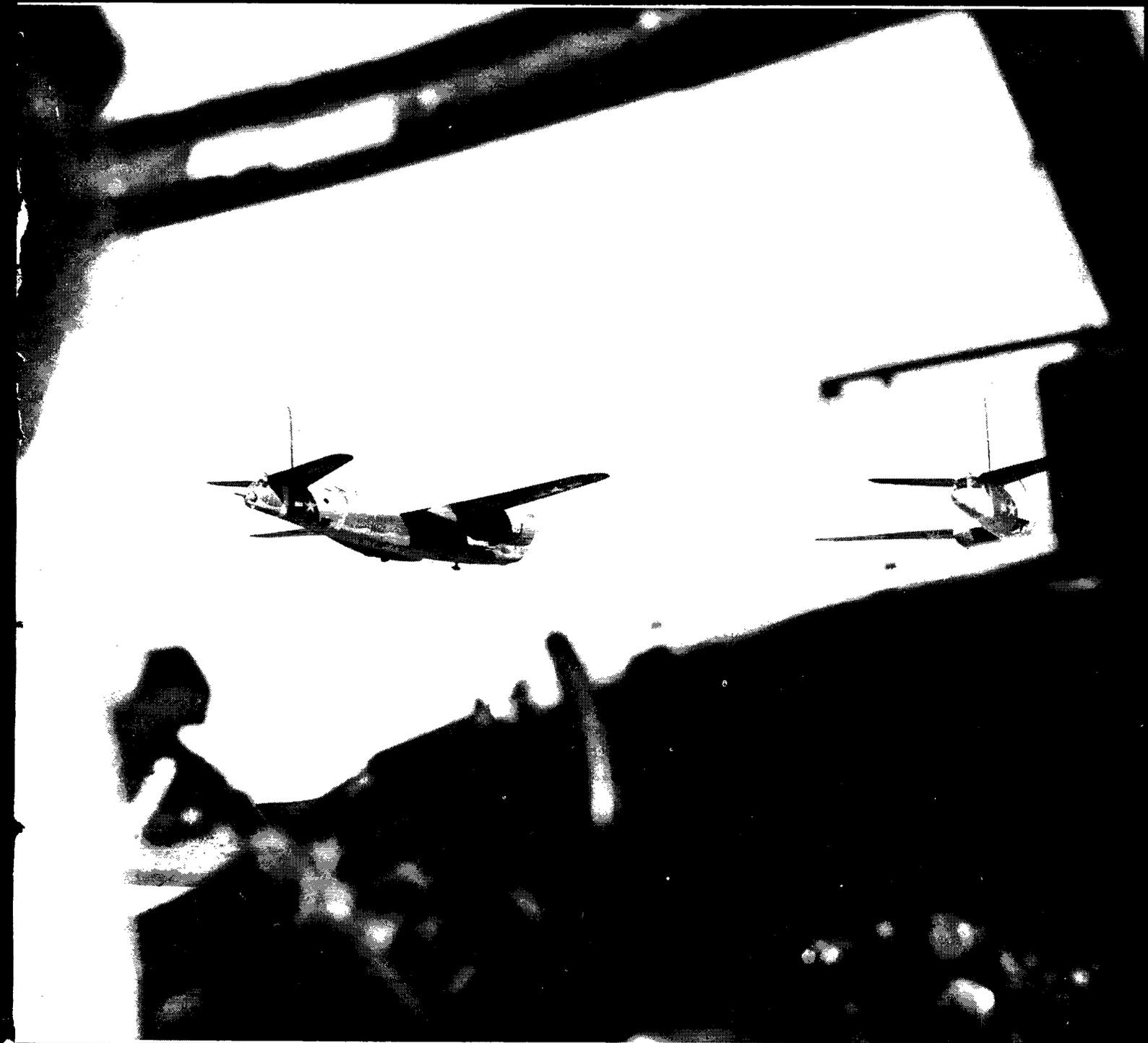


When in operation this model Jap aircraft resembles the airplane ride concession at Coney Island—without music and bagels. The plane, suspended from a motor-driven cam, is controlled to revolve up and down in a complete circle.

The newest addition to the Gunnery School is the belly turret which is being hoisted to the top of a tall scaffold which was designed to provide the belly gunner with the firing angle he will ordinarily encounter in actual aerial combat.

Colonel Unruh discusses with Lieutenant Musick the next water-spouting device to be added to the curriculum, a flexible gun mount for the training of waist gunners. Mastery of all four techniques should lead to a Ph. D. in gunnery.

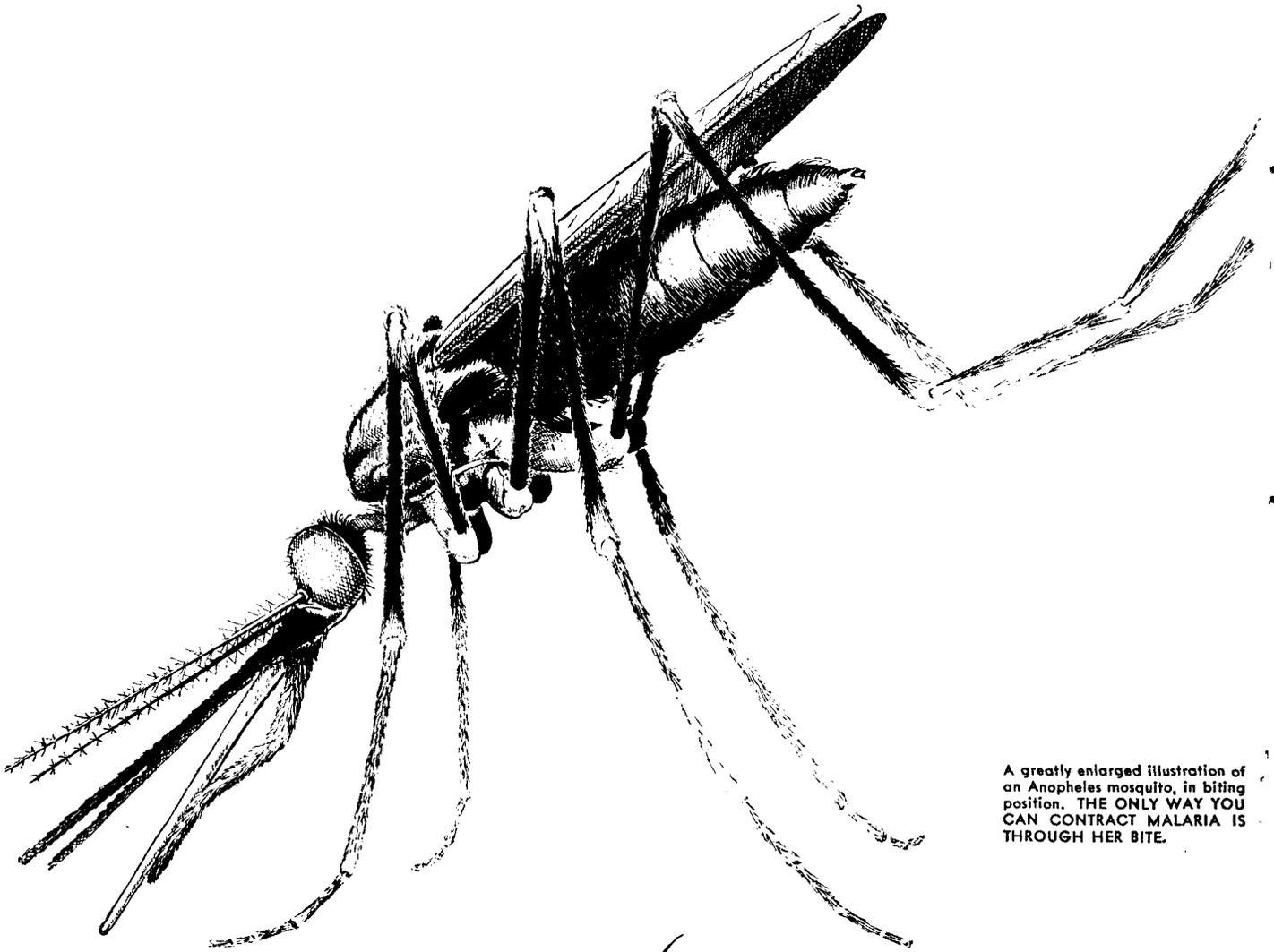




## THE MEDIUMS ARE ON THE JOB

Our medium bombers have long since joined their "big brothers" in blasting enemy targets in war theatres around the world. From bases in England, B-26s are striking German airdromes and communications adjacent to the invasion coast; B-25s and 26s are running missions ahead of our ground forces in Italy; Mitchells, many of them with fire spouting from 75s in their noses, are pasting the Japs in Burma, China, in the Southwest Pacific and now, with the capture of forward bases, in the Central Pacific area. Bombing and strafing operations of the mediums against enemy airdromes in the various combat theatres have accounted for the destruction of Jap and German aircraft by the hundreds. This unusual photograph was taken from the cockpit of one of the planes in a B-26 formation headed for targets in northern Italy.

# This, too, is your enemy



A greatly enlarged illustration of an Anopheles mosquito, in biting position. THE ONLY WAY YOU CAN CONTRACT MALARIA IS THROUGH HER BITE.

## PROTECT YOURSELF AGAINST MALARIA

1. Sleep under a mosquito net.
2. Use your head net. Keep your sleeves and trousers rolled down and your collar buttoned. Wear protective clothing.
3. Use issue repellents on exposed parts of your body and on your clothing where it is tight.
4. Use GI sprays and bombs to kill mosquitoes wherever possible.
5. Avoid needless exposure, especially at night. Stay away from native villages.

T A K E   A T A B R I N E   A S   P R E S C R I B E D

# AIR FORCE

THE OFFICIAL SERVICE JOURNAL



OF THE U. S. ARMY AIR FORCES



MAY 1944



# CROSS COUNTRY

**I**F you're sweating out some mail in a converted Italian palace, a New Guinea tent or one of the Nissen huts the AAF maintains here and there, you probably have good reason to grouse—but perhaps not at the Army Postal Service.

More than 25,000,000 pieces of mail are being sent overseas each week. And according to a recent War Department statement, fifteen percent of that mail is first incorrectly or insufficiently addressed, a serious, growing problem.

To eliminate unnecessary delay or loss of mail, the War Department is stressing that a complete address must list: (1) rank, (2) full name with middle initial, (3) Army serial number, (4) service organization or unit, (5) APO number and (6) the postmaster at the Port of Embarkation through which the mail is routed.

You know all that, of course, and the War Department is making every effort to tell the folks back at home about it. But you can help by giving them full information in your own letters and reminding them always to use the complete address. If the proper instructions are carried out, then those letters from home should be on hand when the mail shipment arrives.

## 30,000 RELEASED

When, during March, some 30,000 men of the Ground and Service Forces who had volunteered for, but not yet commenced flying training were released by the Army Air Forces and returned to their original services, the War Department stated several reasons for the action.

The first was a reduced requirement for manpower in the AAF. General Marshall pointed out that the AAF was approaching complete air supremacy in practically every theatre at a much faster

pace than the Army had dared to hope, and that the combat losses were considerably less than the anticipated percentage on which development of the AAF had been based.

The second reason was the general shortage of trained personnel throughout the Army. Due to the cumulative shortages which had developed in the Selective Service since last July, it has become necessary to utilize every available soldier to meet current demands for pending operations. Thus, the AAF was really returning the favor of manpower assistance that was extended to it in the earlier days when, faced with the need to create the world's largest air force, thousands of picked men from the Ground and Service Forces were permitted to volunteer for AAF service.

In its statement, the War Department made it clear that the AAF need for picked young men will continue and that this transfer did not imply any intention to stop training or the future acceptance of applications from 17-year-old-men. Temporarily, however, enlistments of 17-year-olds in the Air Corps Enlisted Reserve have been suspended.

General Arnold, in a letter made public at the time of the release, said:

"I take this action with the full knowledge of the disappointment it may bring to some of the men concerned, and to them goes my heartfelt appreciation for their proffered services. Beyond this

feeling is one of strong pride in the combat crews now trained, who by their aggressive superiority in the air have permitted me to reduce somewhat my training requirements in terms of men needed.

"I am further gratified that the AAF is able in this critical manpower period to release excellent men, to serve in those branches of the Army for which they have already received training. It is my belief that their presence in combat will shortly be felt by the enemy."

## WHAT'S GOOD FOR THE GANDER

Women's Airforce Service pilots will be given training similar to that of AAF officers, according to AAF Letter 40-7, dated 27 March 1944. A training course for this purpose has been established at



... bring May flowers.

## THE FRONT COVER

With her tour of combat duty at an end, the Blue Streak, B-24 of the 15th Air Force, circles Mt. Vesuvius as a farewell gesture before heading for the States.

the AAF Tactical Center, Orlando, Fla., and the first class of fifty students was scheduled to begin April 19. Subsequent classes will enter the first and third Wednesdays of each month until all assigned WASPs have received the prescribed training. Each class will be in training for approximately four weeks.

#### QUOTES FROM BRITAIN . . .

Maj. Samuel L. Davis of Wabun, Mass.: "All I could think of at the time was 'My God, here I am over Berlin—and can't write my wife about it.'"

Public relations man, 8th Air Force: "Their majesties, the King and Queen of England, stopped at this field today, inspected both Fortresses and Liberators, talked with crew members, discussed flying tactics, had tea and went on."

Lieut. Norman Gill of Lombard, Ill., co-pilot of Missouri Mauler: "Today was the 13th and it was my 13th mission. I drew ration kit No. 13 and there was a No. 13 camera aboard. Now there are 13 flak holes in our ship."

Capt. Robert W. Waltz of Akron, Ohio, speaking of Capt. Edwin McMichael of Colonia, N. J.: "Fifteen seconds from the bomb release line, flak ripped into our bombardier's forearm, yet he struggled back to his position in time to release his bombs on the target. What McMichael did is the thing they give medals for."

Staff Sgt. J. J. Verbitsky of Miami, Fla., gunner on Swamp Angel: "Any flyer who doesn't get one of those flak suits and use it is nuts. I had an extra one on today. I had a hunch and put one over my head. A piece of flak bounced off it, knocking me down."

Lieut. Harold T. Barnaby of Waco, Texas: "I turned into them and then dived to 8,000 feet and hid. I circled in broken clouds for five minutes. Then I came out and they were waiting for me. I ducked back in the cloud, I stayed in the clouds for another ten minutes, then came out. They were gone and I headed for home."

#### TO THE LETTER

Now and then we hear of men in the AAF who are so determined to carry out instructions that they follow orders

even when they blow out the window. From Key Field, Meridian, Miss., comes this story of a new member of a P-39 ground crew.

"There are three things I want you to do before a flight," his commanding officer explained. "Put a parachute in the cockpit, help the pilot put the chute on and then have him sign the Between-Flight Inspection Form."

On hearing this simple, however solemn injunction, the young crew member was duly impressed. That afternoon an officer, about to fly this same P-39, approached the plane unnoticed by the ground crew, climbed in and put on the chute. In a flash the new man was on the wing of the plane.

"Lieutenant, will you step out of the

Technical School Squadron, Sioux Falls (S.D.) Army Air Field, less than a year ago he has sold \$50,000.000 worth of policies. For this he was recently selected the field's Soldier of the Week.

#### PARACHUTE BRAKES

Only slightly at variance with crack-pot inventions which have been showering upon aviation for forty years, the crew of a B-24 recently made a landing at a fighter strip at Tarawa by throwing out their parachutes to form enough wind drag to stop the big plane. With their brakes destroyed in a ninety-mile battle with thirty Japanese planes, these 7th Air Force boys cut their landing speed approximately forty miles an hour, and further aided by a dragging ball turret, the B-24 rolled to a stop just as it reached the end of the runway.

Piloted by Lieut. Charles F. Pratte of Warren, R. I., the plane was prepared for the landing by a parachute attached to each of the waist gun mounts and a third one laced to the fuselage bracings in the tail. Just as the wheels touched the hard coral surface of the landing strip the parachutes were released. They billowed out almost simultaneously and the bomber rolled to a stop.

The novel arrival was witnessed by a group waiting for a naval officer who was scheduled to make the first landing on the newly completed fighter strip.

#### WAR DEPARTMENT THE CHIEF OF STAFF WASHINGTON

9 March 1944

Dear Arnold:

On the occasion of the second anniversary of the establishment of the Army Air Forces under the reorganization, I wish to send you my sincere thanks for the vigorous and unflinching support that you have rendered me. I congratulate you on the outstanding job that you have done as Commanding General of the Army Air Forces in these two short years. In this tremendous expansion the entire Army has undergone, your part was by far the largest and most far reaching and I know you are gratified by the results that these efforts are reaping. Your flyers, with their supporting units, are spear-heading the attacks in every theater and their amazing effectiveness is the finest tribute I can imagine to you and the members of your staff.

General H. H. Arnold,  
Commanding General,  
Army Air Forces.

Faithfully yours,

(signed) G. C. MARSHALL

plane?" he implored. "Please step out of the plane." Thinking that surely the thing was booby-trapped the pilot leaped out. Whereupon, the new man removed the chute from the cockpit, then replaced it. He asked the pilot to crawl back in and then helped him into the chute. When this business was completed the GI then presented the inspection form for the pilot's signature.

After this confusion it was to the pilot's credit that he flew away in but one direction.

#### INSURANCE SALESMAN

Pleasant thoughts of being in business for himself must have floated through the mind of Staff Sgt. Wolfe W. Rosenstein recently when his total sales of insurance for a day were \$1,500,000. Since Rosenstein became insurance clerk of the 654th

#### AAF AHoy

Air Force men who have felt the call of the sea will welcome the news that the AAF has need of additional men to operate the boats used in its world-wide emergency service, whose mission is to locate and rescue flyers who have been forced down over water.

The surface craft employed in this service range from the 17-foot swamp glider to the 104-foot seagoing rescue boat. The craft are gasoline powered, swift, seaworthy and well equipped for the performance of their mission. Crews vary from three to thirteen men and are commanded by commissioned, warrant or noncommissioned officers, according to the size of the boat.

The emergency rescue service needs experienced personnel to serve as masters, mates, engineers, radiomen, medical tech-

nicians, boatswains, cooks and deckhands. It is desirable that candidates for this service have previous small-boat experience, preferably with high-speed boats. It is essential that candidates be in good physical condition and it is desirable (though not essential) that they be under 36 years of age. Officer applicants must be in the rank of first and second lieutenants.

Accepted applicants will be sent to a training center in one of the southern states for twelve weeks of individual instruction in their specialty such as navigation, seamanship and engineering, and an additional six weeks of unit training to include boat handling, ship drills, rescue techniques, combined operations with aircraft and similar practice. Outstanding accomplishment during this training period may result in promotion and, upon completion of the training, crews will be formed, assigned to ports and sent to duty stations.

Applications should be addressed to the Commanding General, AAF, Attention: Assistant Chief of Air Staff, Personnel, Washington 25, D. C., and must be forwarded through military channels. The following information should be included: Request for transfer to AAF emergency rescue boat activities; name, grade and serial number; age, height, weight and color; education and general classification test score; present assignment and duties; history of applicant's boating and military experience.

### RIGHT PATTERN, WRONG FIELD

It happened at San Angelo, Texas, a city which has two airfields located only a few miles apart. First Lieut. Jackson B. Cox said he got the story second-hand, but from a reliable source.

The story goes that the pilot of a transient B-24, deciding to land at Goodfellow Field, called the tower for instructions and was told to come in on the left-hand pattern. Since several other planes over the field were doing it right-handed the B-24 pilot checked the tower again to make sure.

The tower verified "left" so the B-24 broke the pattern and came in as instructed, landed and taxied up in front of Operations. The operations officer came raging out and started giving the pilot hell for coming in the wrong way.

Immediately on the defensive, the pilot called the tower but before he could say anything the tower man demanded, "Where are you?"

"Where do you think I am?" the pilot howled indignantly. "Are you blind? I'm right in front of your damned Operations."

"Brother," came the answer, "If you're sitting on the ground, you're not at Goodfellow Field." The B-24 pilot wasn't, either. He had Goodfellow on the radio but had landed at San Angelo Field.

### MISSION ACCOMPLISHED

A WAC lieutenant at an AAF port of embarkation on the Atlantic coast was confronted by a problem which, while not new to her species, presented her with a state of mind that women have enjoyed since the beginning of time. The WAC had a beau in Hawaii and another in Texas and while she might have been happy with either, were t'other dear charmer away, the absence of both young men was a thing hard to bear. As in many cases of this kind, the girl's problem became the problem of everyone around her and much advice was given and many predictions were made. One day the man in Texas seemed to have the upper hand, while a little later it appeared that the gentleman in Hawaii would certainly win.

Recently, however, according to our scout, two lieutenants reported at the port of embarkation for transfer overseas. The WAC processed them both on Monday, and Tuesday she married the one of her choice. Reporting for work on Wednesday the young lady sighed, "Thank goodness my problem is solved." Our only comment, and we're not sure that a comment is required, is that at least all men involved were members of the AAF.

### THE WARDS OF HAWAII

The Women's Air Raid Defense organization in the Hawaiian Islands is made up largely of attractive young women who previously had done volunteer air raid warning work in the United States. Each girl is bound by a one year Civil Service contract and her salary may range from the \$140 beginners' pay to

\$225 a month. Previously, air raid warning work in Hawaii was primarily the responsibility of officers' wives, but since these women usually wanted to leave after their husbands had been transferred, the jobs were put on Civil Service status early in 1943 when recruiting was conducted quietly in San Francisco for a small and select group of girls to work in Hawaii. Recruiting was done through the personnel officer of the Air Defense Wing in San Francisco, and the jobs were offered to unmarried girls between 20 and 35 years of age with at least a high school education. After the initial groups were taken to Hawaii the quota was lowered until now a very small number of girls are taken each month.

The WARDS live in a group of attractive two-story houses, close to their work. For \$4 a month a WARD is provided with a bedroom, bathroom and completely equipped kitchen. Groups of them usually live in two-bedroom units. The WARDS provide their own attractive, inexpensive uniforms and pay for their own meals. They have all the privileges of the post and mess at the officers' club, although some prefer to prepare breakfast and an occasional dinner at home. The girls are required to wear their uniforms on the post, but otherwise they may dress to suit themselves. Not one of them has been known to buy a hat, and stockings are seldom worn. To most of the WARDS the job and the climate of



With the WARDS mail time is an adventure, as with all people in the service, and two members (right) appear to be engrossed with intelligence from the States. They wear gold wings after completing three months of satisfactory service. They have free run of the post and enjoy the same rank and consideration as commissioned officers. Many have been quick with the Hawaiian custom of a flower in the hair.



Hawaii bestows a holiday from the expense of new clothes.

When WARDS arrive in Hawaii they are given two weeks' training before they take up the routine of six-hour shifts, which are so arranged that each girl works an equal number of hours during the night and day. They get a 36-hour break every eight days and one day off in every twelve.

Some of the girls were born on the islands; others, though recruited in California, represent a large number of states. Among them are former school teachers, Junior Leaguers, secretaries and college students. Every WARD on duty has passed the Army General Classification Test with a better than an average grade.

Incidentally, the curfew on dates with WARDS is 2200.

### TRANSITION

Randolph Field changed cadence on March 18 when it ceased to be the largest basic flying training field in the country and took over a greater and more urgent task of training instructors in every phase of the Army Air Forces program.

When the last cadet marched out of Randolph he took with him the trappings of preparation. The "eager beaver" is gone from Randolph and so is cadet lingo and the short haircut. Gone are the white-gloved hands swinging in march-rhythm, the rigid backs of a thousand "mistfers" in the cadet mess, the bark of the adjutant "publishing his orders."

Randolph, on that day of transition, became the Central Instructors' School for the nation. The men of the school now wear wings and bars and they are learning how to teach better than any

other instructors have ever taught. They are graduate flyers, a little older and a little tougher, and they are coming by hundreds to Randolph. From there they will go to every flying field in the country to impart their new understanding to thousands of other flyers.

### PICTURE MIX-UP

Due to an inaccuracy in identification at their source, two photographs were published in the Roll of Honor section of recent issues of AIR FORCE with incorrect captions. In the January issue, a photograph of Capt. Robert Morris Creech was identified as that of Lieut. (now Capt.) Henry D. Chism, who had been awarded the DFC and the Air Medal. Incidentally, Captain Creech also holds the DFC, with two oak leaf clusters, and the Air Medal. In the March issue, a photograph of a Capt. Don A. Johnson was published. It was not the likeness of the Capt. Don A. Johnson referred to in that month's Roll of Honor.

### 'KNOW THYSELF'

Our flight surgeons are striving toward the ultimate goal of closing a gap between the potentialities of modern airplanes and the limitations of flyers. A cogent statement of their problem is included as a foreword in *Physiological Aspects of Flying*, listed as Technical Manual No. 1-705. The relationship between men and their planes is explained this way:

"During the last war and until a few years ago it was said that a pilot is only as good as his airplane. This is no longer true. In the race for higher speed and greater altitude, the performance of airplanes has moved relentlessly ahead until now it is the airplane that is vastly superior to the pilot. In fact, it would seem that, like Frankenstein, we have created a monster which, if not handled correctly, can easily destroy us by its actions.

"The inventors, engineers and manufacturers of the new airplanes are doing the jobs demanded of them; building airplanes capable of greater range, greater altitude and greater speed, and making them large enough to carry enormous loads. Now it is the job of the flight surgeons, the scientists and the doctors to close the gap between the potentialities



—FRITZ WILKINSON

ties of the airplane and the limitations of the flyer. That they have been doing so cannot be disputed.

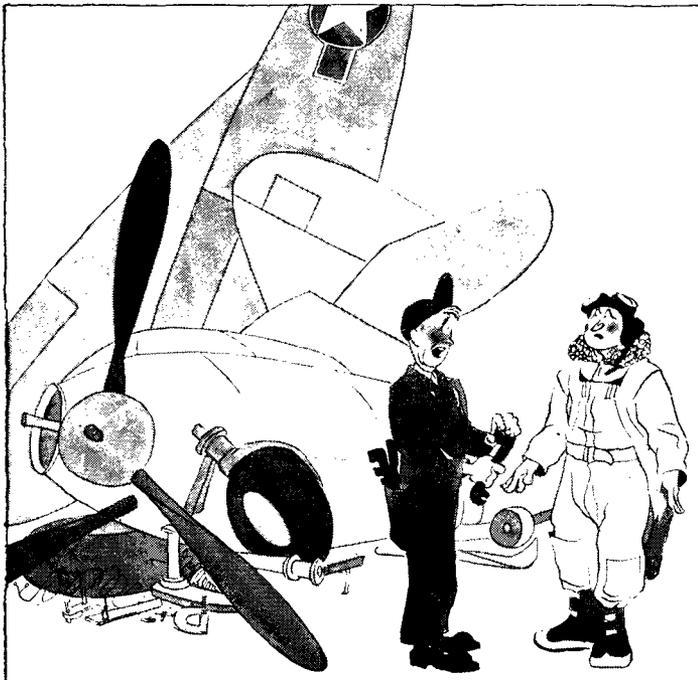
"The flight surgeons cannot find the answer to a problem until they know what the problem is. After a new type airplane is developed, scientific problems arise. These problems are met and they are solved. Each day we come closer to the long-dreamed-of complete mastery of our newest environment—the air.

"In the comparatively short history of aviation it has been shown that the majority of crashes are not caused by mechanical faults but by the pilot's error. There are reasons for these failures. . . . It is important that the airman realize his shortcomings and weaknesses and learn how to compensate for or prevent them. When a crew takes to the air on a mission it leaves behind the flight surgeon. If one of the flyers fails through his own lack of knowledge and training, he does more than jeopardize his own life and the lives of the other crew members—he jeopardizes the safety of his country. A mission may fail simply because an airplane is flown at 28,000 feet instead of 35,000 feet as a result of one of the men developing bends."

"The ancient Greeks, who strived for the ideal in physical and mental perfection, had a great motto: 'Know Thyself.' The flyer, by following these two simple words, will never fail either himself or his country."

### ONLY HUMAN

Retribution has fallen upon Pfc. Harry W. Siebels, payroll clerk of Hq. and Hq. Sq., Daniel Field, Augusta, Ga. As a payroll clerk we naturally supposed that Siebels enjoyed certain pleasures of the orderly room which are denied other brethren. Apparently not. After sweating out the payroll line recently, envisioning that whopping \$54, minus deduction,



"It all started with a small squeak in your door, sir."

—JIM RAWLS & PFC. R. R. KIEKER

Siebels eventually came before the CO and rendered a lively salute. A moment later Siebels was slinking away empty-handed. He had been red lined.

### ROGER!

Tech. Sgt. Richard R. True of Indianapolis has credit for 275 combat hours on fifty missions, and while his ship was damaged by flak or gunfire on every mission the sergeant and his crew never received a scratch. Sergeant True, a radio operator and gunner, now assigned as an instructor at Sioux Falls airbase, does not credit his fortune to good luck charms or magic potions. His simple explanation is: "I did a lot of praying."

### PARACHUTES: LOST AND FOUND

#### Lost:

Nos. 42-62989, 42-310426, seat type, return to Office of Base Operations Officer, Army Air Base, Godman Field, Ky.

Nos. 42-323189, 42-330805, 42-335145, 42-389261, 42-699874, 42-70265, and 42-433705; communicate with Parachute Department, I Tactical Air Division, Hq. Det., Morris Field, Charlotte 2, N. C.

No. 42-393677, bears name A. L. Banko. Parachute left at Love Field, Texas, with civilian riggers on Jan. 1, 1944. Return to Sgt. A. L. Banko, Heavy Bomb. Section, First Proving Ground Group, Eglin Field, Fla.

Nos. 42-58009, 42-58016, type S-1; return to Maj. Gordon F. Keys, Jr., Flight Test Section, Middleton Air Service Command, Middletown, Pa.

Nos. 42-545266, 43-19407, 43-19479, 43-19751, QAC type; return to 1st Lieut. Eugene H. Duggan, Supervisor of Supply, CAAF, Childress, Texas.

Nos. 42-32114, 41-41388, type B-7; return to 312th Sub-Depot, Victorville Army Air Field, Victorville, Calif.

No. 42-599228, return to 32nd AAF Technical Training Detachment, AAF Western Technical Training Command, California Institute of Technology, Pasadena 4, Calif. Attention: Capt. Teddy F. Walkowicz.

#### Found:

Nos. 42-209285, 42-387755, 42-387743, 42-209318, 42-209327, 42-394133, 42-209287, 42-445890, 42-387630, 42-384011, 42-209337, 42-306570, 42-387846, 42-209326, 42-538498, 42-277220, 42-209286, 42-306554, 42-209339, 42-291791, 42-306674, 42-387867, 42-458832, 42-306702, 42-306659, 42-384020, 42-394294, 42-387785, 42-209304, 42-384018, 43-26320, 43-187, AF43-27847, 8300-6-11000, 8300-635750. Communicate with Office of the Supply Officer, Headquarters 71st Sub-Depot, Key Field, Meridian, Miss. Attention: Lieut. Eugene E. Jackson.

### STRIKES TWICE

It is seldom that the 14th Air Force is caught unprepared when the Japs raid their fields, but not long ago they did lose a P-40 by default. The plane had been parked on a repaired bomb crater when a rain came along and softened the earth. The P-40 sank into the hole. Before it could be hauled out, an air raid on the airdrome alerted all ships. Then, despite popular superstition, another bomb hit squarely in the hole of the original crater and blasted out the plane.—THE EDITOR.

**AIR FORCE, MAY, 1944**



Vol. 27 No. 5

May, 1944

## BRIEF

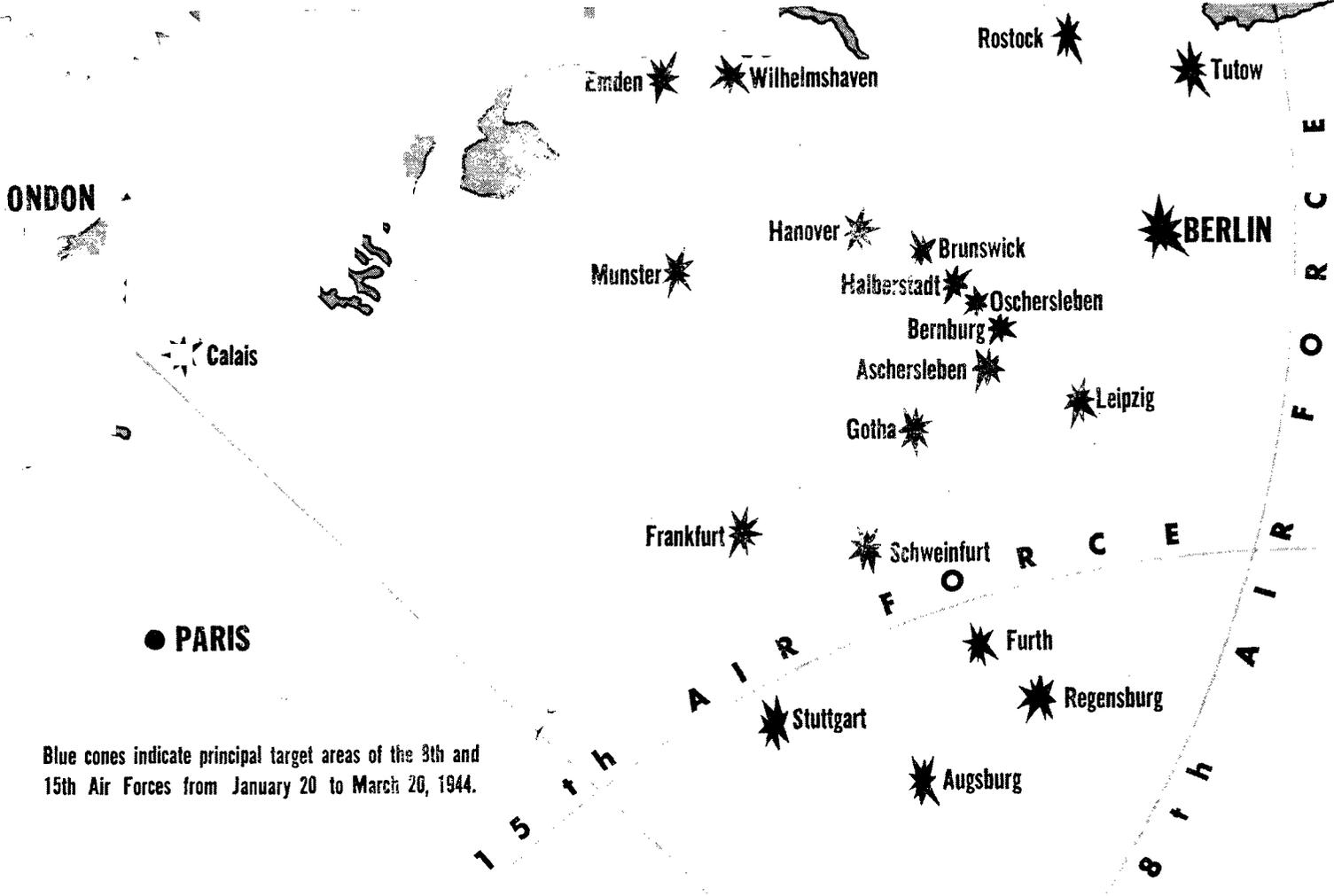
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AIR FORCE (formerly the Air Forces News Letter) is printed monthly by authority of Army Air Forces Regulation No. 5-6, Sept. 6, 1942, and with the approval of the Bureau of the Budget, Executive Office of the President. AIR FORCE is published by the U. S. Army Air Forces at the AIR FORCE Editorial Office, 101 Park Avenue, New York 17, N. Y., U.S.A., for use of personnel of the Army Air Forces and allied activities, and is not to be republished in whole or in part without express permission. Direct communication with this office has been authorized on matters of editorial content, circulation and distribution. Tel., Murray Hill 5-1951; Teletype No. NY 1-2530; Director, Lieut. Col. James H. Straubel, A.C. AIR FORCE is primarily a medium for the exchange of ideas and information among Army Air Forces personnel, and the opinions expressed by individual contributors do not necessarily reflect the official attitude of the Army Air Forces or of the War Department.

# OUR GROWING MASS ATTACK



Blue cones indicate principal target areas of the 8th and 15th Air Forces from January 20 to March 20, 1944.

Map by Paul Reed.

**Maj. Arthur Gordon, Air Force writer with the U. S. Strategic Air Forces in Europe, continues his monthly report on the air war in that theatre.**

THE month of February left the Luftwaffe in the uncomfortable position of a starving man who has a few loaves of bread in the house but whose neighborhood bakery has burned down. As March began, air observers in Britain were waiting watchfully to see how the victim would use the resources left to him. Would he continue to eat as heartily as ever until the supply was gone, or would he weaken himself by adopting a stringent diet? That was the crucial question as the air war moved into the lengthening days of spring.

Our last dispatch from this theatre was filed just as the great February blitz on German production was reaching its climax. The date was February 25. That morning heavy bombers from the 15th Air Force, based in Italy, roared across the Alps to attack the Prufening Messerschmitt factory in Regensburg. One hour later the same target was hit by British-based heavies escorted by fighters making the longest round trip of the war. Other

8th Air Force formations attacked Augsburg, Stuttgart and Furth. The day was a landmark in the air war over Europe. More than 2,000 American planes, operating from bases 1,000 miles apart, were launched against Germany.

The six days between February 20 and February 25 were most significant in the history of strategic bombing. In some 3,800 bomber and 4,300 fighter sorties, the 8th and 15th Air Forces attacked factories whose estimated production was more than two-thirds of Germany's single-engined and more than three-quarters of her twin-engined fighters. The cost was high. On February 24 the 8th Air Force alone lost 49 heavies over Schweinfurt, Gotha and Rostock. The next day, when two American spearheads met at Regensburg, the 8th and 15th expended a total of 65 heavies over this and other targets. Altogether, in the cyclonic month of February, 250 four-engined bombers failed to return to their bases. But at the end of the month, looking at their PRU pictures

and damage assessments, the chiefs of the Strategic Air Forces knew that the price was not too high.

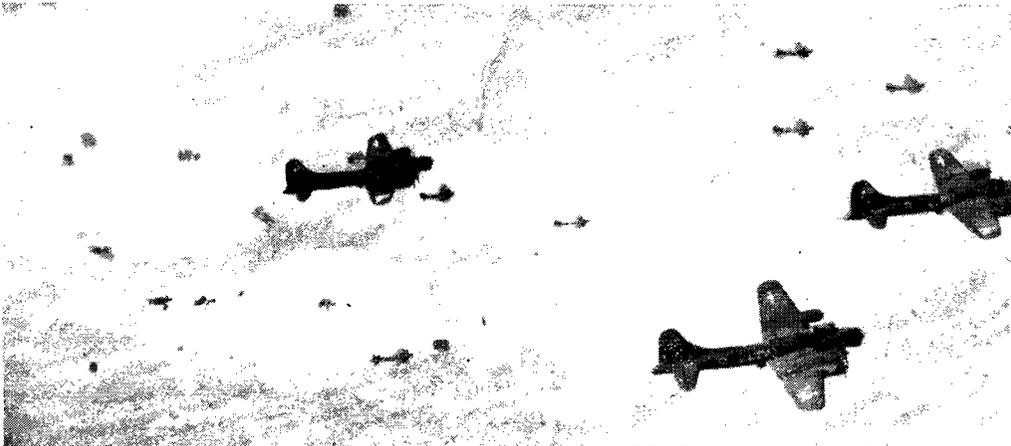
They knew without question that during February the wastage of the Luftwaffe's fighter strength exceeded its replacement capacity by a substantial margin. They estimated that the productive capacity of the Nazi aircraft industry as planned for March was down by at least fifty percent for an undetermined period. Just how long a period depended on the recuperative capacity of the Germans and the ability of precision bombers to return to the targets when factory repairs had advanced sufficiently to make it necessary. Even pessimists conceded that without further bombing the crippling effects of "Blitz Week" would last between one and two months.

This was not long but it might be long enough. If the strain on the Americans had been great, the pressure on the Luftwaffe had been almost unbearable. During February the American heavies claimed 540 enemy fighters destroyed in combat. American fighters, whose camera guns made reliable checking easy, shot down 365. There was little doubt that the German Air Force was taking a beating which it could not stand indefinitely.

This did not mean that the Luftwaffe could be discounted as a formidable fighting force. Its front line strength was being maintained intact, partially at least from stored reserves. Its pilots were still



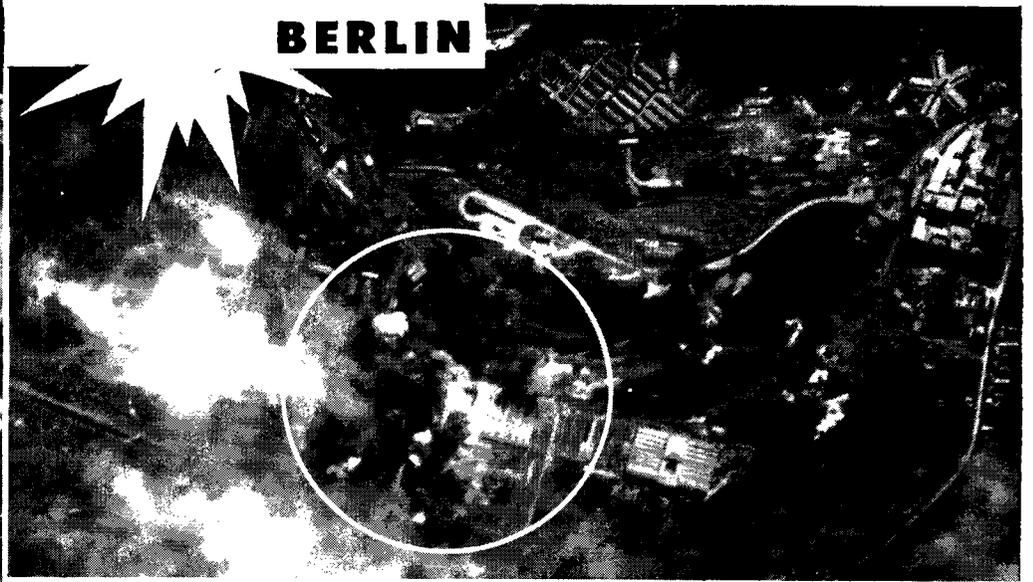
Flyers from the villages of America, the open spaces and the streets of big towns have just learned that their target is "Big B," war name for Berlin. Solemnity, surprise and outright enjoyment show on the faces of these men who have come all the way to war so quickly from college, factory, office and store. Below, some of the U. S. 8th Air Force Fortresses pass through a flak-filled sky over the greater Berlin area en route to hit Reich industry and break the back of Nazi war production.



Berlin's Sportspalast (below), famous athletic arena, stands out beneath our raiders on March 6.



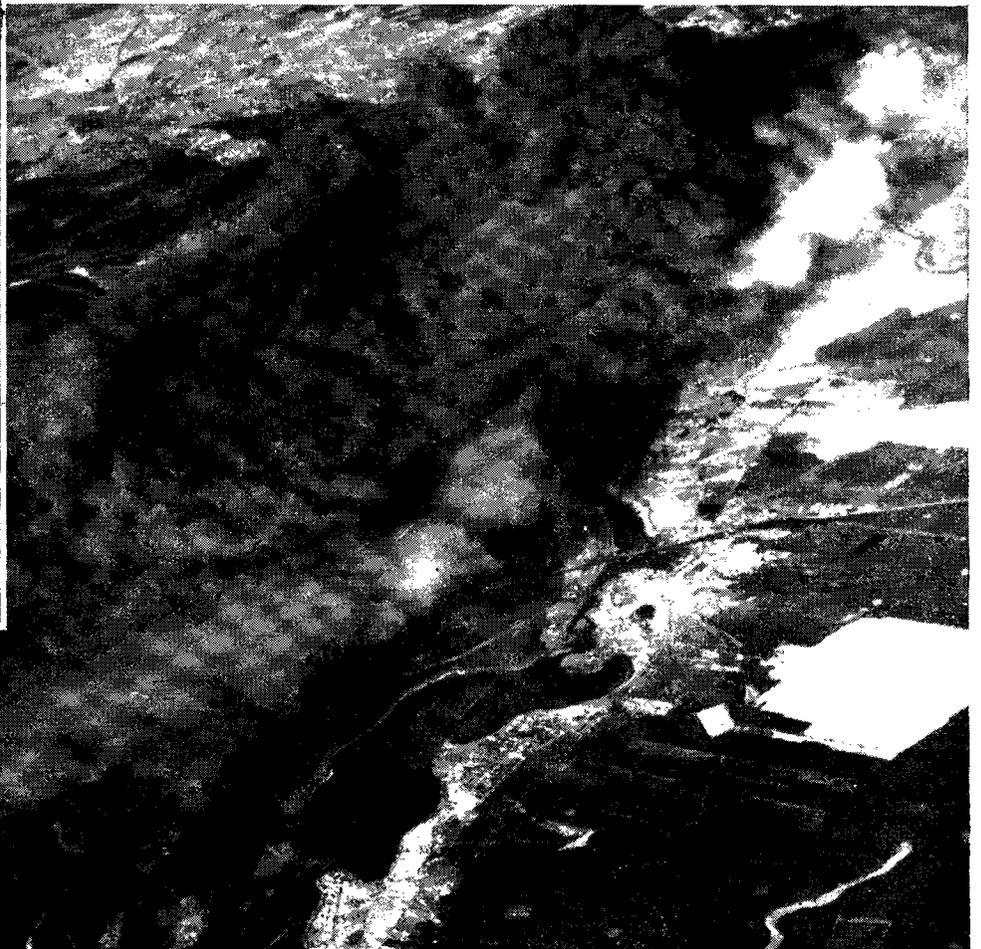
# BERLIN



Encircled above are bombs crashing into the target area, the AAF's second attack on the Reich capital. Seeking to protect their ballbearing works and other vital installations the German Luftwaffe came aloft in great strength and fought with a ferocity they had never shown before. Six hundred enemy planes were encountered and the flak was accurate and intense. One Mustang group claimed 20 enemy craft destroyed. In all, escorting fighters knocked down 83 opposing planes.

Bombs (left) from American heavies start their descent toward an industrial target during the large-scale daylight operations against Berlin. Marked for this March 6 attack were important aero-engine ballbearing and electrical equipment plants around the Reich capital. Total weight of these bombs was reported to have been 1,500 tons, and the prospects of having their vital bearing plants destroyed brought the reluctant Luftwaffe into the air in respectable strength.

On March 8, bomber crews were briefed to strike Erkner, sixteen miles southeast of Berlin, and visibility was near perfect to attack this plant which produces one half the minimum annual ball-bearing requirements of the German Air Force. Reconnaissance pictures taken two hours after the strike showed large fires in the plant and extensive damage to the only visible building. AAF aircraft encountered no opposition planes until they were deep inside the defenses of Germany.





Spread out like the center page of a travel folder, Berlin looked like the high spot for tourists in Germany on March 8 when this Liberator came down the twisting river Spree which flows beside the Tiergarten (left center), Berlin's counterpart of Central Park in New York City.

good, still brave. Those who read only newspaper headlines and expected the skies over Germany suddenly to be clear were bound to be disappointed.

As early as August, 1912, when the first dozen American B-17s were dispatched against Rouen, the Germans had seen the handwriting on the wall. By the end of that year there had been a definite shift in their aircraft production from bombers to fighters; that is, from offensive to defensive warfare. As the fighting grew fiercer their losses rose but foresight had put them in a position where they could keep production considerably ahead of attrition. By February, 1913, this production was booming along at the rate of several hundred planes a month ahead of losses.

The Americans knew they had to stop this. In July and August, 1913, they made their first big effort. It succeeded momentarily but by September, thanks to rapid repair work, bad weather and the husbanding of their remaining forces, the Germans were again in the black, and Americans had learned, somewhat to the confusion of the man in the street, that a destroyed factory could not be counted upon to remain destroyed. Even when precision bombing wrecked a building, some of the machine tools could be saved and put to work elsewhere in a matter of weeks. The Germans were proving themselves masters of the art of salvage. The miserable weather of November and December, 1913, gave them further op-

portunity to develop and exercise that art.

January was another story. The pressure of daylight bombing was intensified. The coordination between the daylight thrusts of the Americans and the nocturnal blows of the RAF grew more marked. It became almost routine for the AAF to spear a target by day and the RAF to bludgeon the same town that night. Augsburg, Schweinfurt and other cities learned this to their sorrow. RAF officials agreed that when AAF bombers preceded their night raiders British losses were appreciably reduced. The round-the-clock attack added to the strain on the German defenders. In February, the USSTAF finally got the run of weather for which they had been waiting four months. When the smoke of "Blitz Week" cleared away, experts estimated that German production was running almost as far behind wastage as it had been running ahead of wastage in the same month of 1913.

On February 29, Fortresses and Liberators made the third attack on Brunswick in ten days. They bombed through the overcast and enemy air opposition was practically nil. Only one bomber and six fighters were lost.

There were various possible conclusions to be drawn from this. The most probable was that the Germans were unwilling to expend their dwindling forces when bad visibility hampered the American effort. Instrument bombing had made great strides but was still no sub-

stitute for pinpoint visual bombing. Bombs dropped through the overcast could hurt Jerry but not enough to make him risk his precious aircraft. Another possible reason for the Germans' reluctance to fight was weather conditions on the ground. Sending up fighter formations through overcast, under severe icing conditions, was too expensive a pastime for the once prodigal Luftwaffe.

There was, however, a way to force the Germans' hand. Every indication was that they would fight desperately to defend their capital. So the Americans went to Berlin. They went in daylight and they went four times within six days. On at least some of the missions they hardly bothered to conceal their intentions. A fight was what they were looking for.

Luring the Luftwaffe into combat was only one of several valid reasons for daylight blows at the heart of Germany. The great ballbearing works at Erkner, in the suburbs of Berlin, was high on the list of priority targets. The ferocity with which the Germans usually defended Schweinfurt indicated the dependence of their war economy on ballbearing production. The attacks on these plants, coordinated with blows at aircraft industry were designed to make the replacement of aircraft factories more and more difficult.

Then, too, there was the psychological effect to be considered. Berliners were reeling under night attacks by the British Bomber Command. If they lost their



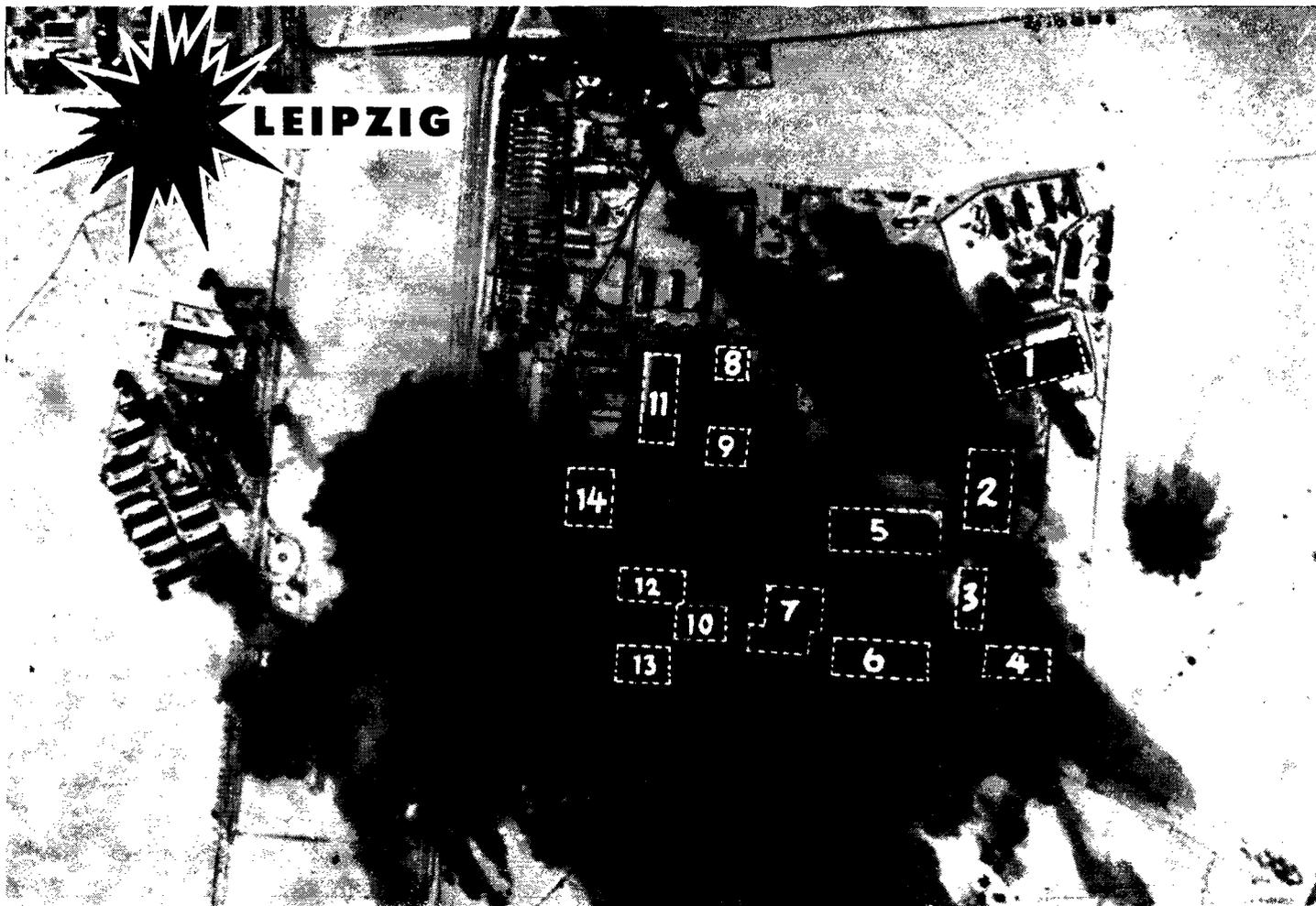
Heavy bombers of the U. S. 8th Air Force head for home, leaving two Messerschmitt plants at Regensburg burning in one of the recent attacks on Germany's net of industrial centers. Every building at the Prufening

plant and at least half of the installations at the Ober-Traubling factory were damaged. Prufening, largest producer of ME-109s, had been extensively repaired since the last AAF attack made on August 17, 1943.

Over two-thirds of the Ober-Traubling area was set aflame by the first group over the target, and later photographs revealed that all bombs had struck inside the area. The Focke-Wulf 190 fighter (left center) is one of the 35 to 50 enemy aircraft which came up to encounter our

bombers. Most of the attacks were weak and took the form of passes, although two groups reported vicious and sustained opposition. There were intermittent attacks along route from the French coast to target. A newly built assembly shop was among the buildings heavily damaged.





Beneath the black pall of smoke which covered the related Messerschmitt components plant at Leipzig-Heiterblick are component erecting shops (1 and 2), small work shops (3 and 4), sub-assembly and dispatch

center (5), component erecting shop (6), workshop or stores (7), boiler house (8), small shop or office (9), power house (10), machine shops (11 and 12), small shop and entrance to works (13) and main offices (14).

fancied daylight invulnerability the effect on their morale could hardly fail to be shattering. In any case, Berlin attacks would reveal whether the Luftwaffe would prefer to accept daylight bombing unopposed by anything except flak or conduct combat on a grand scale.

The first attack on March 4 was not a fair test. Appalling weather, with condensation trails that made formation flying virtually impossible, forced the recall of the bulk of the force. One formation slipped through escorted by fighters whose round-trip penetration of 1,200 miles exceeded even their Regensburg performance and set a new distance record for the war. Very few enemy aircraft were seen over the cloud-shrouded city. Fifteen American heavies were lost but only one as a direct result of enemy fighter action. The cold was intense. One gunner, whose oxygen equipment froze, died of anoxia. The first assault on "Big B," as combat crews called it, was at best a glancing blow.

Still, it gave jittery Berliners a foretaste of what was coming. Two days later, driving straight across northern France and Germany, a great aerial armada fought its way through opposition of unparalleled ferocity. American fighters guarding

bomber boxes reported close to 600 enemy aircraft in the skies over Germany. Living on borrowed time, the Luftwaffe seemed willing to live—and die—boldly. Individually, its planes were no match for our fighters. One Mustang group over Berlin claimed twenty enemy aircraft destroyed, one probable and seven damaged, for no loss. Altogether that day escorting fighters knocked down 83 opposing Germans, losing 11 of their own. The score was somewhat equalized by the fact that a certain percentage of Nazi pilots could, and undoubtedly did, parachute to safety. Still, if any American fighter pilot wanted to claim that bombing Berlin without long-range fighter support would be prohibitively expensive, no bomber man would disagree with him.

Losses were heavy enough as it was. Some combat wings got through easily but others sustained fierce attacks from fighters and rocket-carrying fighter-bombers. Sixty-nine American bombers failed to return to England, the severest loss yet suffered by the 8th Air Force. A few cripples landed in Sweden. These losses were reported promptly with the grim honesty that has characterized Allied air communiques from the beginning. It was announced the next day that gaps in the

ranks were already filled with replacements.

Proof of this was given on March 8 when another very strong force renewed that assault on the German capital. Again the Luftwaffe rose to defend it, but this time its claws were somewhat blunted and air opposition was somewhat weaker. Our fighter escort had another field day again, destroying 83 against a loss of 15. Our bomber losses dropped to 38.

Visibility was considerably better than expected. All crews had been briefed to hit the ballbearing plant at Erkner if they could see it. They all saw it. The factory and the surrounding area were literally smothered under 350,000 incendiaries and 10,000 small HE bombs. A lone American photo-reconnaissance pilot, who flew over the capital a few hours later, brought back pictures that confirmed the story told by strike photographs. He nearly failed to bring them back. In the sixty-below-zero cold his gas gauge froze. As he landed and tried to taxi to the dispersal point, his engine coughed and stopped—out of gas.

When released to the press, the figures on the number of bombs dropped caused various British newspapers to go into an arithmetical dither and come out with



Rocking Schweinfurt again on February 24 (above), heavy bombers piled additional heavy damage upon the industrial area surrounding the ballbearing factories, disabling dispatch buildings and marshalling yards. At the same time, Liberators were busy with ME shops at Gotha as clear weather over both targets permitted excellent visual operations. Thirteen bomber wings, led by Liberators, made the attacks, the B-24s encountering more than 100 enemy aircraft. Escorting fighters met sporadic opposition over most of route and AAF planes dropped 3,976,000 propaganda leaflets. We lost ten fighters and 49 bombers.

man still had a few loaves left. From this confusing pattern of enemy fighter reaction no clear-cut conclusions could be drawn except that the Germans were reluctant to risk their squadrons in bad weather. That the Luftwaffe was being steadily weakened was certain. Just how far from collapse it was, no one this side of the Rhine could say. For the Allies, the future held forth the promise of increasingly better weather and the opportunity to raise the tempo of the air war still higher. To the Germans it offered the bleak prospect of constantly waning strength and the constant necessity for concealing that progressive weakness, either by sulking on the ground or by sending into the air every plane that could be scraped together by stripping trainer and reconnaissance units, converting bombers to twin-engine fighters and reconverting fighter-bombers back to fighters.

**I**N the weeks ahead, visual strategic bombing would remain the prime objective of the USSTAF, with tactical bombing available when necessary. Overcast bombing would continue to be carried out whenever bad flying conditions did not outweigh its effectiveness.

For the Luftwaffe, the defense of key industrial targets would remain priority number one, with an apprehensive reserve always alert to meet the forthcoming invasion. There seemed little doubt that no matter to what extent he might rely on radio-controlled glider bombs or other devices to repel landings, Jerry would almost certainly try to maintain an anti-invasion air force.

To what extent he would succeed, time and the course of the war would tell. ☆

"Blitz Week" closed and the lessons learned were being studied for more violent attacks upon the war-starting Germans. If any American pilot was amind to claim that bombing Berlin would be too costly without long-range fighter escorts, then no bomber man would disagree. The fighter pilot came into his own during "Blitz Week" and here three Mustang men engage in a little "hangar flying" as they recount their deep penetration of the Nazi's aerial barricade. These fighter pilots have been to Berlin. They are Lieut. Robert L. Meserve, Sand Point, Idaho; Capt. Wallace Emmer, St. Louis, and Lieut. James J. Parsons, Seattle.



# THIS IS YOUR ENEMY

New German Parachute



Jap Pilots' Bull Session



Nazi Air Policy

**NOT QUITE ENOUGH ROPE.** String savers in Germany are being advised these days to go after rope. The German Air Defense League has requested its members and others living in districts visited often by our bombers to collect parachutes and ropes which can be used in "sailing shells."

Nazi scientists have made a great many experiments with these shells which, they say, are more effective than barrage balloons. They make a kind of aerial mine-field, being shot to the altitude of attacking formations. When they explode, a rope about 200 yards long attached to a parachute unrolls and sinks slowly to the ground. At one end of the rope is an explosive, which in case the "shell" doesn't hit anything, goes off before it reaches the ground.

**DUCK THESE JOES.** Commanders in the Pacific theatres are handing out stern advice about taking evasive action the moment any enemy planes are seen flying alongside our formations. The Japanese are using air-to-air bombing, and an observation plane is likely to be communicating altitude and airspeed to a bomber above our aircraft. In such instances, changes of altitude and airspeed as well as the usual weaving are in order.

**WOODEN PLANES FOR THE JAPS.** Radio Tokyo announced the other day that the Japanese are building wooden planes, which, the Japs contend, "are necessary as counter-weapons to radio locaters." The announcer stressed that the planes are needed in modern warfare and are not being developed merely because of a shortage of light metals. He mentioned the "Mosquito," a very successful wood job.

**NAZI BOMBING POLICY.** Goering, it appears now, has been over-ruled on a major point of air strategy. Hit-and-run raids by a small number of bombers have been abandoned for the most part in favor of big raids by a large number of aircraft.

Generalmajor Harlinghausen, who was in command of the Mediterranean units of the Luftwaffe in the Sicilian campaign, favored raids by large groups. He contended that continual small raids led to losses out of all proportion to their value

and seriously weakened his forces. Harlinghausen was in favor of withdrawing bomber units from Sicily and North Africa to Italy and using them for occasional large scale operations.

Goering disagreed and removed Harlinghausen. Of late Feldmarschall von Richtofen, who has charge of the Mediterranean campaign, has backed Harlinghausen's ideas and has withdrawn his bomber groups to positions well behind the battle lines and apparently is conserving them for big raids.

**GERMAN HANGOVER.** The Third Reich, which got its start in a beer cellar, is running out of drinking stuff right at a time when the bierhaus characters could probably do with a couple of quick ones.

Beer is still being consumed in the normal tremendous quantities but no one is getting high. It is weak and watery, and only looks like beer. The heavy consumers say that after drinking a few gallons of it a man feels full up—that's all. Wine and hard liquor are expensive and hard to get. Champagne and brandy have been seen in expensive restaurants but the customers have to tip the barmen as much as they pay for the drink, which is plenty.

People have been told that the reason for the scarcity is that all available liquors have been sent to the forces fighting in Russia. The fellows in Russia who *really* need a drink are told that liquor is being held for the suffering population in Germany.

Actually, alcohol is being used for motor fuel.

**THAT OLD NASU-NO-YOICHI.** We have here an interview printed in *Fuji*, a magazine read by a number of Japanese only, we guess, when they have nothing better to do. Four flying officers are doing the talking and some of it is pretty good and quite a lot of it fairly honest. We present a few quotes:

"They used a machine called a 'bulldozer,'" one fellow said of us, "which levelled trees and mounds just like a chisel-plane. One machine did the work of a thousand men, so that twenty machines with twenty drivers were as efficient as 20,000 men working here from morn until night. . . ."

"I have spent three years in training

pilots," another was quoted, "and as a result of my experience, I feel that the Japanese are entirely suitable as pilots. Everyone acknowledges that the Japanese are clever with their hands, but I think that they are also much quicker in learning the knack of things than foreigners. Further—and this is my own personal opinion—in controlling a plane, a pilot's feet are the most important. In the sensitivity or touch of the foot, the Japanese are thoroughly trained from childhood through wearing 'geta,' walking on stilts or by other means. This is very convenient for controlling a machine. Our pupils come to us from the flying school at the age of seventeen or eighteen and in about three weeks they are performing solo flights. They go up with an instructor for a full five or six hours and then they can fly by themselves splendidly. For this purpose they also undergo various exercises on the ground, but even so to become so proficient in such a short time means they have a gift for it."

"You have only to look at their dancing," one man (who obviously had never spent any time in Roseland) said, "to know that the Japanese can move their feet far more nimbly than foreigners."

"Our greatest problem," said another, getting worked up, "has been the enemy's Boeing B-17 heavy bomber. We met these first in Burma, where Ashihara brought one down. Afterwards, however, they added some special equipment to them and they reappeared at Guadalcanal. We intended to treat them as before, but this time could do nothing against them. They were most insolent and overbearing in their behavior. Ships could not bring us supplies, so we were without food. If we did nothing, we should starve helplessly. By some means or other, these Boeings had to be brought down—such was our problem. In Japan, too, all the experts were assembled trying to devise a way to bring down a Boeing, but no good idea occurred to them. Yet to leave the problem unsolved meant that we should starve by inches. At last, on the front line, one was brought down by flying up against it. It was just then that I was going out to Guadalcanal. The enemy was afraid of this kind of fighting and so the Boeings did not appear again for some time. If they were struck all of a heap, they had no way of defending themselves. So for two

or three weeks they didn't appear. In the interval we completed our transfer from Guadalcanal without further loss. If the Boeings had been rampaging around we could not possibly have effected our transfer. When our experts in Japan heard about this, they couldn't contain themselves. By burning midnight oil, they quickly made the necessary alterations in our equipment and sent them out to the front line. When they arrived, knowing that something 'big' had come, we were quite excited. Afterwards, when the enemy came over, the commander-in-chief called up a certain pilot and said, 'You are the Nasu-no-yoichi of the Showa Era. Come back with the enemy destroyed!' The pilot was deeply moved, and mounting up in the plane he displayed the valor of a Nasu-no-yoichi and brought down the enemy at the first attack. . . ."

The most emotional note in the inter-



These wooden belly tanks for Japanese planes were found near the Munda airfield after it was taken by American troops. The tanks are of good design and light construction but vulnerable to 50 mm fire.

view was sounded by Jiro Chikusni, a squadron leader, when he was talking about the necessity of killing us. (He calls Americans "Hairy foreigners.") Chikusni said, "If I had a son, I would say to him, 'Be an airman. If you can't shoot down the enemy's plane, then crash into him.' Only a parent could say that. . . ."

**PLENTY OF GERMANS LEFT.** Toward the end of 1942 the Germans reorganized their system of bomber crew training rather successfully and, no matter what else they might be short of, they have plenty of men for the bombers.

In changing their training methods the Nazis abolished the Gross-kampflieger-schulen (heavy bomber schools) and sent flying personnel directly from specialist schools to operations where they teamed up for the first time and got all their operational training.

This speed-up in training and lack of activity for many months has built up many heavy bombardment squadrons to a point where they can take a lot of losses

without being crowded for crew replacements. Their greatest problem probably will be getting new planes.

**PHOSPHORUS.** One day recently in the South Pacific, a Zeke closed to within 700 yards of one of our bomber formations, then, from a two o'clock position, rolled over and catapulted an aerial phosphorus bomb from the belly of the plane. The bomb burst about 250 yards to the right of the formation and the explosion was accompanied by an orange burst followed by many white smoke streamers. One streamer hit the right wing of one of our bombers and burned off some paint while another damaged the nose of a bomber slightly.

**SOMETHING THEY NEED.** Some important developments in parachute design and use are being made by the Germans. One type, on which the pilot sits, opens automatically. When it becomes necessary to bail out, a catapult tosses the pilot (still in a sitting position) and the parachute away from the plane.

It is intended that when the bail-out takes place in rarefied atmospheres above 18,000 feet, the opening mechanism is delayed so that the pilot falls quickly through the space where oxygen is needed. If the pilot bailed out at low altitude, the parachute would open quickly. At normal altitudes there would be a time delay in opening so the pilot would lose some of the initial velocity and reduce the opening shock.

**NO TRACE.** In recent raids many Jap planes have not been using tracer bullets. This has made their shooting quite inaccurate, but often our fighter pilots (the ones who are careless about looking around) have not had any warning that they are being attacked until shells from a Jap plane rip through their ships.

**'THE BLOOD-CURDLING HOWL.'** A rather excited eyewitness account of the German rocket gun in action appeared in one of the Nazi newspapers recently. It is interesting both for the peculiar way it was written and the information it gives about the gun, which is called Werfer. The report follows:

"The whole battery—one salvo! The gunners in their fox holes 25 metres apart from the gun turn the key of the electric ignition switch: 'Fire.' A tremendous jet of flames hisses from six guns to the rear.

In the same split second six rockets project themselves in a big arc through the night towards the enemy. They compare to fire-spitting comets with tails 400 metres long illuminating the landscape and blinding every eye. The blood-curdling howl still being felt, the ignition keys release the second, third, fourth, fifth and sixth salvos.

"In a few seconds 36 rockets are on their way to the enemy position, representing 36 heavy grenades. The battery then changes position within a few minutes. Due to the necessary quick action, aiming at the target cannot be very accurate. The small weight of the gun projectors renders the motorized or horse-drawn battery a unit of extraordinary mobility. It races towards the center of action, fires within a few minutes and moves out of the center in no time at all. The gun-projectors are of simple construction and not expensive to build.

"They resemble six short stove-pipes bound together and mounted on wheels. The grenade looks different from the usual type. It detonates close to the ground and is designed for splinter effect. The battery also can put up a smoke screen over a large territory. After a few bomb shells a single salvo of smoke shells covers the enemy position for several hundred metres deep and high up with a smoke screen. The destructive firepower of the battery combined upon open targets has a tremendously demoralizing effect upon the enemy."

**DUMMY.** In a nice bit of bombing which did us no good at all, our bombers flew over Rangoon Harbor at 22,000 feet and sank a ship. It was a dummy which intelligence officers believe was built by modifying a 250-by-34-foot cargo barge which had been lying in the port.

A few days after this dummy was sunk, the enemy made another one to take her place, a 200-by-27-foot job. It still looked like a barge, however, and we weren't taken by it. The Japs made a third dummy which looked even less like a ship, being only 140 feet long and 40 feet wide.

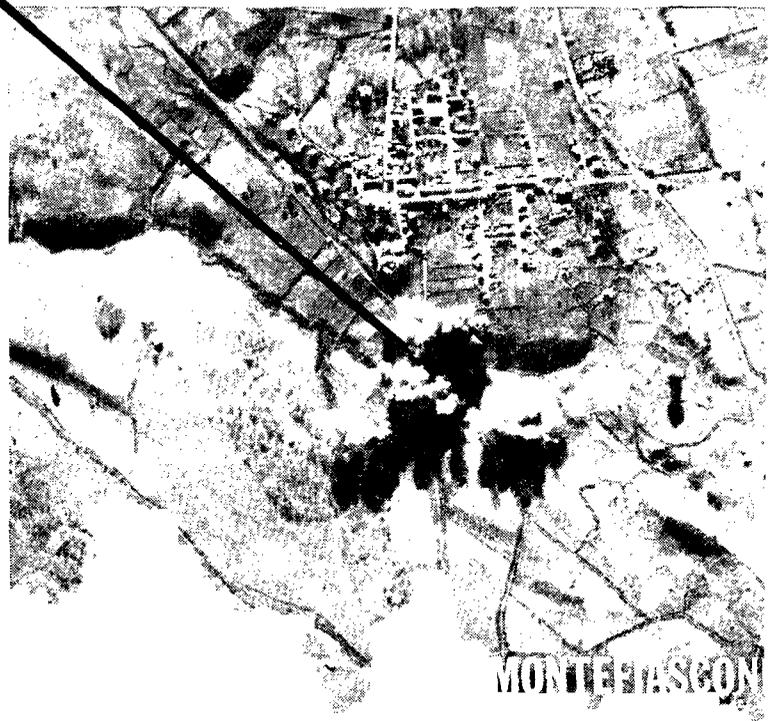
**GHOST TALK.** American formations on their way to bomb Akyab in Burma one day had instrument weather a good part of the way and radio communication had to be maintained among the flights. A voice broke in, "We can't go into Akyab because it's covered over with clouds." The formation leader tried to find out who made the call but no one answered. About five minutes later the same voice called, "Where are you? Where is the rest of the formation? I'm lost."

The leader was smart enough to realize that something was wrong and he didn't answer. The Japs were figuring on our replying to the voice, thereby giving them information. ☆

# One-Two-Three Punch

**T**HE Florence-Rome rail line is the main supply artery for Nazi troops fighting below Rome. In order to check the flow of equipment to the Germans opposing our men in the Anzio beach area, AAF planes are flying constant strikes against bridges, terminals and rolling stock of the railroad. These photographs illustrate how a flight of B-26s hit a series of bridges along the southern end of the line, one after the other. About 25 miles due north of Rome, the Marauders blasted the railroad bridge at Civata Castellana. Then, following the path of the

rail line, they next panted the bridge at Montefiascone, twenty miles farther along the track. The bombers completed their mission by attacking the bridge at Orvieto, sixty miles north of Rome. The bomb pockmarks in the Orvieto picture are evidence of previous concentrated bombings in the bridge area; four more bombs are on their way to continue the destruction. As fast as the Germans rebuild the bridges, 12th Air Force planes blast them again. Arrows indicate the rail line. The winding, white lines are highways, often strafed by our aircraft. \*



# THE ZERO JOHNNY DIDN'T GET

Drawings by Capt. Raymond Creechmore

**Even the best of our fighter pilots make mistakes but they know better than to make the same error twice.**

**T**HE flight of P-40s was on patrol at 20,000 feet over Rendova Island, protecting a newly won landing area. Twenty Jap dive bombers were sighted at about 8,000 feet, screaming down in a sharply angled dive. The tactical situation was ideal for the four Warhawk pilots. They were above the Japs, with the sun at their backs. The P-40s closed for the attack and broke up the Val formation. The Nips floundered around helplessly like sitting ducks, made perfect targets.

But not one Jap dive bomber was shot down.

The P-40 pilots had neglected to turn on their defrosters. Their windshields

blurred quickly in the humid atmosphere and the Japs got out of the area without a single shot being fired at them. You can't hit what you can't see and you can't see if you forget to turn on your defroster. It was as simple as that.

Art over the world, fighter pilots are making errors that result in enemy planes escaping certain destruction. Most pilots do not make the same mistake twice. When an error is committed, a lesson is learned—frequently under such grave circumstances that it is seldom forgotten. But some men continue to make the same old mistakes, violate the most fundamental rules of fighter tactics and get themselves and their formations into serious trouble. There are important lessons to be gained from the errors of omission and commission which have been made through over-eagerness, excitement or just plain unawareness.

You have heard a great many stories of how enemy planes were shot down. Here are some incidents wherein enemy planes were *not* shot down when they should have been, or wherein a fighter pilot faced trouble that could have been avoided. An AIR FORCE staff writer reports these incidents straight from the men who made the errors or who saw them made—from men who pass this information on to others in the hope that it might prevent someone else from erring, or dying.

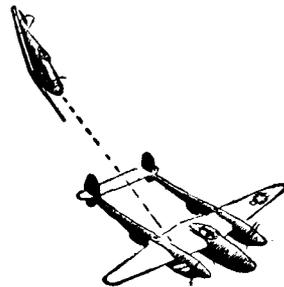
Thirty-six P-38s were escorting B-26s over southern Italy. As the bombers went in to the targets, about forty ME-109s and FW-190s attacked. A rat race resulted between the flight of 38s and the Germans. One of the Lightning pilots saw two ME109s make a pass at the outside bomber element, pull up and begin to split S. The P-38 pilot did a

wingover and started to chase the two Nazis. He was directly on the tail of one and had him all lined up in his sights when he was attacked directly from the rear by another ME. The P-38 pilot was a veteran of more than fifty missions, but he had forgotten one of the first rules of fighter tactics. He hadn't looked around. The ME in the rear hit his right engine and the pilot was lucky to get out alive. His is an old story; it happens every day.

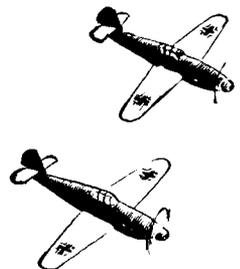
Another P-38 pilot had a similar experience—except he wasn't so lucky. His flight was at 10,000 feet, returning from a morning fighter sweep. The sun was directly at the left, on a level and extremely bright. It was bright enough to hide the three enemy planes which came out of the sun, attacked the tail ship and shot it down. Another rule of fighter tactics had been violated—a pilot had not kept watch on the sun.

Consider another cliché of basic fighter tactics: never leave your formation. Everyone knows that. Yet our planes are still being shot down because some eager pilot wants to win the war all by himself and breaks formation to chase a "lone" enemy plane. Probably the oldest of enemy tricks is the ruse of sending a decoy plane below our fighters while a flight of enemy ships waits above, ready to pounce on the dope who leaves the formation.

Not only green pilots fall for that one. One case was reported in which the pilot was a squadron leader who had fifty missions and 214 hours to his credit. Four squadrons of P-38s were escorting sixty B-17s on a mission over western Sicily. The 38s were to the left of the bombers and about 2,000 feet above, flying line astern. No enemy fighters were sighted until the bombers had made their runs and were several miles from the target.



This Lightning pilot neglected one of the first rules of fighter tactics. He didn't look around when he went after two ME-109s. Another ME dove on him and he was lucky to get out alive.



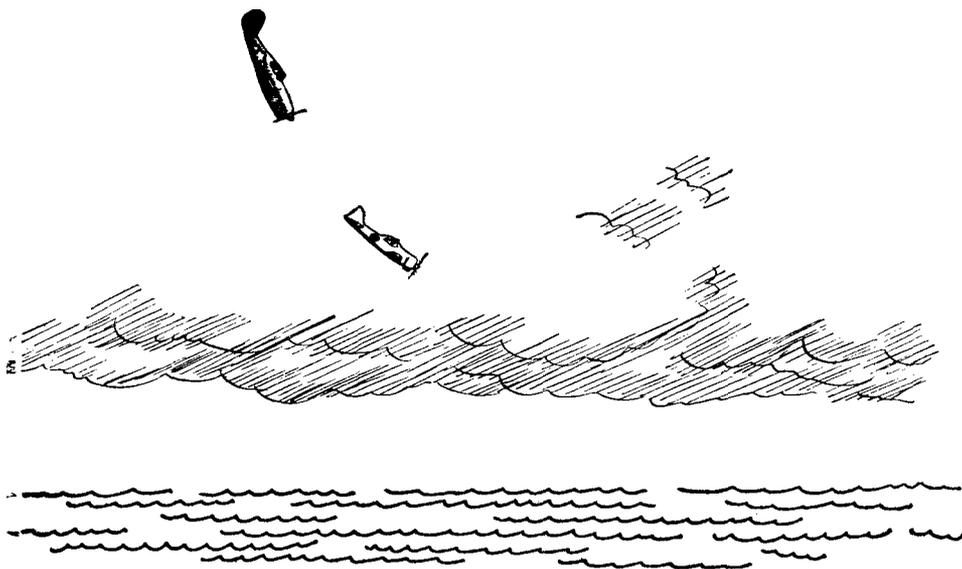
Then the last element was attacked. The enemy sent one ME-109 beneath the fighter formation in an attempt to break up the element by luring one of our fighters down. It worked. The squadron leader peeled off and dove. Six more MEs came out of the sun and shot him down—just like that.

Then there is the P-40 flight leader who had his squadron at 10,000 feet over the Kihili airdrome on Bougainville. A flight of Zeros had attacked a dive bomber formation and the P-40s had intercepted. The Japs pulled straight up, and the flight leader followed on their trail. Without any previous warning, he made such a violent maneuver that his flight was unable to follow him. The wing man reported that when he tried to keep in formation, the pull up was so violent that his radio was shaken loose and all his breaker switches were pulled down. Consequently, the lead plane was off by itself and the wing man, not being able to follow, was left alone and unprotected. Two set-ups for Tokyo. Actually, the Warhawks got away in a blaze of luck that is seldom duplicated. The moral is obvious: Don't make a maneuver that every man in your element cannot predict and follow.

**EAGERNESS** is a major cause of combat errors. It appears under varying circumstances. A P-40 pilot (95 missions) was at 8,000 feet over Guadalcanal. He saw some dive bombers coming in low to hit our naval vessels on the northwest side of the island. His flight turned and trailed the Japs down. There were so many possible shots that he simply turned his guns on and kept shooting. But he had his guns firing so long that the barrels got red hot and began to work improperly. By the time he got some good

targets in his sights, only three of his six guns were functioning effectively. Realizing his plight, he pulled up to get away and found only one gun working—and he had to fight his way out of the Jap formation. His guns jammed because the trigger was down so long that the barrels didn't have a chance to cool off. He was left practically unarmed in the middle of fifteen enemy planes. On the climb up, a Zero moved right in his path, but he couldn't do any damage with only one gun. A perfect example of being "trigger happy." Another case of lucky-to-be-alive. Neither example is recommended.

Another instance of being over-eager is reported by a Spitfire pilot who had 207 missions. He was at 10,000 feet when he saw an ME-109 at the same altitude flying away from him. The Spit pilot chased the Nazi but he started firing at about 600 to 700 yards, considerably out of effective range. As he states, "I should have opened my cannon at about 300 to 350 yards and held my machine guns until I was approximately 250 yards from him. By the time I was in proper range, I was out of ammunition. I was too eager. As a matter of fact, if I had been jumped on my way back, I probably



A Warhawk pilot on patrol at 21,000 feet over the Russell Islands made a serious error of judgment which resulted in the escape of an enemy plane and the near loss of his own life. He dove on a Zero and chased him down through an overcast. But when he pulled out he was right on the water and, by all odds, he should have gone in.



Attempting to attack a Jap bomber at the front quarter, a P-38 pilot erred and came in from the right rear, directly into the Nip's 20 mm tail turret gun, one of his least vulnerable spots.



would have been shot down. I had to hedge hop home."

Or, take this P-47 pilot on a flight over Paris. He was at 25,000 feet, escorting B-17s. About thirty FWs and MEs attacked. The pilot reports, "One of the FWs pulled up from the rear of the bombers and I had a perfect deflection shot. But all I did was knock his canopy off. I dived on him and he didn't even know I was there, because he took no evasive action. But I was too excited and overshot him. I was going about 350 miles per hour when I should have throttled back to between 250 and 275 mph. In that case, I wouldn't have overtaken him so rapidly and I would have had a longer time to shoot at him. There he was, a dream target doing straight and level, and me rocketing by him like Flash Gordon."

You may operate your aircraft strictly according to the book, but an error of judgment makes you as guilty as if you had neglected to lower your wheels for a landing. It's the results that count. A serious case of mistaken judgment is told in the story of a P-40 pilot on patrol over the Russell Islands. He was at 21,000 feet when he was informed of a flight of Zeros about fifteen miles away, losing altitude. He came down to 18,000 feet and attacked in his formation. The Jap flight became disorganized and soon airplanes were scrambling all over the sky. The Warhawk pilot saw a single Nip trying to slip away so he chased him. He did a mild roll and went down into an overcast at about 2,500 feet. But he came out of the overcast right on the water and, by all odds, he should have gone in.

Errors of judgment are as commonplace as the P-38 pilot who missed a setup because he misjudged the speed of an enemy plane he was about to attack.

He was second man in a flight at 22,000 feet over Oro Bay in New Guinea. A Betty came along and the P-38 pilot figured he would attack at the front quarter and catch the Jap at his most vulnerable spot. But he was way off on his speed estimation, and he actually came in from the right rear, directly in the face of the bomber's 20 mm tail turret gun. The Lightning pilot got out in a hurry; he didn't get his Jap and he almost lost his neck.

The speed of your aircraft is a fine thing if you use it properly. A P-38 pilot over Rabaul didn't, and he got himself into serious trouble. He was at 26,000 feet flying bomber cover when a flight of Zeros was sighted at 24,000, climbing into attack position. The pilot drove at a Zero at about 300 miles per hour. The Nip went into a tight roll to the right, and the P-38 pilot followed, going into a power dive. He relates, "I was going straight down and, not wanting to go any farther, I throttled back but my controls wouldn't operate. I was indicating 400 mph at 23,000 feet. I had one hell of a time trying to pull out of that high speed dive. Evidently, the effects of compressibility got me. I finally leveled off at 5,000 feet, but I shouldn't have gone down that fast."

Then, there are the men who literally talk themselves to death. A formation of Spitfires was over the coast of France at 15,000 feet, flying a loose V formation. Two of the pilots were talking to each other over their radios when the flight leader saw an FW break from above for the attack. The leader tried to warn the pilots of the approaching enemy ship, but the men were chattering away and he could not break into their jammed radios. Three times he tried to call them but each time he was unable to get through. So he just sat there and watched

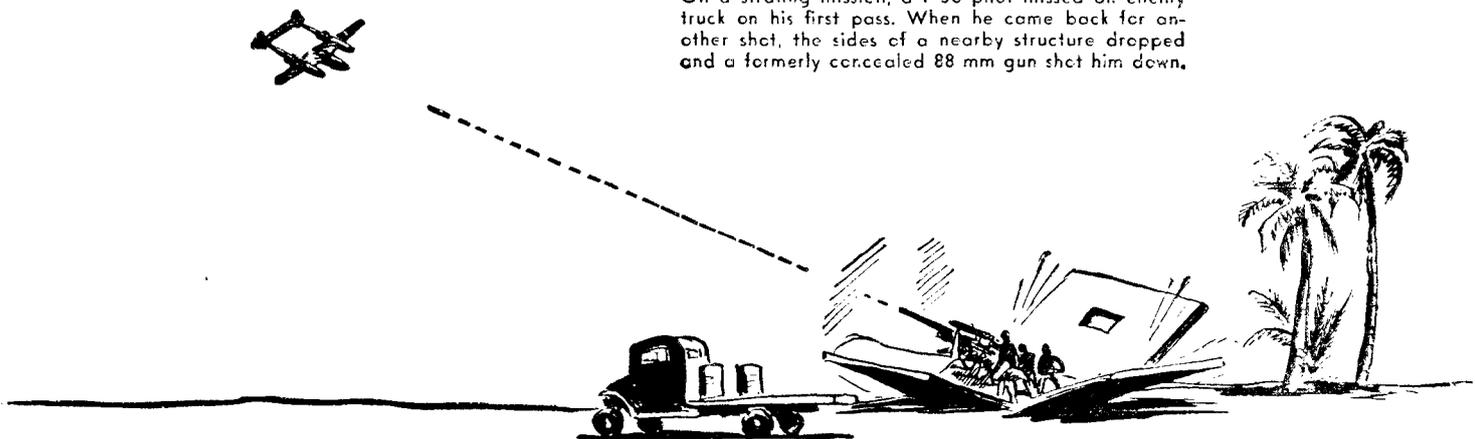
one of them go down in flames. The enemy ship was originally sighted about 4,000 feet above the formation, and there would have been plenty of time to take evasive action. Moral: Don't use the radio unless it is absolutely necessary. That one, too, is as basic as taking off into the wind.

It is also well to remember that on a fighter sweep speed and surprise are your defense. A P-38 pilot was on a strafing mission in Africa, hunting targets of opportunity. He came in low over an Arab house and saw a German truck beside it. But he had passed the truck before he had an opportunity to hit it, so he pulled up and came back. The Arab house collapsed and 88 mm gun poked out its nose and shot him down. He had automatically eliminated one of his greatest assets—surprise—and he gave the Nazis an opportunity to get set for him.

SOME errors are so perfectly obvious that they seem almost childish. Yet experienced pilots continue to make them. There was the P-38 pilot on his last mission in Africa. He was on his way back from the target when he decided to take off his oxygen mask. Two MEs jumped him and he couldn't get his mask back on in time to use the radio and call for help. He jammed his ship into a steep dive and was extremely fortunate to evade the enemy. Because he was only a hundred miles from his base, he figured he could relax. The enemy probably figured he was figuring just that.

And so they go. Nobody is perfect and mistakes are made by the best of them. But the enemy is tough enough without creating your own troubles. And in the air it doesn't pay to make the same mistake *once!* At least, that's the way a lot of 100-mission boys, who admit they are lucky to be alive, feel about it. ☆

On a strafing mission, a P-38 pilot missed an enemy truck on his first pass. When he came back for another shot, the sides of a nearby structure dropped and a formerly concealed 88 mm gun shot him down.



These SBDs, lined up on the flight deck of a U. S. carrier in the Casablanca convoy, were among the planes which spear-headed the

American landings in North Africa. The SBDs, among other jobs silenced the big guns of the Jean Bart, lying at anchor in the Casablanca harbor.

## By Ensign Oliver H. Townsend, USNR

NAVAL AIR STATION, JACKSONVILLE, FLA.

"Now hear this . . . Now hear this . . ." The words crackled over the big carrier's intercommunication system. They were simple words, but they had an electrifying effect. In the galley the cooks stopped peeling potatoes. In the ready room the pilots butted their cigarettes and reached for their flight gear. Down on the hangar deck the mechs pulled their heads out of the Wildcats and Avengers and listened.

Those who were there said later: "It was a beautiful day for flying like it nearly always is down there with tall, white cumulus clouds coming out of the water like snow-capped mountain tops. We knew the Japs were around somewhere, but we didn't know just where, or just when we were going to contact them. When we heard the squawk box that morning we all knew this was it."

And it was. The announcement continued: "A large Japanese force including carriers has been sighted . . ." Even before the noise from the loud speakers had died away, fighters, dive bombers and torpedo planes, pre-warned over the intra-

### **An explanation of the organization and combat techniques of U. S. Naval aviation.**

carrier teletype system, were roaring across the flight deck and heading off toward the enemy. High overhead the combat air patrol tensed itself for the aerial blow they knew the Japs would try to deliver.

A dive-bomber squadron leader sang out over his interphone: "It's a beautiful day!"

The admiral had already given his orders: "Attack. Attack. Repeat. Attack!"

And the Navy swung into another aerial action against the Jap.

The outcome is already history. It was the Battle of Santa Cruz—one of the last major appearances of the Jap fleet before it was driven into hiding behind the island bases that ring its corroding empire. Maybe Santa Cruz wasn't the biggest battle of the war, and maybe not the

most significant, but it was typical of the fighting spirit with which the Navy's flyers go into combat and of the results they achieve. There the planes of a two-carrier naval task force blocked the Japs (with four carriers and the battle unit) in their strongest drive to retake Guadalcanal, and permanently crippled Japanese aerial authority over the southern reaches of their Far Eastern empire.

The job of the Navy pilot doesn't end with the big sea battles, however. You'll find him in the Hellcat clearing the skies above an Allied beachhead in the South Pacific. You'll find him in the PBV picking a tortuous patrol route amid the fog and williwaws of the Bering Sea. You'll find him in the little observation plane on a scouting mission over the enemy fleet. And you'll find him in the "baby flat-top" squadrons that ply the sea-lanes in search of Axis submarines. In fact, you'll find him on every ocean frontier in the world—wherever the Navy, to fight this war, has gone down to the sea in airplanes.

In spite of these many and varied aerial



In the ready room of a converted carrier, pilots spend their time working out navigation problems, playing gin rummy and bridge, or just dozing. When called, they get into action fast.

activities of the Navy, there is no such thing as a U. S. Naval Air Force. Every tactical plane the Navy has in a combat area works for the U. S. Fleet and is under a fleet commander. There is no separate air organization, controlled through separate command channels, such as there is in the Army Air Forces.

But that is no indication that the Navy doesn't rate air power of prime significance. It does. Naval aviation this year will celebrate its 31st anniversary. In those 31 years it has grown from 201 officers and men in World War I to the point where today it has more than 25,000 planes and a pilot-training program with an "input" of 30,000 per year.

At sea, the aircraft carrier has established itself as one of the most vital parts, and often the nucleus, of the modern fleet. Because it has the longest offensive arm, it is the carrier the enemy wants most to destroy, and the carrier that receives maximum protection from the other ships of its own battle force. To better utilize their offensive power, many large naval units operate as carrier task forces, consisting of one or more flat-tops and a screen of cruisers, destroyers and subs. It is carrier task forces like these that today are providing the aerial cover for the Pacific amphibious attacks that in some cases reach out beyond the range of land-based air power.

"Big boss" of naval aviation, as he is of the whole Navy, is Admiral Ernest J. King, Chief of Naval Operations and Commander-in-Chief of the U. S. Fleet. Representing the airman and looking after his interests on Admiral King's staff is Vice Admiral John S. McCain, Deputy Chief of Naval Operations for Air. As such, Admiral McCain serves as assistant in aerial matters to Admiral King, and gives aviation a big voice in the overall direction of the Fleet.

Admiral McCain's office is the Navy



Each loaded with a 2,000-pound tin fish, these Avengers are ready for a target run. Torpedo bombing is tough work, but these powerful planes are built for the job.

organization that corresponds most closely with Headquarters, Army Air Forces. It contains the administrative offices and is the headquarters for Marine aviation and the Naval Air Transport Service. All in all, it handles the Navy pilot's training, the flight rules he follows and the jobs he is called upon to do—everything, in fact, but his airplane, which comes under the jurisdiction of the Bureau of Aeronautics, headed by Rear Admiral DeWitt C. Ramsey.

To get a rough idea what becoming a Navy flyer is like, it is worth taking a brief look at the training gauntlet each Naval air cadet must run: (1) fifteen weeks at a flight preparatory school for elementary ground instruction, (2) twelve weeks at a war training service school for elementary flight training, (3) eleven weeks at a pre-flight school for a mind and body "toughening-up" course, (4) twelve weeks of primary flight training and (5) fourteen weeks of intermediate flight training.

Here there is only a pause—long enough for the student to receive a pair of gold wings and a commission as either ensign in the Naval Reserve, or second lieutenant in the Marine Corps Reserve. But he doesn't relax—he still has eight tough weeks ahead of him.

Operational training is what the Navy calls the next phase. There, as in the AAF, men who have learned how to fly are taught how to fight. Their instructors are combat-wise veterans who learned their tricks the hard way.

After "operational," the Navy or Marine pilot is turned over to the Fleet and incorporated into one of its coordinated sea-air activities against the enemy.

But that doesn't mean he loses his identity as an airman. Each major fleet (Atlantic, Pacific and their various subdivisions) has its own air force and its own air commander. Under him the fleet air arm is broken down into groups and squadrons, some based on carriers (largely Navy), some shore based (largely Marines). Even aboard a carrier, however, the aviation group maintains itself virtually independent of the ship. Both naturally work in close cooperation, but each has its own skipper (air ultimately under the ship's captain), its own staff and its own job to do.

The five main jobs Navy and Marine flyers are called upon to do are fighting, scout-bombing, torpedo-bombing, patrol-bombing and observation (Navy only).

The fighter pilot's main task is to protect the Fleet and its shore installations from enemy air assault and to escort scout

and torpedo bombers on attack missions. He also has a number of supplementary duties, such as scouting, strafing and sometimes even bombing.

The plane he flies is either the Vought F4U Corsair, introduced in February, 1943, in the Solomon Islands' area; the Grumman F6F Hellcat, which first saw action last September when a carrier task force raided Marcus Island, or the Grumman F4F Wildcat, scrappy little fighter that bore the brunt of the Japanese aerial assault in the Pacific for the first year and a half of war.

From the day of its introduction to the end of 1943 the 2,000-horsepower Corsair, primarily land-based, is credited with destroying 584 Jap planes in the air and on the ground. Only 108 F4Us were lost during this time. One Corsair squadron alone (the Marines' Flying Falcons) had accounted for 72 Jap planes while losing only two of its own pilots.

The Hellcat's record during its brief 1943 career was 300 enemy planes destroyed to 62 Hellcats lost. The score its first time out, at Marcus Island, was 21 Zeros to two Hellcats. It is results like this that have prompted Comdr. John Raby, air group commander of one of the Navy's biggest carriers at the Marcus raid, to declare that the F6F is "the finest carrier plane in the world."

Although the six-gunned, 400-mile-per-hour F4U and F6F, dubbed the "Terrible Twins" by the Navy, are now carrying the fighter load in the Pacific, it was the Wildcat that was in there pitching during the early, "so-few-against-so-many" days of the war.

The saga of the "F" began at Wake Island on December 7, 1941. There a small band of Marine pilots under the command of Maj. Paul Putnam, with an "air force" of four Wildcats saved from the first surprise attack, took a daily toll of the 27-to-50-plane flights of Jap bombers sent against the island—and made an occasional swipe at the Jap fleet for good measure. The overwhelming odds gradually whittled the F4F force down, but not past the point where one of the last radio reports from Wake said: "Our two remaining fighters aloft; several of the enemy accounted for."

THAT was the beginning. Since then the Wildcat has carried the fight to the Axis on all sea-air frontiers of the war. It was in on Midway, Guadalcanal, Casablanca, the Coral Sea, the Solomons campaign, and is still representing the Navy on the frontlines along with the new Corsairs and Hellcats.

The main job of the Navy scout bomber pilot is destruction of enemy carriers, warships, transports and shore installations. The destruction is carried out through dive-bombing.

In a sea battle between carrier task forces, the scout-bombers go in first (with

fighter protection), blast up the flight decks of the hostile flat-tops and soften up their defenses in preparation for torpedo attack. In an amphibious drive they also spearhead the assault—strafing and dive-bombing enemy beach defenses.

As their name indicates, scout-bombers also perform another vital function: scouting. In periods of watchful inaction between battles, they range far out over the sea, combing the waves for a glimpse of the enemy. When they spot him a radio flash sends carriers and shore-bases into action, bringing bombers and torpedo planes to the attack.

Helping the pilot carry out his scout-bomber responsibilities is a radioman-gunner who occupies the rear cockpit. The plane these two use is either the new Curtiss SB2C Helldiver, which made an impressive debut in a raid last November on Rabaul, or the rugged old standby, Douglas SBD Dauntless.

In a Rabaul attack the Helldiver, biggest and heaviest dive-bomber ever used by the U. S., dropped 28,000 tons of bombs on Jap shipping in the harbor, sinking a light cruiser and a destroyer, probably sinking a heavy cruiser and

The accompanying article on the organization and operation of U. S. Naval aviation was written for AIR FORCE by Ensign Oliver H. Townsend, USNR, Public Relations Office, Naval Air Station, Jacksonville, Fla., who formerly was a civilian writer on the AIR FORCE editorial staff.

severely damaging another light cruiser and a destroyer. In spite of severe attacks by huge flights of Zeros, the Helldivers fought their way home without loss to enemy action, and shot down three Zeros and damaged another in the process. Although two of the planes ran out of fuel and had to land in the ocean, all personnel were saved.

Still active on the warfronts, but now supplemented by the SB2C, is the Dauntless, standard Navy scout-bomber through all of the World War II. Like the Wildcat, it has seen action in all the big battles and is responsible for much of the success the U. S. Fleet has attained in the Pacific. Versatile, the SBD has turned in topflight performances as a dive-bomber, strafing and scout-plane, and has even been known to hold its own in dogfights with the Jap Zero.

Like the dive-bomber pilot, the torpedo-plane pilot has a primarily offensive responsibility. His is no simple task. Following the scout-bombers in an attack, he must bring his plane in at just the right height and release his torpedo at just the right time to get a hit. Not until the torpedo is away can he concentrate on getting out of there—which is exactly what he does next, usually by dropping

down to wave altitude and pouring on the coal. As compensation for the risks he takes, he knows that the wound he inflicts is usually fatal.

Since the Battle of Midway, torpedo-plane pilots have flown the Grumman TBF Avenger, which replaced the TBD Devastator in June, 1942. In addition to the pilot, the TBF also carries a rear gunner (topside, rear) and a radioman-gunner who rides in the belly.

Because of the nature of their combat functions, torpedo squadrons have the reputation for being "suicide squadrons." They aren't. Outside of the Battle of Midway their losses have been surprisingly small. Lieut. Comdr. Edwin B. Parker, who flew with torpedo squadrons at the Coral Sea, Tulagi, Santa Cruz and parts of the Solomons campaign, says: "In all those actions we did not have a single plane shot down by enemy fire."

Like the SBD, the activities of the Avenger are not restricted entirely to its primary function. It also serves as a bomber and on several occasions has joined with fighter formations during a battle and held its own against attacking Zeros.

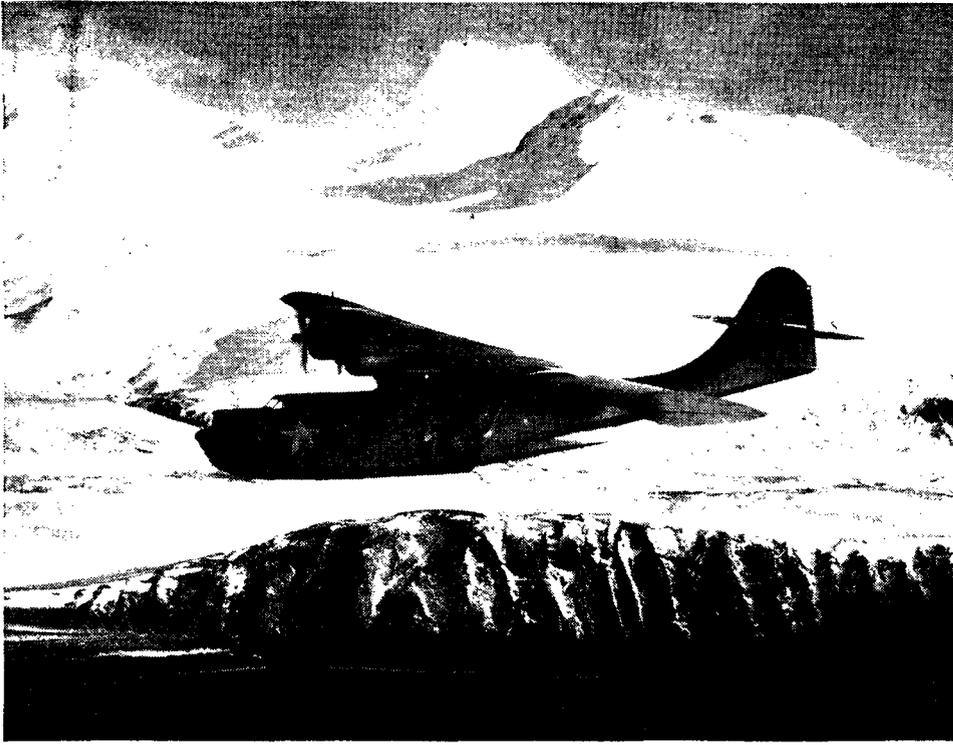
One of the most important non-torpedo jobs of the TBF is anti-sub patrol from baby flat-tops on convoy duty. For these assignments depth charges and bombs are fitted in the torpedo bays. One baby flat-top with Avengers and F4Fs aboard recently fought off an entire submarine wolf-pack in the Atlantic, getting two subs for certain, four very probables and four more probables. The convoy got through unscathed.

PATROL plane pilots are the "eyes of the Fleet." Patrolling is their main function, bombing the other. They fly big planes that can travel great distances and remain aloft for hours at a time. While on patrol they and their crews maintain a constant vigil for everything from enemy planes to submarines.

The Navy has a number of flying boats and land-based planes in its patrol-bomber classification, but none is quite so well known, or used quite so widely, as the twin-engined Consolidated PBY Catalina.

Although nominally a patrol-bomber, the PBY is really the workhorse of Naval aviation. It has been used for everything, both day and night, from dumbbo hops (rescue missions) to laying mines and dropping torpedoes. Its characteristic parasol wing has hovered over the Aleutians, the Solomons, the Caribbean and the North Atlantic seaways. Its versatility is so taken for granted that no one even raised his eyebrows when Lieut. Robert Calrow won the Air Medal for "Dive-bombing Kiska in a PBY." Built to carry thirteen, PBYs on dumbbo hops have taken off with as many as 37 aboard.

Big and slow, the PBY has learned to



A Navy PB4Y watches over the cold northern ocean, with the mountains of the Aleutians adding a touch of rugged background. The patrols demand long flying hours, call for perfect navigation.

stay away from the fast fighters of the enemy unless it has its own escort along. But that hasn't kept it from making some of the most valuable contributions to the war. It was a Catalina that first spotted the Jap fleet at Midway. It was a "Cat" that finally located the Nazi's Bismarck when it was trying to elude the British sea net. It was a "Cat" that made the final trip to besieged Corregidor. And it was a PB4Y from which Lieut. Donald Mason originated his famous report, "Sighted sub, sank same."

Besides the Catalina, the Navy also has two other widely used flying boats—the Martin PBM Mariner and the Consolidated PB2Y Coronado—and a number of land-based bombers. Both the PBM and the PB2Y perform patrol functions similar to those of the Catalina, operating from shoreline bases and from tenders far out at sea. They are also valuable as cargo and transport planes.

The Navy's land-based planes are used on anti-sub patrol and for low-altitude bombing and torpedo attacks. Chief among them are the Lockheed PV Ventura, the Consolidated PB4Y Liberator, the North American PBJ Mitchell and the Douglas BD Boston.

The smallest contingent of tactical pilots in the Navy are those assigned to the cruiser-and battleship-based observation planes. Small as their numbers are, their work is far from dull—and far from unimportant. Carrying a radioman-gunner in addition to the pilot, the main purpose of the observation plane is to spot targets for the gun crews back aboard their bat-

tlewagons. To do this they are generally carried aboard a ship in numbers of two or four, sent off by catapult and picked up by crane.

In the observation plane category the Navy has two current types—the Vought OS2U Kingfisher and the Curtiss SO3C Seagull. Also still in active use, although no longer manufactured, is the Curtiss SOC biplane.

One of the most noteworthy performances turned in by the low-powered Navy observation planes was during the landings in North Africa, Sicily and the Italian mainland. There, from ships sailing along the coastlines, they flew inland, strafing and giving the locations of shore objectives to the fleet. Over Sicily, Lieut. Paul Coughlin and his gunner, Dick Shafer, even rounded up more than 150 Axis troops with their little SOC and herded them to the American lines in an aerial "Sergeant York" act that is unequaled in the annals of air warfare.

In addition to the five main activities carried on by Navy flyers, there are a number of subsidiary services operated under the general heading of Naval aviation. The two most important of these are the Naval Air Transport Service, operating at present over routes totaling more than 60,000 miles, and the lighter-than-air service.

Lighter-than-air is centered at Lakehurst, N. J., and operates an authorized fleet of 200 airships. Its main jobs are anti-sub patrol, "convoying" convoys, laying mines and scouting. The airship generally used is powered by two radial

engines, has a speed of over sixty knots and carries depth bombs and machine guns. Some have made trips of more than 3,000 miles.

Behind all the aerial activities of the Navy stand, as in the Army Air Forces, the ground crews and the flying enlisted men. Only petty officers perform the specialized jobs enlisted men are given to do in Naval aviation—jobs like aerographer's mate, machinist's mate, ordnanceman, radioman and photographer's mate. Aiding them in carrying out these duties in the continental United States are the Waves (Women Accepted for Voluntary Emergency Service). Already Waves are filling such important jobs as control tower operators, link trainer instructors and administrative clerks and assistants, and they are beginning to take over such "masculine" assignments as aviation metalsmiths and machinist's mates.

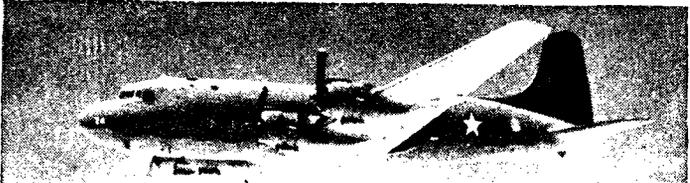
If all the operational and training policies of the Navy could be summed up into one word, that word would be "teamwork"—among aircrews, ground crews, airplanes and squadrons, and between air units and ships of the Fleet. Navy flyers are proud of this ideal of cooperation, and of their record of coordinated accomplishment, both among themselves and in conjunction with the Army Air Forces.

ARMY-NAVY air cooperation has been demonstrated in many different ways in many different war zones. Take, for instance, North Africa, where Navy planes made the first attacks on the continental airdromes needed by the Army for its land-based bombers and fighters, and Navy flat-tops brought Army fighters to within flying range of newly-won African bases. Or take the Solomons, where the Corsairs and the B-24s go out on raiding missions together. Or take the waters off the east coast of Japan, where Navy planes patrolled the skies while the Hornet, with General Doolittle's bombers aboard, raced within range of Tokyo.

Any Jap who was careless enough to be flying over Beaufort Bay at Guadalcanal on the afternoon of June 16, 1943, and who is still lucky enough to be alive, can tell you what Army-Navy air cooperation can really mean. He can tell you how 36 Army and 30 Navy fighters teamed up with eight New Zealanders that afternoon to knock down 77 Jap planes. Ship ack-ack added sixteen more and shore guns one—94 planes brought down in all. Allied losses were six planes and four pilots.

To this action the Navy Department wrote a terse but fitting postscript, one that may well apply to future accomplishments as well as past:

"This air victory was a striking example of coordinated battle action by the various units concerned." ☆



# TRANS-OCEANIC FLIGHT

*By Lieut. Wm. T. Lent*



A weary band of travelers checks in at customs after a grueling twelve hours over the sea. Broadway strip-artist and USO charmer Babs Tobler blushes indignantly while the "eager-beaver" customs official checks her personal effects. Waiting behind her are a trophy laden Marine private and a Hq AAF major with portfolio and two-day beard.



To help pass the tedious hours, the inevitable poker game is organized. Rank is relatively unimportant here and a brace of aces can be an effective equalizer. Captain Wilson just pulled to a straight flush and cordially invites Ensign Luerich to make the fracas a joint Army-Navy affair.



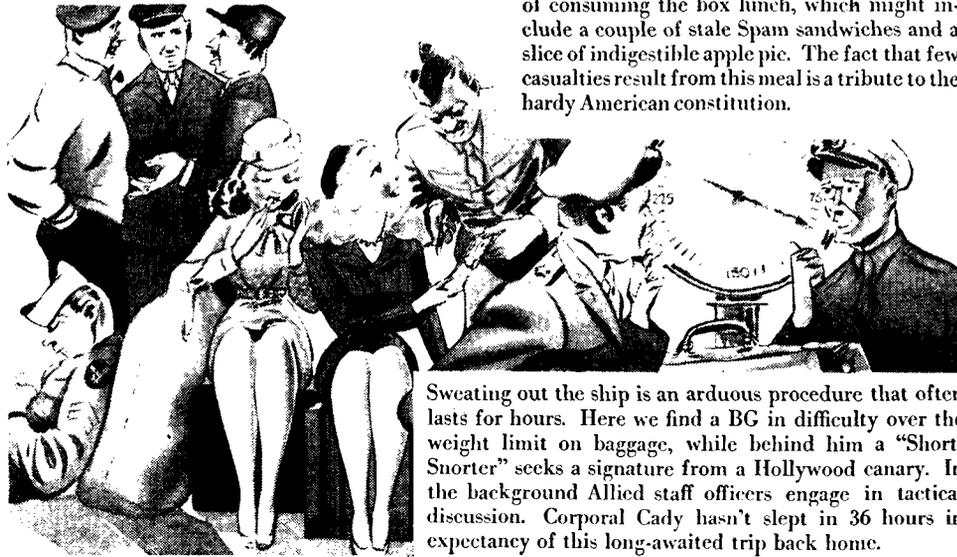
The above scene is a figment of Pfc. Doherty's subconscious mind as he dozes aboard the crowded transport. Instead of ill-fitting bucket seats, the "dream ship" would have luxurious reclining chairs with a pretty flight nurse as hostess. To make the scene complete, flunkies Hitler and Tojo would await his beck and call.



Stormy weather usually occurs at meal-time. Thus an extra hazard is added to the problem of consuming the box lunch, which might include a couple of stale Spam sandwiches and a slice of indigestible apple pie. The fact that few casualties result from this meal is a tribute to the hardy American constitution.



Sleepy-time aboard the C-54 presents an eerie sight. Lifeless-looking bodies are sprawled about the ship in every conceivable position, vainly seeking rest and sleep. Above the drone of the propellers is heard the snorers concert-music which does not appeal particularly to the more sensitive soul who is still awake.



Sweating out the ship is an arduous procedure that often lasts for hours. Here we find a BG in difficulty over the weight limit on baggage, while behind him a "Short-Snorter" seeks a signature from a Hollywood canary. In the background Allied staff officers engage in tactical discussion. Corporal Cady hasn't slept in 36 hours in expectancy of this long-awaited trip back home.



# 'FLYING SUBMARINE'

By Maj. Arthur Gordon

AIR FORCE Overseas Staff

can be hazardous in the extreme. They make the longest operational flights in the business; 2,000 land miles is a routine distance. And "land miles" is just a figure of speech. Most of the fourteen or fifteen hours of the flight are spent over the steel-gray waters of the Atlantic—waters that at some times of the year will freeze a man to death in a matter of minutes. Exactly where these Fortresses go, and when, must remain undisclosed for purposes of security. But the reason for these tremendous hops can be told.

That reason is weather.

**T**HE weather that blankets Europe at any given time is a product of the air currents and pressure areas that coil and form far out in the misty Atlantic. In these days of self-imposed radio silence, trans-ocean shipping is powerless to relay the reports that were invaluable to weather forecasters in peacetime. Yet those forecasters must know what conditions prevail to the westward if they are to be able to tell the air chiefs what to expect in the way of cloud conditions over airbases and over targets, what winds will be encountered at what altitudes, what abrupt weather changes to expect.

So they send out planes. The British have been dispatching weather flights for years, using several types of planes. The Germans dispatch them too, long-range planes like the giant Focke Wulf Kurier. The B-17s go farthest of all.

They carry a crew of seven or eight, a full complement of armor plate, .50 caliber machine guns and ammunition, and instead of a bomb load, they carry bomb bay tanks of fuel in addition to regular wing and Tokyo tanks. Since gasoline weighs over six pounds a gallon, the total load at take-off is staggering, more than the combat Fortresses carry; it is, in fact, the maximum that the straining engines are supposed to be able to hoist into the air. There is no margin for error. If an engine falters on the take-off, it's just too bad. That happened not so long ago. No one survived.

There are other hazards beside the take-off. Weather observation calls for periodic sampling of air pressure, temperatures and the like at the lowest possible altitude. This means that at certain

intervals on any given flight the Fort swoops down so low that the waist gunner can taste salt spray on his lips and the roar of the engines comes reverberating from the ocean sometimes less than fifty feet below. "This ain't no airplane," said one gunner feelingly after his maiden voyage, "this is nothin' but a flyin' submarine!"

There's no great trick to such low-level flying in daylight, but on a dark rainy night it calls for a certain faith in your instruments to watch the needle on the altimeter creep lower and lower and try to ignore the shrinking feeling you get just about where the seat of your pants touches your parachute. Or, if you can't ignore it, pray for the "met" observer, performing his mysteries in the plexi-glass nose, to make his readings quickly and give the welcome word over the interphone that will allow the pilot to send the B-17 zooming into blackness and safety.

In 2,000 miles any aircraft will meet with a lot of weather, and over the Atlantic in mid-winter some of it is bound to be bad. This does not upset the weather flight crews unduly; weather is what they are looking for. But when severe icing conditions are encountered, or when a wind that has been a head wind all the way out suddenly shifts and becomes a head wind all the way back, then there may be some anxious moments.

It is a tribute to the maintenance crews and the stamina built into the planes that in all the thousands of miles of flying, only one B-17 remains unaccounted for. That one simply failed to return; no one knows what happened; there were no distress signals. Just silence. Two of the planes have crashed on land, one on the take-off, the other in southwest England when, flying blind, it failed by a heart-breaking five feet to clear a mountain top. Three of the crew of this Fortress were injured, the others killed. Recognizing these dangers, 8th Air Force Headquarters has ruled that every twenty hours of weather flying should be considered the equivalent of one combat mission. Thus, after a certain time, the crews will have completed an operational tour of duty and will be grounded or returned to the States.

**T**HREE is a Flying Fortress outfit somewhere in England that has never fired a shot at an enemy plane and probably never will. The crews have no hair-raising stories to tell of engines shot out over enemy territory, of casualties from flak or rocket cannon fire.

Yet the work of the particular unit may determine whether a thousand warplanes are dispatched against the Reich. It may have a distinct bearing, one of these days, on the zero hour that the world is waiting for—the hour of invasion. And despite the absence, so far, of enemy opposition, the missions carried out by these B-17s

Most of the crew members are volunteers taken from Combat Crew Replacement Centers. They make the choice deliberately, balancing the long monotonous flying hours, the lack of glory and the dangers involved against the basic importance of the work and the value to pilots, navigators, radiomen and engineers of such grueling experience. The gunners, spoiling for combat and feeling—quite rightly—that their flying time isn't doing them much good, get restless occasionally and require a brief fight talk from the CO. They usually snap out of their discontent quickly and go back to scanning the empty skies in the hope that the million to one chance will occur and they will lock horns with a German plane on weather reconnaissance flight.

Now and then they get a whiff of unexpected excitement—such as the day one of the Forts shot out of a cloud too close to a big Allied transport—a famous pre-war luxury liner—and got a hot reception of flak and tracers before recognition was established. Or the rare occasions when they get a radio order to search for survivors of some torpedoed vessel. But more often the thrill proves to be a flash in the pan—mysterious lights on the water at night turning out to be nothing but the Irish fishing fleet, or the "flare" excitedly announced by the tail gunner nothing more phenomenal than the planet Venus rising from the foam.

The routine of this American weather outfit has become fairly well established. There is more than one flight each day—weather permitting—and the flight is often carried out in the face of conditions that would keep the combat Fortresses securely grounded. The trip is timed so that the information obtained at the maximum distance can be used in planning forthcoming day or night raids on Germany. But actually all the armed services make use of the information supplied by

these and other weather flights. The reports, coming in continually from different "tracks" flown are coordinated and analyzed by British and American weather experts. They are invaluable to the two air forces, to both navies and to any form of combined operations.

An American weather flight begins at an airdrome in England that is like dozens of others scattered the length and breadth of the land: a few hundred acres of flat farming country criss-crossed with runways and dotted with dispersal points where the big ships stand ready. If it is winter, the twin nightmares of mud and distance have to be faced. Still, they're not so bad if you have transportation, and the CO of an operational unit is sometimes entitled to a jeep.

**T**HE mission actually begins several hours before take-off time with the briefing. It's not very elaborate: a forecast of weather conditions likely to be encountered, a shipping situation summary giving position of convoys that may be met, the radio call signals of the day, and so forth. When the crew is at its home base a specially assigned intelligence officer conducts the briefing. If it has landed at another airdrome the unit commanding officer may give the briefing himself, having received the information by phone.

After briefing the crew disperses for food and as much sleep as the time of take-off will allow. At breakfast the atmosphere is completely relaxed, in sharp contrast to the tension before a combat mission. Officers and non-coms kid each other about alleged amatory exploits. The camaraderie persists as they drive out to the hardstand where the B-17 is waiting, with a stencilled row of miniature weather-vanes on her nose, each symbolizing a successful weather flight, barely visible in the dim light.

Only the British meteorological officer is somewhat aloof. Not unfriendly but rather shy, as might be expected when a lone Briton finds himself in an air crew with seven uninhibited Americans. Tall and rather awkward, he pulls a British helmet down over his ears and crawls into the B-17 carrying a bag which contains his meteorological tables and a thermos bottle that almost certainly contains tea. He makes his way forward into the plexiglass nose of the bomber and draws a curtain behind him so that the light from the navigators table will not affect his vision. He sits up there on his little stool confronting his instruments: an aneroid barometer that records air pressure in millibars, a cyclometer which consists of two thermometers, one air and the other wet-bulb, a pressure altimeter and an air speed indicator. Every fifty miles through the darkness of the night—and the daylight hours, too—like some high priest of weather, he will perform the ritual to which the whole mission is dedicated. What he observes in the way of temperature changes, wind veers and cloud formations, all details of vapor trails, icing conditions, warm and cold fronts, is carefully recorded.

Behind the "met" officer sits the navigator. He is the next most important man of the team. He has secret equipment to aid him in plotting his position while the Fortress is fairly near land, but for most of the distance he has to rely on dead reckoning and celestial navigation.

The main worry of the pilot and copilot is getting the big ship off the ground. Once they have a few hundred feet of altitude they can relax. But beforehand they check each engine carefully. If any of the engines seems to be running rough they will not risk a take-off. An alternate Fortress is always standing by. Rather than take chances they will transfer to it. (Continued on next Page)



In the radio room, social center of the ship, the non-coms are gathered for the take-off: engineer, radio-men, ball-turret and waist gunners. On the floors are stacked provisions looted from the mess to keep the crew from being hungry on the fifteen-hour trip: bread, butter, peanut butter, jam, self-heating soup, cheese, candy bars—hardly a balanced diet but a lot better than nothing.

Of these four men, the radio operator is probably busiest throughout the long trip. The waist and ball-turret gunners share the job of dropping smoke bombs to calculate drift. Sometimes they test their guns by shooting at the bombs.

By dawn the B-17 is far at sea. Daylight grows slowly; the bomber is racing westward almost as fast as the sun. "George," the automatic pilot, flies the ship except during the let-downs to fifty feet when a human pilot—and a good one—is called for. The sea is usually

empty except for occasional birds which appear even in mid-ocean. Sgt. Tilman O. Lawr, red-haired tail gunner from Des Moines, has his own theories of how they manage it. "Geez," he exclaimed on one occasion, "those birds must carry belly-tanks!"

At the outermost point on the weather track the Fortress takes its usual "met" samples on the deck and then begins to climb to altitude. At 12,000 feet the crew goes on oxygen. At the required altitude the pilot levels out and for the next two hours, headed home, the B-17 stays upstairs. There are violent winds in the troposphere as a rule, usually blowing from west to east, so the trip back may be shorter by one or two hours. If the home base is closed in, the crew will be directed by radio to another base.

Sometimes they land at an RAF station where they always get a royal welcome despite their somewhat disheveled and by

new unshaven appearance. And for practical furtherance of Anglo-American relations, there is probably nothing better than these occasions when Americans, like Second Lieut. Albert H. Ownbey of Hickory, N. C., or Staff Sgt. Angelo M. Nicoletti of Brooklyn, N. Y., or Second Lieut. Sam Nudelman, who used to run a clothing store near Scranton, Pa., drop out of the sky and spend an evening shooting the breeze with boys from Birmingham or Bristol or Barrow-on-Humber.

The crew is likely to be tired after a weather flight; fifteen hours is a long time in a bomber built for things other than comfort. But they get the next day off and they can paint another weather-vane on the nose of their B-17. Above all, they have the satisfaction of knowing that, even though they have nothing to show for their work except a few lines on a weather map, those lines are all important to the job of winning the war. ☆

## BE A BOTANIST ON THE SIDE

**T**HIS is an appeal to soldiers stationed at northern bases.

Several northern plants which can serve as emergency fuel and food are described in various survival booklets available to AAF personnel. Your ability to find and use these plants properly is a survival skill almost as important as knowing how to use your parachute. The AAF Arctic, Desert and Tropic Information Center is engaged in checking and improving survival information. The data on northern plants is inadequate because pre-war travellers were not thinking about the survival of soldiers when they gathered information. We want to have the benefit of data supplied by soldiers in the field.

*You can help by supplying the following information on the plants illustrated here, and others which you know to be useful in emergencies:*

1. Gather enough edible plants for a fair meal, or sufficient fuel plants to cook one meal. How long did it take you?

2. Describe the plant and its habitat, giving its size and the characteristics which helped you find it and may help other soldiers find it. If possible get a photograph of the plant.

3. Collect a specimen of each plant so we can be certain that you identified the plant correctly. Press it in a newspaper or magazine until dry and then mail it in an envelope along with your description. Consult your postal officer for mailing regulations.

Other food and fuel plants on which we need information are white heather, licorice root, bistort and reindeer lichen. If you hear of other useful plants from settlers or natives, tell us about them. Send your data and specimens to the

ADTIC, Headquarters, Army Air Forces, 25 Broad Street, New York 4, N. Y., attention Dr. John W. Marr.

**T**HE ADTIC is often asked to supply general descriptions of the vegetation of specific regions. If you are interested in observing your surroundings and writing about them, you can supply ADTIC with information that is urgently needed. Many soldiers are stationed in areas which botanists or even casual travellers have never visited. Even in the cases of areas scientists have studied, the descriptions on hand often do not supply the type of information needed. Your reports should cover:

1. Descriptions of each type of plant community (forests, meadow and so on), giving the relative abundance and size of each type of plant.

2. The date on which buds of trees and shrubs open and flowers bloom.

3. The appearance of the plants in the winter. -- AAF Arctic, Desert and Tropic Information Center. ☆



**KAMCHATKA  
LILY**

One to several feet tall.  
Dark red or purple flowers.  
Stems slender, sometimes vine-like.  
Grows in meadows mixed with grasses.  
Occurs on Alaska coast, Aleutian Islands and in Siberia.  
Boil or roast the root.



**CROWBERRY**

Creeping shrub.  
Branches rise two to three inches at tips.  
Leaves needle-like, short and very close together.  
Grows in all types of tundra, sometimes partly buried by lichens.  
Occurs throughout the north.  
Stems and roots make good fuel.  
Berries are edible; best when cooked.

**LOUSE-  
WORT**



Five to eight inches tall.  
Pink or purple flowers.  
One plant may have several flower stalks.  
Grows in tundra.  
Occurs throughout the north.  
This root is the most tasty northern plant food.  
Boil or roast the root.



**By Col. Clinton D. (Casey) Vincent**  
**14TH AIR FORCE**

**T**HE Thanksgiving Day blasting of Formosa's Shinchiku airdrome was the deepest penetration of the internal communication and supply lines of the Japanese to be carried out by the 14th Air Force, and the most successful mission ever conducted against Jap aviation by our China-based planes.

Planned as a surprise raid with secret and meticulous care, the attack was executed without loss. Employing 29 aircraft, we destroyed 42 enemy planes and probably destroyed or damaged a dozen more in this first strike at Formosa.

With forecasts of but three days of good weather over the area within a month, the 14th Air Force jumped into high gear with a report from the weather detachment that Thanksgiving Day would be clear. On November 22 and 24 our reconnaissance planes brought back pictures of Shinchiku, revealing more than eighty aircraft, mostly medium bombers, on the field. On receipt of the first pictures we called together our tactical air staff and planned the day, approximate time, fighter and bomber strength and the bomb load of the mission.

On the morning of November 25, fourteen Mitchells, six from a Chinese-American squadron, took off from an advance base and kept rendezvous with fifteen fighters. The raiders then flew to the China Sea coast where they dropped down to skim over the whitecaps to avert detection by Jap locators.

Success of our mission at that point

hinged on surprise which, in turn, depended upon perfect navigation. If spotted, the mission could turn into a costly failure since we were flying into a hornet's nest of Japanese air power.

Any anxiety, however, came to an end when we hit the Formosa coastline at precisely the right place and time. The fighters dropped their auxiliary fuel tanks and sped ahead in preparation for their battles. Bombers and the trailing formation of fighters climbed to 1,000 feet for their bombing and strafing attacks as the entire formation lined up on the target.

A squadron of P-38 fighters was leading, while the B-25s followed with their loads of fragmentation bombs. A fighter squadron came last to protect the Mitchells from rear attacks.

Upon approaching the target the P-38 leader spotted a lazy traffic pattern of ships waiting for landing instructions over the field. With his first flight, he joined the pattern, moved up on a bomber's tail, pressed the gun button on the stick, eased up behind another bomber, squeezed the button again, banked around to line up on a fighter just taking off and squeezed the button again. Score: three Jap planes destroyed. Meanwhile, his fellow pilots were knocking down other ships, accounting for nine by the time they had passed over the target.

So complete had been the surprise that by the time the second wave of P-38s charged over the field they noticed some 200 Jap mechanics just breaking for

cover. In a deadly buzz job, this flight blasted ten more enemy planes into flames.

B-25s then dropped their fragmentation bombs among the parked planes and scurrying mechanics. Three B-25s, banking away from the target, turned their guns on a barracks area and an engineer-gunner knocked down a Zero during the action. The last two Zeros in the air were shot down a moment later.

Despite smoke and flame over the target, the trailing fighter formation moved over the field and fired five more Jap bombers, probably destroyed a sixth and damaged at least three more.

In three minutes of fast action nineteen bombers, eight fighters, two transports and one Stuka dive bomber were destroyed, one bomber probably destroyed and three others damaged by gunfire in the air. Fragmentation bombs riddled and ignited between twenty and thirty other planes on the ground.

The only damage received by our planes were small arms hits on three B-25s and a bent wing on a fighter which hit a tree in its strafing run over the field.

Two Japanese versions of the raid were broadcast. One newscaster reported an attempted strike on Shinchiku airdrome in which the Japanese forced the raiders to turn back before reaching the field, shooting down two American aircraft. Another enemy radio report was less modest. This broadcaster reported that our bombers were forced to jettison their bombs before reaching the target and all, except one, were shot down. Such perverted claims were additional proof that the Japs had been severely jolted.

It was a perfect raid. ☆

# 'One of my boys'

By Capt. N. W. Pinney, Jr.

84TH BASIC FLYING TRAINING SQUADRON, GUNTER FIELD, ALA.

I WAS relaxing at the club last night after another six-hour, five-student flying period and just by chance I happened to see his name in the evening paper.

There was quite a headline telling about the big Ploesti raid, and in reading it I caught one name that was very familiar. The story said something about this pilot being one of the war's great aviators and mentioned that he had been flying a B-24 when his crew blasted their target to bits. I ran the name through my mind again and again, and at first I could not sort him out from the many students I had helped train. However, I knew he had been "one of my boys" so I settled back comfortably and tried to recall him more clearly.

As I went back a year or so, I remembered him as a tall, skinny kid with an unruly mop of hair. He was always getting gigged for that hair, even if he *did*

get it cut once a week. When I first met him on the line he seemed such a young, awkward squirt that I wondered how he had ever gotten by the 64. However, what he lacked in good looks he more than made up in brains and memory, and he learned his procedures so well that I soloed him long before the others.

## An instructor's thoughts after reading a headline.

It was one of those crisp autumn days when we shot those fateful duel landings at the auxiliary field. He managed to make enough fairly good ones to convince me he was ready for solo, so we stopped by the stage-house. I'll never forget seeing the sweat running down his neck when I got out and leaned into the rear cockpit to fasten the safety belt across the seat. I knew he'd probably be too nervous to remember to set the trim so I set it myself and tried to be as casual as possible when I climbed up to talk to him. "OK, now," I told him, "just

place your base leg where we've been putting it, remember to hold the nose level to slow her down when you cut the gun, give it throttle if you bounce high and, for *God's sake*, remember to reset the trim if you have to go around."

Well, the kid sat there moistening his lips and looking at me as if he were hearing the most important words since the Sermon on the Mount. I gave him a tap on the back and jumped off to walk over to the bench while he shot me a nervous look. Then he gave her the gun to taxi and dusted me off very nicely.

He took one hell of a long time to check his mags and I recall wondering if he was being unusually careful or just trying to screw up his courage to take off. Finally he did give it the gun (roughly as usual) and I remember cussing at him because it was cross-tee. I sweated him out all around the traffic pattern and, when he turned onto the base leg, I held my breath until he closed the throttle. He set her down *exactly* three-point, something he had rarely done with me, and taxied back to the stage-house with a mile-wide grin that said, "Hell, man, I can fly this thing!"

He shot two more solo landings which he really greased in, and on the dual ride back home I hadn't had to say a word to him. He was obviously feeling his oats as I could catch scratchy strains of "Off we gooo, into tha wile blooo yonderr..." and I had a funny feeling he would be needing some deflating soon. Surely enough, he began to get a little cocky, his airwork started to go "in the pink," and



I had had to give him a lecture on pilot ability that must have made his ears burn for days. Wonder if he remembers it now?

His instrument flying was never anything to brag about and he had gotten the idea somewhere, certainly not from me, that the only way to fly instruments was to shove the controls around like he was driving a bulldozer. An instrument ride with him was always better than anything you could get on a roller-coaster. How he managed to get by his instrument check is beyond me; maybe he gave the check pilot that special "eager look" he usually reserved when he knew he was in for some healthy correction.

Will I ever forget his formations! He had the damndest habit of jerking his head around when he should have been watching the lead ship, and he would continually use a lot of aileron to hold his position. I remember very clearly racking him back for that little habit good and proper, but he never calmed down until we had a near-accident.

As I remember, we were up solo formation and he was my number two wing man. I had made a turn to the right and he had failed to hold position. He dove down ahead and under me, then climbed up steeply to the right and above me, and just *hung* there in about a sixty degree bank. Then, zoom, back he came across us just grazing my canopy and scaring me and my number (Continued on page 64)

Illustrated by Capt. Raymond Creekmore





Illustrated by James T. Rawls

# PREPARE FOR INSPECTION

## TIMELY ADVICE FROM THE AIR INSPECTOR

Administrative ☆ Tactical ☆ Technical

► **Under False Colors:** Wearing of service ribbons and stars which were not earned makes a soldier a hypocrite. WD Cir. 62, 1944, directs that all commanders will assure themselves that service ribbons and stars are worn only by those individuals authorized to wear them. Authority to wear a particular service ribbon and battle stars will be noted in Service Records of enlisted men, and on Officers and Warrant Officers Qualification Cards (WD, AGO Form No. 66-2).

Requirements pertaining to eligibility to wear the service ribbons and stars are outlined in the circular.

► **Continuing Insurance in Civil Life:** All military personnel discharged to return to civil life, except those discharged under Sec. VII, AR 615-360, must be furnished information concerning National Service Life Insurance as presented in WD Cir. 336, 1943.

The insured will be clearly informed that discontinuance of allotment for payment of premiums does not cancel the insurance if appropriate action is taken to continue premium payments. The salient provisions of National Service Life Insurance, including the rights and conditions of conversion of term insurance to permanent plans, will be fully explained, and the insured impressed with the advisability of continuing the insurance after return to civil life. Those who be-

lieve they will be unable to maintain the full amount will be informed of their right to continue any amount of \$1,000 or more, in multiples of \$500.

► **Inspecting Life Vests:** Inspections of crews going on overwater flights reveal that in many cases life vests have not been properly inspected and inspection dates have not been stenciled as outlined in TO 13-1-3. Reference is also made to Pilot's Information File 8-10-1.

Frequently caps on the CO<sub>2</sub> cylinders of life vests are not screwed tightly enough originally or work loose. These caps should be checked often because if a cap is more than half a turn from full tight, the plunger will not puncture the cylinder.

► **Nipping Frostbite in the Bud:** A report from an overseas theatre reveals that in one week 244 combat crew members became casualties because of frostbite. This is evidence enough of the need for more emphasis on training in prevention and first aid treatment of frostbite—and more emphasis on follow-up to assure that instructions are carried out.

► **Attention: Crew Chiefs:** Tips from technical inspectors:

Hose clamps on all aircraft should be checked frequently.

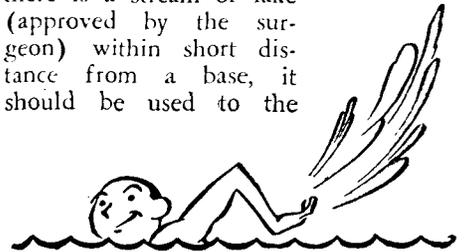
Propeller feathering pumps must be bled to insure that they are full of oil

after the complete oil system of an engine has been drained and refilled, or whenever a modification has been made of the type that would empty the feathering pumps. In bleeding these pumps, the pump outlet line should be disconnected and the feathering buttons depressed until oil is flowing through the pumps. If this is not done, the pump may be blocked by air, preventing oil from entering the pump mechanism and thereby completely stopping the feathering action.

Careless maintenance has resulted in engine rocker box leaks. Nuts securing some caps were only finger tight. Some gaskets were found torn, creased double or missing entirely. Other cases of leakage were traced to warping of the cap itself, as a result of excessive and uneven torquing of the securing nuts.

► **Correct APO Numbers:** All postal officers at continental home stations have been directed to exercise the utmost caution to assure that correct APO numbers are placed on WD AGO Forms 20-1. (AAF Ltr. 80-8, 10 February 1944, Subject: "Incorrectly Addressed Mail.")

► **Utilizing the "Old Swimm' Hole":** A little water will go a long way toward preparing AAF personnel for combat duty, as long as there is enough to learn how to do more than "dog paddle." If there is a stream or lake (approved by the surgeon) within short distance from a base, it should be used to the



fullest possible extent for instruction in swimming and rescue work as part of the physical fitness program.

Drew Field, at Tampa, Fla., took advantage of a lake five miles from the field to teach 2,000 men how to swim last summer. The higher the mercury rose, the more popular the training became.

► **Noncommissioned Officers:** WD Cir. 70, 1944, pays tribute to noncommissioned officers and directs that commanders of all echelons do everything possible to assure that noncommissioned officers are "top-flight" men:

"It has been clearly demonstrated in this war, as in past wars, that noncommissioned officers are the backbone of the Army. Success in combat depends upon the character and qualifications of the noncommissioned officers commanding small units. They must be outstanding leaders with a high sense of duty and a strong will. They must be resourceful and willing to assume responsibility. In order to insure that our noncommissioned officers

are equal to the tasks that lie ahead of them, commanders of all echelons will give their personal attention to improving the quality and prestige of those noncommissioned officers who exercise command responsibilities."

► **Decorations and Service Ribbons:** No soldier wants to wear his individual decorations or service ribbons incorrectly, but many apparently haven't consulted regulations or their first sergeant. Here is some information that may help to get those ribbons pinned on correctly:

Individual decorations are worn in the order of precedence shown in Par. 53a (2), AR 600-40, 28 August 1941, as amended by Ch. 24, 5 July 1943, followed by service ribbons in order of the date of the service performed. The decorations and service ribbons are worn on the left breast in order from right to left about 4 inches below the middle point of the top of the shoulder in one or more lines.

Suppose, for instance, a soldier has two individual decorations—Good Conduct Medal and Purple Heart, and two service

medals—American Defense (received before going overseas) and Asiatic Theatre. The ribbons for these decorations and service medals would be worn in this order, from right to left:

1. Purple Heart. 2. Good Conduct Medal. 3. American Defense Medal. 4. Asiatic Theatre Medal.

The Purple Heart is first, as it takes precedence over the Good Conduct Medal, and the American Defense Medal precedes the Asiatic Theatre Medal since it was earned before the latter.

► **Ground Work on Formation Flying:** The Air Inspector of an air force notes that "still more emphasis should be placed on ground instruction on formation flying. Pilots are still being found who don't know formation signals, how to change positions in a formation, the different technique in the arc of turn, the use of throttles, etc."

► **Navigational Failures:** Here are some common causes of navigational failures:

— Lack of preparation before flight, bad

briefing and failure to check equipment for serviceability.

Failure to "steady" the aircraft when using the sextant, taking drifts or loop bearings.

Pilot flying courses other than those given him by the navigator.

Applying wrong drifts.

Relying on mental calculations rather than comprehensive log keeping.

"Wishful thinking" in identification of pin-points.

► **Radio Operators' Don'ts:** Here are some "don'ts" called to the attention of radio operators by the Air Inspector of the Second Air Force:

Don't forget to check your radio before you take off.

Don't forget what frequency the squadron is on.

Don't forget your authentication.

Don't forget how to use your frequency meter.

Don't forget the call signs of the squadron and the home station.

Don't abuse your radio equipment.

— Don't forget how to tune your radio. ☆

## HERE ARE THE ANSWERS

**Q. What arm or service is indicated in the legend following the official signature of a warrant officer on duty with the Army Air Forces?**

**A.** When signing official correspondence and other official documents and records, warrant officers, regardless of the organization with which serving and whether appointed in the Regular Army or the Army of the United States, will indicate "USA" in the legend after their signature. Exceptions are made for warrant officer band leaders and warrant officers appointed in the Army Mine Planter Service. (AR 340-15, as amended by Ch. 12, 12 August 1943.)

☆

**Q. May enlisted men of the first three grades receive monetary allowances in lieu of quarters for dependents under the act of 26 October 1943, effective 1 November 1943?**

**A.** An enlisted man who, on 1 November 1943, was receiving or was entitled to receive monetary allowances in lieu of quarters for dependents and had applied therefor, has the option of receiving or continuing to receive such monetary allowances, or, in lieu thereof, may elect to have his dependents become entitled to receive family allowances. For example, a staff sergeant with a wife and one child was receiving monetary allowances of approximately \$37.50 a month on 1 November 1943. He may drop these allowances in favor of the family allowances, which would mean that his family would receive \$80 a month, of which \$22 would be deducted from his base pay. Under no circumstances, is he entitled to both allowances. (Par. 1d, AR 35-4520, as amended by Ch. 5, 21 January 1944.)

**Q. May improperly fitting clothes be altered without charge to the enlisted man?**

**A.** When a proper fit cannot be obtained from stock sizes, uniforms may be altered at government expense at the time of initial issue or when necessitated by change in the enlisted man's measurements, provided due regard is taken of the cost of the necessary alterations as compared with the regulation price of the uniform. Alterations which will result in a material change from the cut or measurements prescribed for it will not be made in any article of the uniform. (Par. 9b, AR 615-40, 24 April 1943.)



**Q. May time served as an enlisted man prior to entrance upon active duty as an officer be considered in computing the accrued or accumulated leave credit of an officer?**

**A.** No. (Opinion of The Judge Advocate General, Bulletin of The Judge Advocate General of the Army, November 1943, p. 445.)

**Q. Is a WAC officer who entered upon active duty on 1 September 1943 entitled to the credits of ordinary leave which accrued but of which she did not avail herself during her service as an officer in the WAAC?**

**A.** Yes, provided her transition for membership in the WAAC to the WAC was accomplished without there having been any interruption in her service. (Sec. IX, WD Cir. 24, 1944.)

☆

**Q. Should the entry on the cover of the Service Record regarding arm or service (Par. 2c, Sec. II, WD Cir. 287, 1943) be made at the time of induction, and should it be changed as changes occur?**

**A.** The Adjutant General advises that line 3 of the cover of the service record (arm or service from which enlisted or inducted) should not be filled in at the time of induction in cases of men who are inducted into the Army of the United States without regard to arm or service. The entry should be made when the enlisted man received his first assignment to a specific arm or service. Only *one* entry as to arm or service should be shown on the cover of the Service Record. Future assignments should be shown on Page 5 thereof.

☆

**Q. May officers receive mileage payments in connection with temporary duty?**

**A.** Payment of a flat per diem is the only authorized method of reimbursing officers for subsistence expenses incurred in connection with temporary duty travel (in the continental United States) directed in orders issued on and after 1 March 1944. (WD Cir. 60, 1944.)

# CORNERSTONE FOR CBI OFFENSIVES

By Capt. Robert V. Guelich

AIR FORCE Overseas Staff



Without the Liberator in the background, this scene might well have come out of Biblical antiquity. Runways are built entirely by native labor with Indian methods and tools, under American supervision.

ONLY landmarks of habitation on the prairie land were a dairy stable, open wells operated by oxen, and some native mud and bamboo huts. Crumbling mosques and temples of an ancient civilization dotted the barren countryside. The weather was hot and dry when a heavy dust storm swirled in to blanket a small group of khaki-clad Americans who were struggling to pitch their tents. Then the rains came, pouring down through the dust-laden air to become a deluge of mud. It was the beginning of the monsoons.

Knee-deep in mud and water, this bedraggled group of AAF ground men cursed the foul weather, cursed the lonesome land and began to set up their camp—a camp that was to grow into the first American supply and repair depot in central India. At the end of the line for communications and supplies, halfway round the world, this first depot group in India not only started its task with woefully inadequate personnel and equipment, but also in the midst of the worst terrain of the entire world—deserts, jungles and the world's highest mountains—and the monsoon rains had started.

Despite their inauspicious arrival, the men of this depot group were to change the course of the war in southeastern Asia—not because of their strength and equipment, for they had no AAF supplies and only a part of their organizational equipment, but because of their spirits to accomplish the impossible.

The task assigned to the AAF was to keep a supply line open in China and to build enough air power to stop and turn back the Jap in his march toward India. However, until supply and service depots were set up our airplanes could not operate. So the initial task was thrown into the lap of the Air Service Command and this one depot group (one of the first ever activated) was to lay the cornerstone for future aerial offensives by the AAF.

WHEN the depot group arrived in central India in June of 1942, the few B-17s evacuated from Java to Asia already were in need of repair parts; P-40s flying combat missions under General Chennault were short of supplies; only efficient transportation routes were the air cargo

routes being flown by some overworked C-47s. The air strength was small, but the task was huge, for there were no parts, no supplies, no tools.

Col. John L. M. desIslets, who had accompanied Brig. Gen. Elmer Adler on the initial AAF survey of India and who had laid out plans for the new depot installation as an airdrome construction engineer, took over as commanding officer of the half-drowned depot group. "Colonel John," a civil engineer between two Army careers, wasted no time. The camp went on a work schedule of eighteen hours a day as stables were converted into headquarters, a nearby British barrack was fixed up as the first warehouse, and new barracks were constructed as living quarters. These barracks were turned into warehouses when supplies from the first convoy began to arrive.

Docking the first ship was an event of such great importance to operation of the small air force in India that a special delegation of officers was dispatched to the port to expedite classification and distribution of the cargo. Very little of this cargo ever reached the new depot

for, according to Lieut. Col. Stanley Markell, who was at the port, "All we had at the depot were obligations and no property; when the ship docked, we had commitments for almost every single item."

From boat to cargo plane went the equipment most urgently needed by combat squadrons; railway wagons carried the rest. With the unloading of other ships, supplies poured into the depot as fast as the monsoon rains, overwhelming the men and flooding all of their facilities, but being overwhelmed was SOP in those days.

Drainage ditches constantly had to be dug and rechanneled to keep a field of unsheltered engines from going under water. Tent life was complicated by frogs, grasshoppers and monkeys that wanted to share the men's quarters. P-38 flies, the hit and run type, worked on a 24-hour schedule. The air was so humid you could ring water out of it; the saturated atmosphere rusted typewriters and the intense heat swelled and melted the rubber platens.

Planks over flooded drainage ditches were moved during the night by practical jesters whose sense of humor couldn't be drowned. Men on night latrine duty were the victims who fell in.

Stamps, a few cigarettes, Indian soap (you had to scrub three days to work up a lather) and Indian matches (if one lights you throw the rest of the box away) were the only attractions in the PX during those early days of breaking ground for the AAF.

"Colonel John" always was around when the going got tough, whether it was three in the afternoon or three in the morning. He knew his men by their first names and he knew the jobs they were doing; he assumed full responsibility for all operations of the depot and all actions of his personnel. He was tireless, a dy-

## Groundwork laid by this ASC depot group in India has been turned into offensive striking power against the Japs.



One of our original depot planners in India, Col. John L. N. des Isles—"Colonel John" to AAF depot personnel in CBI—is shown checking supplies moving out from in-transit shelters.

namic individual who was quick to appraise and solve problems, and his men constantly were accomplishing the impossible for the "old man."

Camp construction continued through the entire monsoon season while the men attempted to keep their tents from floating away. By autumn, the camp was firmly anchored; the first control depot for all AAF planes in the CBI theatre was in operation. But the problem of keeping airplanes flying was another near-impossible task.

Requisitions flowed in and there were no supplies. When some supplies were received, they had to be stored in the open fields since warehouses weren't completed. Airplanes had to fly combat missions when there were no tools available for maintenance and repair.

To help solve the problem of too few men for the simultaneous job of constructing and operating the new depot, Indian coolie labor was employed; dhobies and tonga whalers were taught strange mechanical jobs, as non-coms were made shop and project supervisors with hundreds of native workers under them. Despite language difficulties, the men accomplished miracles in getting work out of the natives although their frequent religious holidays, their primitive methods of doing all work by hand and their strict disinterest in hurrying were exasperating. If a big box had to be moved, the natives wouldn't try to budge it for size meant weight to them. If a little box had to be moved, regardless of weight, they would struggle to get it on their heads. Some of the better educated Indians proved to be very able and later were assigned jobs as foremen over other Indian workers, thereby freeing non-coms for other jobs requiring technical skill and training.

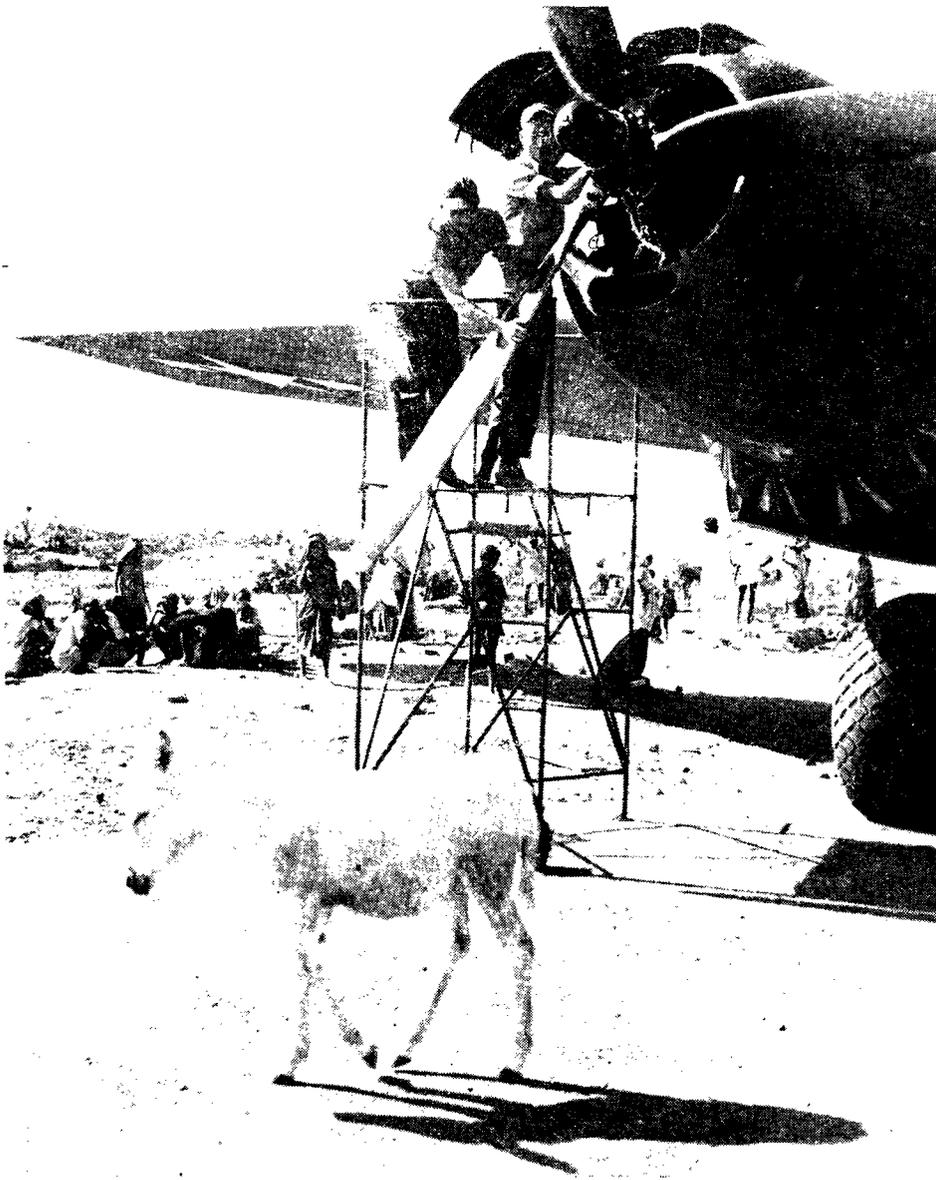
Still, without shop equipment and tools, the depot would not have been able to repair and overhaul engines and airplane accessories had it not been for the Yankee ingenuity of our GIs. Without benefit of blueprints or models, they designed and built the functional equipment needed such as engine cradles, moveable hoists, flow-benches, parts racks for engines and an almost endless list of other shop equipment. Home-made hydraulic and electrical test devices for accessory equipment and instruments replaced the equipment that never reached

Scrap metal is collected at the AAF service depot in India where it is sorted by native workers under supervision of Army personnel. Some plane parts are reclaimed, other metal returned to U. S. steel mills.



Coolie-driven white oxen draw water from a forty-foot well in central India. The water is hauled to the surface by pulley in a goatskin bag. GIs never tire of watching Indians work with their primitive methods.





Taunted, praised, petted and insulted, this six-month-old burro walks with indifferent poise as pleas for attention are heaped upon him by two line mechanics at an AAF air depot somewhere in India. The little burro is carefree now, but when he grows up in another six months he will carry loads of earth and stone upon his back that weigh more than he does. The AF knows his worth.

the depot group. By October, 1942, a production-line overhaul system for engines had started operations and a second one had been set up at another base in southern India.

Sgt. Edward Dillon set up a crude foundry shop in which he began to cast airplane parts of brass, aluminum, zinc and babbitt. Some of his cast products included housing terminals, sway braces for fighter bomb racks, worm and ring gears, even pistons. Right hand man in this work was Sgt. Frank Bilek, eighteen years a pattern maker. He turned out the wood patterns for the foundry shop, using old shipping crates for his wood supply.

Transportation delays, notoriously common in India because of the five different railway gauges, further complicated depot supply and shipping problems. These were overcome partially by assignment of depot soldiers to ride the rails as escorts

on all shipments. These men saw that American equipment was not sidetracked or lost en route to its destination. To get his shipment of oxygen cylinders through, one escort held up a train for a full day until the train crew finally acceded to his wishes and put the cars of AAF materiel back on the train after they had been dropped on a siding for no apparent reason. Escorts rode river barges to keep the natives, who like to chat with friends at every river wharf, on the move. Other expeditors practically lived on the docks to prevent new shipments of aircraft parts from getting buried under cargo less urgently needed.

Other men from the depot group were detached as cadres for the establishment of new service centers near advance bases of combat squadrons. Despite the necessity for sending its own personnel out as expeditors and as training detachments, the nucleus of the depot group continued

to expand its installation and turned out more and more reconditioned equipment.

More airplanes began to arrive in the theatre as rapidly as repair and maintenance facilities were expanded. The cornerstone had been laid; the 10th and what is now the 14th Air Force were able to increase the tempo of their operational flying, striking the Jap supply and communications centers more and more frequently and effectively.

By the spring of 1943 another depot was needed, and needed in a hurry, to help swing the battle pendulum from the defensive to the offensive. To build the new depot, Brig. Gen. Robert C. Oliver, air service commander for the entire CBI theatre, called upon the men who had converted an empty prairie into a huge operating supply and repair base in less than a year. Though scattered all over the theatre, many officers and enlisted men were called back to tackle the new assignment: an assignment that had a six-month deadline.

There was no chance to rest for these men who had started the ball rolling for American Air Force operations in southeastern Asia. There was to be no chance for "Colonel John" to settle down behind a desk, for the colonel was assigned the task of setting up the new depot and he had to start from scratch again.

A private golf course was to be the site for the prospective depot. Empty jute storage buildings were utilized for AAF supply warehousing and for the engineering shops. Before living quarters could be erected, the monsoons struck again and history repeated itself as construction was carried on in mud and water.

Just after the "old man's" headquarters had gone under water during one heavy monsoon deluge the message center received a request from theatre headquarters to expedite deliveries. "Colonel John" replied in proper military language but tacked on a request of his own: "Send me a swamp glider so I can get into my headquarters." A short time later the swamp glider arrived. Now it is being used as a personnel ferry between the main depot and its subsidiary storage buildings on the opposite side of a nearby river.

WHEN supplies arrived so fast they could not be stored in permanent warehouses, 300,000 square feet of land was covered with bamboo and tarpaulin shelters in less than three weeks. The area now is used for in-transit supplies, which total about fifty percent of all supplies handled by this depot. These in-transit supplies are unloaded into the temporary shelters and recorded only according to

the project number of the entire shipment. As soon as transportation is available to the proper destination, these supplies are reloaded and shipped without ever appearing on any itemized stock records and with a minimum of rehandling. Warehouse supplies of repair parts, clothing and accessory equipment are placed in general classification sheds on the river bank as they are unloaded from river barges. Then they are picked up on itemized records and placed in warehouse bins as a reserve stock for future requisitions.

With warehouse space scattered over a ten-mile radius, the depot faced additional problems in the receiving and dispatching of its supplies. Almost before the new depot personnel had gotten their feet thoroughly soaked, eighty railway wagons and thirty river barges arrived with AAF supplies—supplies that had to be broken down by items and classified for storage and future shipment. It was a night and day job for every man attached to the depot to get the equipment under cover and depot construction continued while it was being accomplished.

Under Maj. Clarence B. Dayton, engineering officer who had accompanied General Adler to the theatre as a technical sergeant, the engine overhaul shops

were set up during the summer and started rolling out engines in October. Seventy-five percent of the personnel in the shops were Indians who were trained on the job by enlisted men.

At the end of the six months allowed for set-up and operation of the depot, it had surpassed its parent depot in size and volume of material handled. The job was done and with its completion Colonel desIslets, the driving force that rushed India's two largest depots to completion in less than sixteen months, was returned to the States to tackle a new assignment.

AFTER two years of skimping and scraping to keep the planes flying, our Air Force in India now is being maintained full strength through the efforts of ASC personnel who built the depots necessary to do the job well.

Transportation of supplies and equipment to the 14th Air Force in China still remains one of the most serious problems to be solved. However, even the 14th has been able to build to greater strength and fly more operational missions because of the groundwork laid by this one depot group, despite equipment shortages, personnel shortages, supply shortages, unreliable transportation and a constant battle with dust, heat and tropical storms. ☆

One of the oldest castes in ancient India, the sweepers go about their task of cleaning the runways of debris. Unhurried, custom-bound Indian

people cling with stubborn faith to the past as modern war weapons move around them. The C-47s and the sweepers are symbols of time in India.





# FLYING SAFETY

Suggestions from the Office of Flying Safety, Headquarters, Army Air Forces, in the interest of accident reduction.

*These items are for educational purposes and are not to be construed as directives.*

## SAFETY ADVICE FROM COMBAT VETS

The following consensus is based on the ideas and observations of four bomber pilots who have recently been assigned to the Office of Flying Safety after tours of duty in the North African and Mediterranean theatres. They are Maj. Roscoe H. Johnson, CO of a B-17 squadron, and Maj. Kenneth W. Schultz, squadron CO, Capt. Edmund Harris and Capt. Robert N. Wesley, who flew B-26s. Each of these officers has had from 40 to 52 combat missions.

**Parachutes:** One combat mission is sufficient to dispel any notion that a chute is a useless appendage. The parachute, despite its nuisance qualities, overnight becomes man's best friend. The wise pilot, who as the commander is the last man to leave a ship, develops a lot of interest in the equipment.

Where a squadron lacks a personal equipment officer, an officer should be appointed to supervise the fitting and care of chutes. Combat exacts a toll for any guesswork.

Newly found "chute consciousness" is no substitute for a backlog of training in the care and handling of the equipment. A trained man has the confidence and surety that may make all the difference in a tense situation.

"In a theatre," Captain Wesley advises "a pilot should make certain that his crew wear, or have right at hand, chutes at all times. Returning from a mission, my gunners formed the habit of leaving their chutes behind when they went forward to the navigator's compartment to keep warm. I stopped it with these words, 'As last man out, I don't want to have to wait around while you're scrambling around hunting chutes.'"

Major Johnson's belly turret gunner took his chute, a roll-type chest pack, with him into the ball of the B-17. Other gunners in the theatre used the same trick.

"The pack took up some room," Major Johnson says, "but my gunner, who was about the average size for a belly turret man, found space for it. The deal gave him the best bail-out position in the ship. All he had to do was snap on the chute, open the escape door and fall out."

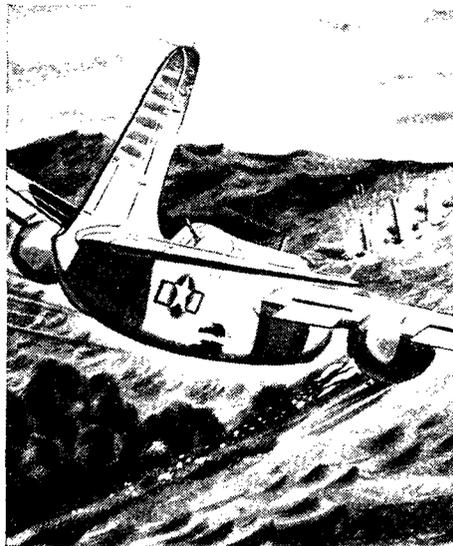
**Ditching:** In the Mediterranean theatre,

experience has shown that B-17s and B-26s generally will float long enough for everybody to get clear, but there's no time for dilly-dallying. Inspired by furnishing cover for planes forced down, crews performed ditching drills by assuming stations and abandoning plane during normal landings.

These drills were made as realistic as possible, with crewmen having emergency equipment at hand, bracing themselves and, after the plane rolled to a stop, scrambling out through emergency hatches. The few minutes required to put the plane back in shape were considered well spent.

It's a good idea, according to Captain Harris, to attach emergency equipment to the person when possible to make certain it will be at hand when the crew gathers in the life raft.

In the Mediterranean, as elsewhere, a pilot at times has difficulty judging his height above the water when letting down. Two aids found useful in this



connection were creating a splash by firing the forward guns, and observing the shadow cast by the plane when the sun was right.

**Emergency Equipment:** A life raft ceases to be excess baggage and assumes considerable importance to a thoughtful man making overwater combat flights. Major Johnson devoted a lot of care to

his raft and, as a result, it never fell out in flight as in the case on other B-17s.

He made certain that the raft was completely deflated (to prevent the raft from expanding at high altitudes), kept foreign objects from the compartment and safetied the release handle with light wire as insurance against vibration. The raft also was checked for bullet or flak holes upon the return from any mission in which the plane had been under fire.

"In a combat theatre," Major Johnson explains, "if you're careless or unlucky enough to lose your raft you may find you'll have to do without one for lack of a replacement."

**Crash Landings:** As in ditching, it's important in crash landings to get away from the plane in a hurry. Crews need no urging on this; as one officer remarked: "The men spill out like Keystone Comedy cops leaving a patrol wagon."

But this apparently spontaneous speed often is the reward for emergency drill. Captain Wesley says that it's important for a pilot, preoccupied with an emergency landing, to be free of worry about whether his crew has assumed proper stations.

"With your own crew you can get procedures down pat," he observes, "but in North Africa there was a lot of shifting of personnel. When this happens a pilot should instruct newcomers on emergencies before taking off. His own peace of mind may be at stake later on."

Captain Wesley, who witnessed a number of belly landings, notes most pilots had a tendency to overshoot when coming into the field.

"Naturally the average pilot is not used to making a wheels-up landing," he says, "so unless he bears in mind that when in this condition his plane will glide farther than in a normal approach he risks not being able to get down in time."

Crewmen in Captain Harris' group helped cushion themselves for a crash landing by inflating the Mae West. The plan wasn't used for ditching because of the danger of a puncture and an inflated vest might impede the exit from a plane filling with water.

**Oxygen:** Major Johnson's crew had no difficulty with high altitude missions—a dividend for rigid oxygen discipline.

When the navigator reported 10,000 feet altitude, masks were donned, with each man confirming by interphone. Between 10,000 and 20,000 feet, the roll was called each half hour, and at higher altitudes, every five or ten minutes.

Because of their isolation, the belly and tail gunners received special attention, but any station failing to report was visited immediately by a crewman equipped with a walk-around bottle.

Major Johnson's crew practiced with the walk-around bottle to discover its time limitations. Here, too, guesswork can cause trouble. The length of time a bottle may be used varies with the pressure of the oxygen system at the time it was filled, the altitude and the lung capacity of the wearer.

"An incident on one of our flights really made us oxygen conscious," Major Johnson says. "I verified those training films that show a man being overcome by anoxia without knowing it. On this



flight, my co-pilot's oxygen hose connection became uncoupled. He got a silly, dreamy look in his eyes. I thought he was clowning until he suddenly toppled from his seat. The engineer coupled the hose again, and the co-pilot came to in a couple of minutes. He never could be convinced that he had actually passed out." **General Observations:** Crew members, including pilots, wore GI steel helmets when in combat in the Mediterranean theatre. The pilot usually donned his tin hat when approaching flak areas.

Major Johnson's group solved the problem of fitting a radio headset under the helmet by inserting the receivers in a cloth headpiece and eliminating the frame.

Eternal vigilance is required overseas to protect jungle kits and other emergency packs. Handy items such as guns, machetes and the like have a way of disappearing when planes are serviced.

"Your best protection," Major Johnson says, "is to keep an eye on your stuff and see that your crew does likewise, especially at a strange field." ☆

**One Pilot Accepted It . . .** Cleared from Phoenix, Ariz., 500 feet on top of the clouds via the Green Airway to El Paso, Texas, the pilot of an AT-11 became unsure of his exact location as he approached his destination.

Weather at El Paso showed an overcast at 2,000 feet, with light rain. Under these conditions the lost pilot faced trouble, for within 32 miles of the field there are mountains as high as 9,100 feet.

When the pilot announced he intended to descend through the overcast, Army Flight Control advised him to proceed to Salt Flat, where conditions were CAVU. The pilot accepted the advice and made an uneventful landing.

Meanwhile, Army Flight Control had made arrangements with a Federal Communications Commission Radio Direction Finding Station to direct the pilot in case he was unable to locate the Salt Flat Field.

**Another Didn't . . .** A flight leader's failure to accept the advice of Army Flight Control recently cost the AAF a B-25. The plane was an element of a three-ship flight which cleared contact from Lexington, S. C., to Chanute Field, Ill.

While over Cincinnati, the flight leader advised the destination was changed to Baer Field, Fort Wayne, Ind., Instrument Flight Plan, with a request the flight be assigned air space 500 feet above all clouds. The Cincinnati Flight Control Center informed the flight that Baer Field was closed, adding that Chanute had unlimited ceiling and good visibility. The flight leader chose to go to Baer Field anyway.

The Chicago center advised the flight that South Bend had a 4,000 feet ceiling, with unrestricted visibility, but the flight leader decided to (Continued on next page)

## P. & I. SAYS:



(The Prevention and Investigation Division, OFS, is composed of veteran flyers. These reports include comments by these veterans on recent accidents. Read and heed.)

**MITCHEL FIELD, N. Y.** — A P-47 pilot was killed and his plane demolished when he made a violent bank, with insufficient airspeed and altitude, in an effort to line up with the runway after overshooting during his turn into the approach. The plane stalled and spun in.

**P & I COMMENT:** *This is another tragedy resulting from a pilot's failure to have firmly in mind a determination to go around in case of overshooting. This pilot had only a split second to decide what to do and, lacking a fixed idea to go around in such cases, he impulsively tried to get down regardless. As The Command Pilot, official accident analyst of the 1st Fighter Command, remarked: "No pilot has ever been condemned for going around."*

**BALTIMORE, Md.** — A BT-9 nosed over, damaging the propeller, when the pilot ran up the engine for check before take-off.

**P & I COMMENT:** *Investigation showed this plane was facing 180 degrees, although a gusty 22 MPH wind was blowing from 320 degrees. In other words, the pilot was asking for just what happened. When engines are being run up for a ground check, it's good practice always to point the airplane less than ninety degrees from the direction of the wind.*

**KINGMAN, Ariz.** — Pilot made a normal landing with a P-38 except that his gear was up. Upon entering the downwind leg he had placed the landing gear switch in down position but did not check the landing gear warning lights.

**P & I COMMENT:** *Upon investigation of the aircraft it was found that the down relay was inoperative, making the electrical extension of the gear impossible. Since the pilot did not check his warning lights he did not know the gear was up and made no attempt to crank it down. Two seconds of care were all that was required.*

**COLORADO SPRINGS, Colo.** — Preparing to take off in a B-17, the pilot disregarded his check list and began to start the engines. The pilot and co-pilot devoted all of their attention to the engines and the plane began to roll forward. This was not observed until too late and the ship crashed into a gas truck before the brakes could be applied. One propeller and the nose section was damaged.

**P & I COMMENT:** *First mistake this pilot made is obvious. He did not use his check list. If he had his brakes would have been set and the accident would not have happened. Occasionally brakes fail to hold so wheel chocks should be used in accordance with AAF regulations.*

**BLANCHARD, Okla.** — A pilot flying a PT-19 low in violation of regulations struck a high-line. The ship was thrown out of control and crashed, killing the pilot. His previous flying record was perfect.

**P & I COMMENT:** *The pilot's previous record might have been a mitigating factor if he had lived to report before an investigating board. But it was of no help to him dead.*

## FLYING SAFETY

(Continued from Preceding Page)

make an instrument let-down at Baer Field. The flight leader made it all right, but one plane overshot and received major damage, while the third missed the approach and luckily got down on the Fort Wayne municipal field.

Two other Army planes, headed for Baer Field at the time, acted on Army Flight Control advice and had no difficulty making safe landings at South Bend and Cincinnati.

### BECOME GASOLINE CONSCIOUS

Investigation discloses that many new pilots and aerial engineers are extremely deficient in knowledge of the gasoline consumption of an airplane at the various power settings used during a mission.

In an effort to make new flyers "gasoline conscious," a regional safety officer recently devised a fuel consumption chart which was used with good results by two heavy bombardment groups of the 2nd Air Force.

The chart, which is kept in flight by the co-pilot, is a running log of power settings, time used, gasoline consumption for that setting and the amount of gas remaining in the tanks. Data on consumption is supplied on the log for the co-pilot's information. In addition to keeping track of gasoline consumption and educating personnel in the subject, the log will uncover ships that are gasoline hogs, pilots who abuse the engines, and whether proper manifold pressure and RPM are being employed.

Sample copies of the log, which was devised for B-24 aircraft, will be sent to any AAF personnel interested in the problem of gas consumption. Write Headquarters AAF, Office of Flying Safety, Safety Education Division, Winston-Salem, N. C.

### NOTE TO PILOTS

Revisions of the Pilots' Information File are now issued on a regular monthly basis and should be in the hands of the operations officer for distribution by the first of each month.

The revisions are numbered consecutively, that is, April 1 revisions are No. 8, May 1, No. 9, and so on. To insure that the file is kept up to date, it is suggested that a note be made on the inside of the cover when new sheets are inserted.

Lieut. Col. Henry F. Carlton, PIF chief, issues the following call to all flyers: If you disagree with any item send in your criticism, likewise send in any suggestions for added material. It isn't necessary to go through channels. Communications may be sent directly to Hq AAF, Office of Flying Safety, PIF Unit, Buhl Building, Detroit 26, Mich. ☆

## What's Your AIR FORCE I. Q.



After leaving you at the mercy of your own conscience and mathematics for a scoring system last month, we come back with the customary yardstick for a tough 20-rounder. A score of 90 or above is a whiz; 80 to 90, definitely on the beam; 65 to 80, not too bad; below 60, tsk, tsk.

1. **The Jap aircraft popularly referred to as a Betty is a**
  - a. Single-engine fighter
  - b. Four-engine bomber
  - c. Twin-engine fighter
  - d. Twin-engine bomber
2. **When a photo-reconnaissance pilot "dices" an area, he**
  - a. Shoots nap with the officer in charge
  - b. Makes a photo strip seven miles wide and eleven miles long
  - c. Takes pictures from above 30,000 feet
  - d. Takes pictures from low level
3. **Bowman Field is located nearest to**
  - a. Bowmanville, Ark.
  - b. Louisville, Ky.
  - c. El Paso, Texas
  - d. Reno, Nev.
4. **What is the difference between absolute altitude and absolute ceiling?**
5. **The F-5 is a modified version of the**
  - a. P-40
  - b. P-38
  - c. P-47
  - d. P-59
6. **Aeroembolism is popularly called**
  - a. Operational fatigue
  - b. The bends
  - c. Air sickness
  - d. Black-out
7. **The Messerschmitt M-210 is a**
  - a. Four-engine bomber
  - b. Twin-engine fighter-bomber
  - c. Single-engine fighter
  - d. Four-engine transport plane
8. **Presence of the cumulonimbus type cloud usually indicates**
  - a. Clear weather
  - b. Cloudy conditions but good flying
  - c. Thunderheads
  - d. Fog but no rain
9. **Which of the following colors are not found on the Distinguished Flying Cross ribbon?**
  - a. Blue
  - b. Red
  - c. Purple
  - d. White
10. **To what do the initials SHEAF refer?**
11. **The commanding general of the 5th Air Force is**
  - a. Maj. Gen. Nathan Twining
  - b. Lieut. Gen. George C. Kenney
  - c. Maj. Gen. Howard Davidson
  - d. Maj. Gen. Willis Hale
12. **In nautical miles the distance from Hickam Field, Hawaii to Tarawa is approximately**
  - a. 3,200 miles
  - b. 1,000 miles
  - c. 4,800 miles
  - d. 2,100 miles
13. **The Bronze Star is awarded for heroic or meritorious achievement or service, not involving participation in aerial flight.**
  - a. True
  - b. False
14. **If you have completed one year of military service since December 7, 1941, you are automatically entitled to the Good Conduct Medal.**
  - a. True
  - b. False
15. **The Frisian Islands are**
  - a. In the South Pacific
  - b. Off the coast of India
  - c. In the Mediterranean
  - d. Off the coast of Holland
16. **An air mile represents the same distance in feet as a mile measured on the ground.**
  - a. True
  - b. False
17. **An officer not holding a flying rating but on flying status receives monthly, in addition to his regular pay**
  - a. \$100
  - b. \$20
  - c. \$60
  - d. \$40
18. **The Lister bag holds fifty gallons of water.**
  - a. True
  - b. False
19. **On the command "Fall In," it is not necessary to come to attention until the order "Attention" is given.**
  - a. True
  - b. False
20. **Identify this fighter plane.**



# ON THE LINE

A MONTHLY MAINTENANCE ROUNDUP PREPARED IN COLLABORATION WITH THE AIR SERVICE COMMAND AND THE TECHNICAL INSPECTION DIVISION, OFFICE OF THE AIR INSPECTOR

## OFF AGAIN—ON AGAIN IN NEW GUINEA . . .

A Hollywood script writer, batting his brains out to fill in a thousand feet of incidents having to do with "conquering insurmountable obstacles," could hardly have improved upon the "scenario" that featured an Air Service Command salvage crew in New Guinea some time ago.

Backbreaking, heartbreaking toil, bitter disappointment, tension of probable enemy action—all the elements were in the tale enacted by the ASC men. Although the battle lines have since moved northward appreciably, the guys on the ground will never forget their role of the Papuan campaign.

The crew of five men, Lieut. William C. Wilson, Sgts. Edwin M. Seabolt, Will K. Brown, Robert W. Martin and Edward L. Little, set out to recover the vital parts of a crashed B-25, that they might be used to supplement woefully short stocks and thus put back into combat other planes of the same type which were grounded for lack of critical repair items.

The crashed bomber was eighty miles from the repair base at Port Moresby. It was reached by a voyage in an old 300-ton barge, which had been beached for two months. It was the only vessel

available although it was pitifully inadequate for the work.

After arriving at the scene of the wreck, the men put in three days of all-out effort to "beef up" the collapsed nose gear of the plane.

At that point, Lieutenant Wilson was called back to his base and Lieut. Warren E. St. Pierre came in to conduct the rest of the operation.

An Air Service Command ordnance company, pressed into service, improvised and manufactured a light winch with which Lieut. St. Pierre was able to tow the plane through the sand to the vicinity of the barge.

Natives, willing but exasperatingly slow, clumsy, inept and seemingly unable to understand what was wanted, finally secured enough timber for the repair crew to build a fifty-foot ramp from the beach to the high sides of the barge. The salvage crew had only three hours of low tide in which to build the ramp and load the plane aboard. Then, when the plane was only two inches from the top of the ramp—it was being loaded tail first—an eye in one of the snatch blocks gaped open; natives, who had been following the plane up the ramp, chocking the main wheels with safety blocks, became terrified. They dropped the blocks and fled. The bomber shot down the ramp, recol-

lapsed the nose gear and buried its nose in the sand, below water at high tide.

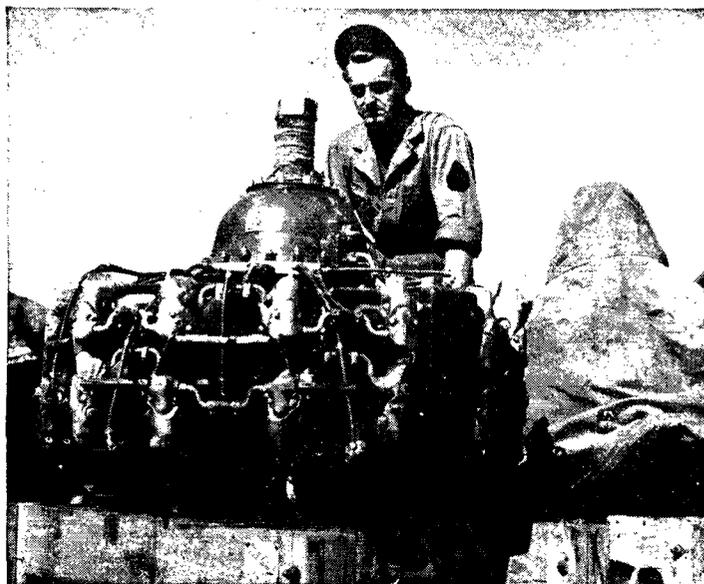
For three days, while gnats and mosquitoes tortured them in plague-like numbers, the crew had to stand by, watching the salt water eat away at the plane, until a tractor could be secured to haul the aircraft to high ground.

Days of added work resulted. The crew was obliged to dismantle the plane as much as possible and flush out its parts with fresh water, dip them and coat them in hot oil and re-pickle the engines to prevent corrosive action of the salt water.

Finally a lucky break came. A smaller barge, with lower freeboard, was made available. It was explained eventually to the natives what they were to do. With their canoes they towed the barge five miles up a river which angled back to within three-fourths of a mile of the B-25's location. The salvage crew set about cutting a road through the jungle for this distance in order to tow the bomber to the vessel.

And then disaster struck again. A liaison plane, being used to ferry in supplies to a small military unit nearby, cracked up on a take-off and plunged into salt water just off the beach. At this point the salvage crew performed its most remarkable exploit. It succeeded in moving its winch to a point on the beach

Because of the care given by mechs of the CBI Air Service Command, "Old 912" functioned perfectly for 745 hours of continuous operation when, ordinarily, a tear-down would have to be made in half of that time. At the end of this run, during which there had never been a complaint or a stall, the engine went in for an overhaul and reconditioning. Staff Sgt. E. W. Zagriski, Buffalo, N. Y., is shown with "Old 912."



This contrivance is a gift from the Nazis which turned out not quite like the Germans expected. Recovering a 2,000-pound bomb, which the Luftwaffe dropped on a city near their 8th Air Force base in England, Tech. Sgts. Charles W. Dese (left) and James W. Brown converted it into an auxiliary compressed air tank. It is now used in supplying compressed air for electric, paint and metal shops on the airfield.



# ON THE LINE

opposite the new wreck, in digging a "deadman" in the beach to which the winch could be anchored, and in towing out the plane to dry land within ten minutes after the crash. The pilot and passenger were uninjured.

By evening of the same day, the crew had dismantled the liaison craft, pickled the engine and flushed the plane thoroughly with fresh water.

Two days later, the road having been cut through the jungle, both planes were towed to the barge and loaded. In a full moon flood tide, it was towed by native canoes to the mouth of the river where a powered boat was waiting to take the barge on its long haul to Moresby. This final trip, incidentally, had to be done entirely by night; a stiff on-shore breeze prevailed during daylight, making navigation through the reefs impossible.

The entire operation, which was staked with only two weeks' emergency rations, took a month to complete. The liaison plane was promptly put back in the air, while every part of the B-25 except its smashed nose section and front landing gear was made a component of some other combat bomber of the same type.

Of this operation, the commanding officer of the Air Service Command group which did the job wrote in part:

"The tireless efforts of this crew, both officers and men, in the face of heart-breaking difficulties and setbacks, of swarms of gnats and mosquitoes, of emergency rations and tinned food, of insufficient and proper equipment, and of the aggravating inability of the natives to understand what was wanted or to be of any real help when they did, are worthy of the highest commendation."

Staff Sgt. Herbert L. Ehlers (left) and Tech. Sgt. Ellis C. Drummond with the bushing puller labor-saving device they concocted in England.



## SAVING TIME IN ENGLAND . . .

Two sergeants at a B-26 station of the 9th Air Force in England, with little—if any—pre-GI mechanical training recently solved the knotty problem of how to save time and to simplify the arduous difficulties rising from their duties as mechanics, when they invented a gadget named the "bushing puller."

The invention, according to its creators, Tech. Sgt. Ellis C. Drummond, Jasper, Ala., and Staff Sgt. Herbert L. Ehlers, Milwaukee, Wis., "reduces a twelve-hour job to about four hours."

Working in the tail assembly of B-26s and confined to the cramped, close quarters, the old method consisted in driving out the bushing with a drift pin and heavy hammer—slow and difficult labor at best.

To facilitate the time involved and lessen the discomfort, the two sergeants worked out their gadget. It is a steel bolt about eight inches long, squared on one end and threaded on the other with a shoulder in the center. By tightening the nut on the threaded end the shoulder automatically pulls the bushing out of the tail, thereby releasing the fin. In addition the new device excludes the chances of binding during a removal or fitting. When a bushing binds it prolongs a routine job into long hours of exhausting labor. "Now," Sergeant Ehlers says, "by using the bushing puller we get steady, direct pull that removes the bushings easily."

Several other mechanics at this medium bomber station under the command of Lieut. Col. Wilson R. Wood, Chico, Texas, have tested the puller and found it highly workable. Sgt. Walter T. Austin,

Covington, Ga., also comes in for a share of the credit in developing the device. —Cpl. Samuel Oxman, 9th Air Force.

## SEND ALONG THOSE URS . . .

GI and general alike share in the responsibility of expediting unsatisfactory reports. For its greatest and most effective strength, there can be no weak links in the UR chain. Any individual who shirks his UR responsibility

may be the cause of death and destruction when planes in flight fail to function properly. Don't wait! Send in that UR at once, as soon as you spot defective parts or materials.

The facts that equipment is small in size and the functional effects are not judged far-reaching, are *never* reasons to neglect sending URs. Brittle safety wire that should be ductile requires a report via UR; the manufacturing source of such wire must be traced in order to maintain high standards of quality in AAF equipment. The idea that only major troubles rate URs is not true. Don't wait for a disastrous ground loop caused by malfunctioning of a brake hydraulic system to use that red-bordered form.

It is imperative that *all* unsatisfactory conditions, great or small, be reported promptly.

## HE GENERATES GENERATORS . . .

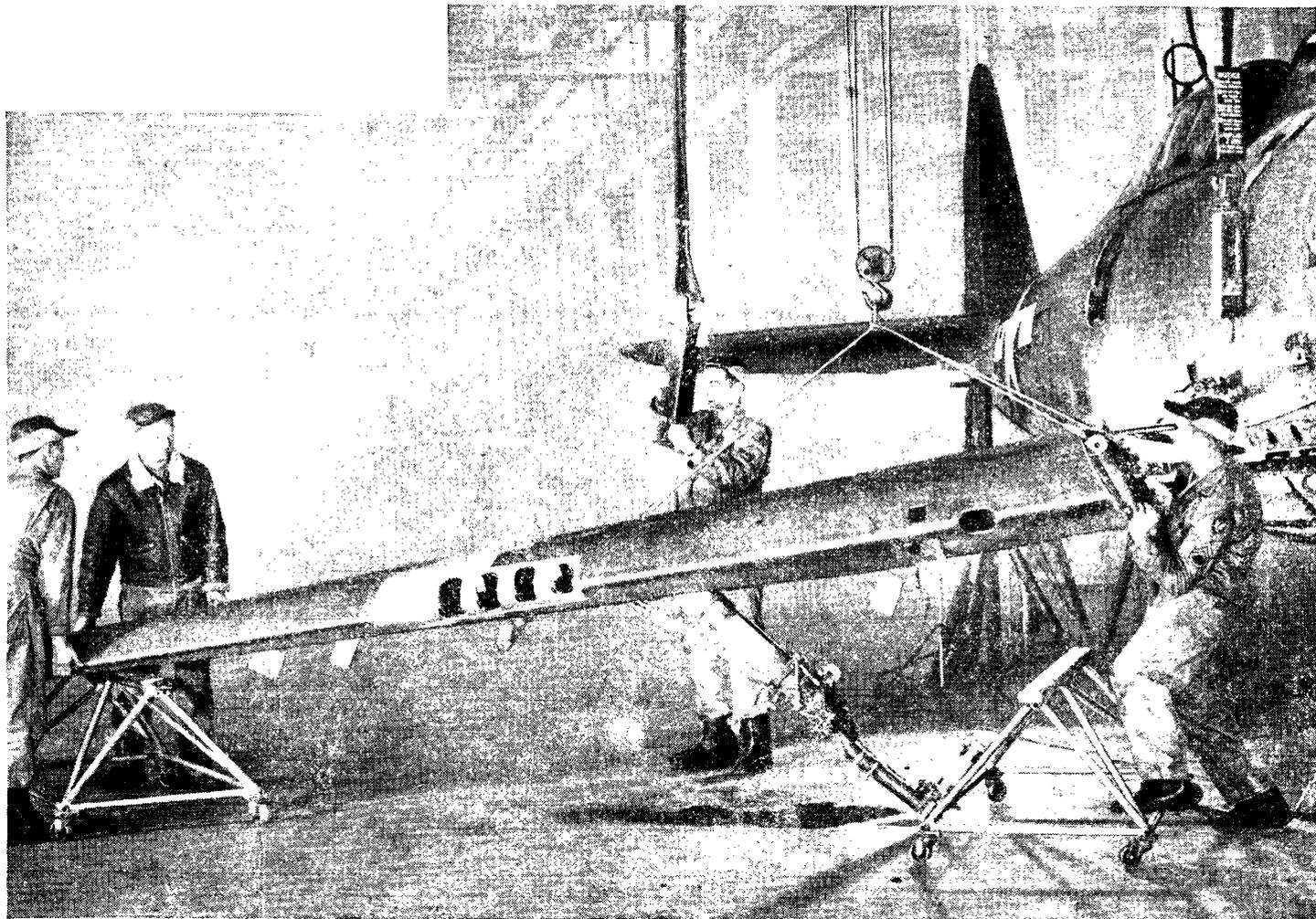
At a 5th Air Force Air Service Command base somewhere in Australia, Staff Sgt. Frank C. Dodsworth has fashioned numerous mechanical devices. His specialty, however, has been a high-speed, portable electric power generating plant which he built from discarded washing machine parts, junked automobile motors and whatever else he found at hand.

Modeled after an American type of unit capable of generating 110 volts, the plant is small enough to be carried on a two-wheeled trailer and pulled by a jeep. Thus it can be moved through almost any section of the jungle to supply electricity for the operation of power tools used in the repair and salvage of wrecked or grounded Allied aircraft.

No less than 35 of these Dodsworth-built generators have been in service in New Guinea and the Solomons. Through jungle thicknesses, over mountains and along soggy lowlands, they have been hauled to give on-the-spot service to planes, which, because of the nature of the terrain in which they have been forced down, could not be transported back to an established repair base. Scores of fighters and bombers which otherwise would still be lying useless in the jungle wastes are thus put back in action over Jap installations.

Some of the generators have been used to supply electricity for giant searchlights, others generate power for transmitters and still others have been used to supply Allied soldiers with the unheard-of luxury of electric lights in their tents behind the front lines.

Dodsworth has seen little of his handi-



**SO YOU'RE** going to install a P-47 wing? Well, here goes with TO 01-65BC-2. The chief took one look at this set-up and scratched his head in despair—but then, the boners were posed with full knowledge that there is a right and wrong way of doing everything, including a wing installation.

Each month you men are challenged to find the mistakes. There certainly is no secret about the one that fairly jumps off the page—the extended landing gear. The reason you're

not asked to name this obvious error is that you're to figure out why the landing gear is down during wing installation, and how it got down. You'll find the answers on Page 64 to seven mistakes. Can you find more?

In the picture (left to right) are Sgt. Glen Manning, Cpl. Eugene Greenwold, Sgt. Robert L. Craig and Staff Sgt. James C. Edsall, all of Headquarters Squadron, Air Service Command, Patterson Field, Ohio.

work in action. Stationed at a base of the 5th Air Force Service Command far from the combat area, he serves, technically, as unit supervisor and purchaser in a supply unit charged with providing all types of repairs and supplies for Allied planes.

As a purchaser, he buys what few parts are available for his generators, begs, borrows and scrounges many more, and keeps a vigil over junkyards within a thirty-mile radius for the rest. He puts the pieces together, improvising a new part here and adding a necessary improvement there, until the completed generator is in operational order and ready for shipment to the front.

Dodsworth's talents are put to many uses. Shortly after he was assigned to his present base he designed and built the wind-direction indicator which is still

in use. At present he is busy assembling a portable workshop to be carried in a bomber. He builds many of the tools for his assemblies himself.

#### THE STAFF OF LIFE . . .

One of the strictly headache jobs being done with a minimum of aspirin these days is that of a Quartermaster outfit in New Guinea which has eight lieutenants and something less than a hundred enlisted men handling supplies for troops in the forward lines of that area.

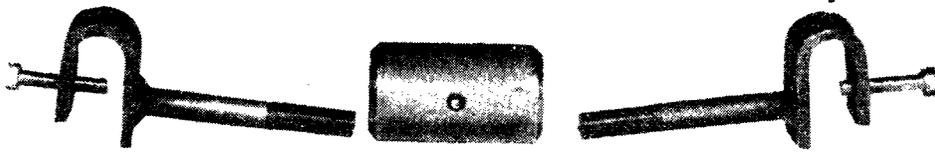
The outfit is attached to the 5th Air Force Service Command, and it has charge of some 10,000 items which various units in the area need from time to time. The supply dumps are log and thatch frameworks perched in a steaming jungle. Although one time the outfit may be re-

quested to supply an organization with a box of paper clips and the next day a three-quarter ton generator, the main job is *food*, lots of it for 17 different organization messes in the area.

For awhile, one man was detailed to fly back and forth in a "bread plane," lugging in loaves of white, whole wheat and rye. This became tiresome until Lieut. Arthur G. Borchardt volunteered for a course in a baking school. He learned how to make bread and started a bakery in the forward lines, thus relieving the fellow on the bread run.

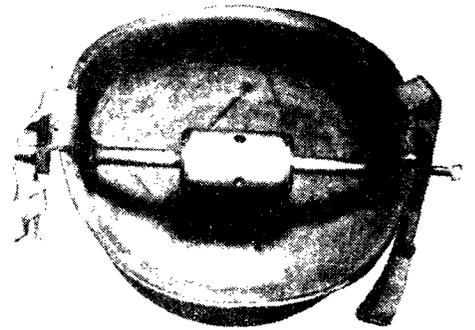
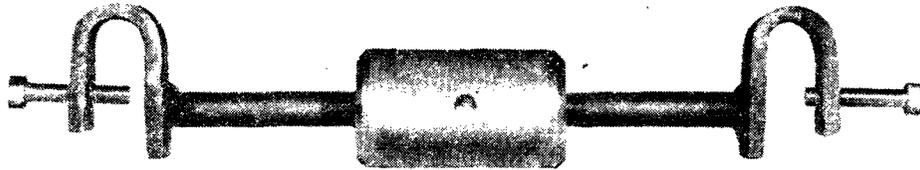
#### A LITTLE REMINDER

Be certain that threads are showing through self-locking-nuts installed on accessory hold down studs in accessory section. See TO 04-1-13. ☆



Component parts of the screw-jack.

The screw-jack assembled for use.



The screw-jack in place for spreading helmet

By Maj. I. Louis Hoffman

OFFICE OF THE AIR SURGEON, 15TH AIR FORCE

SEEKING out the primary causes of head wounds among combat crews, an investigation recently revealed that the M-1 helmet was too often going on raids merely for the ride. One sergeant revealed that he had taken his helmet on 13 missions but had worn it less than ten seconds all told—yet that one donning had saved his life.

After extensive inquiries it was learned that the majority of combat crew personnel have not worn their helmets over their leather flying helmets because of the uncomfortable pressure on the earphones. The steel helmets, being of standard size, do not allow for heads of different sizes and the bulge of the earphones. Aside from the discomfort caused by the ill-

**By 'custom-tailoring' the M-1 metal helmet, 15th Air Force bomber crews have maximum protection against flak with minimum discomfort.**

fitting combination, the undue pressure also diminished the circulation within the ears and made this a contributory factor to frostbite at low temperatures.

This investigation, conducted within the former 12th Bomber Command, now the 15th Air Force, revealed that some crew members had attempted to wear the steel helmet without the fiber lining and,

while this allowed for the bulge of the earphones when worn by personnel with narrow heads, the instability of the unsupported steel helmet made it more of a nuisance and menace than a protective device. In addition, it did not protect against the concussion of a missile striking the helmet, due to the absence of the fiber lining and suspension webbing.

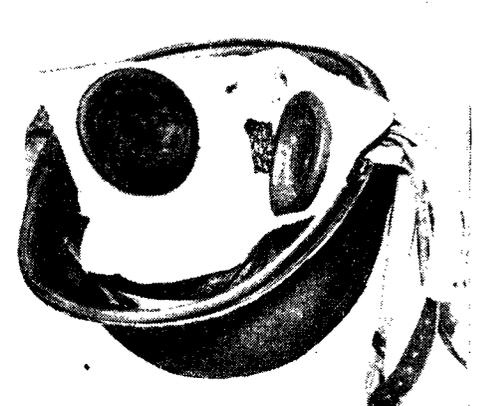
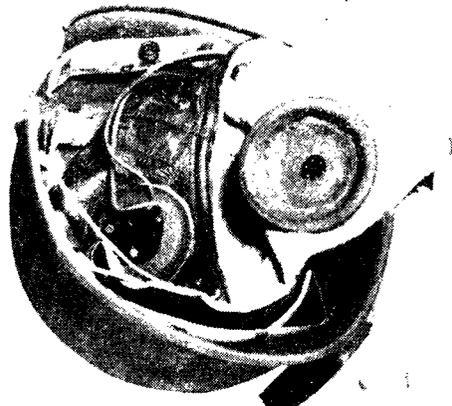
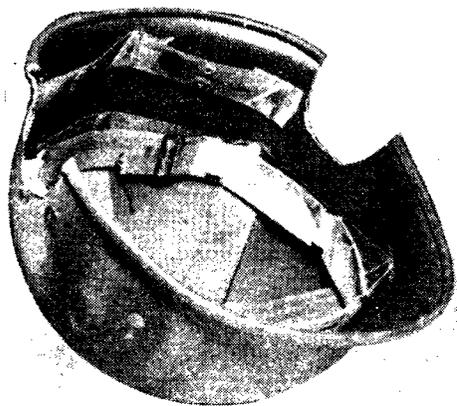
With these facts to work with, investigators soon learned that the incidence of head wounds could be reduced by modifying the M-1 helmet so that it could be worn over the leather cap and earphones with comfort and stability.

Experiments then showed the feasibility of modifying the present metal helmet so that it (with summer liner) could be

Sections have been cut from the summer liner to accommodate earphones, and female parts of two snap-fasteners have been set in rear webbing. Inner sweat or head-band has been adjusted to receive the leather flying helmet.

Leather helmet and earphones are shown in liner with left male part of snap-fastener set in leather helmet. Left female part of snap-fastener is set in rear webbing. Leather helmet is clipped to rear webbing by right snap-fastener.

Helmet is now ready for use, with the leather helmet inside the summer liner which is clipped to the webbing by two snap-fasteners. It is also clipped to the front sweat band by one snap-fastener for additional stability and comfort.



worn over the leather flying helmet and earphones, without undue discomfort.

The deformation of the helmet is made by devising a screw-jack which will spread the sides at points coincident with the location of the ear-pieces of the head-telephone. The screw-jack should be left in place for five minutes and the helmet tapped with a mallet to help it set. If this is not done the helmet will revert to its original shape. Under any condition it may be necessary to re-spread the helmet after a few months. The summer liner is left in place and the inner sweat or heat band is unsnapped at the sides and rear. The steel helmet should be supported evenly by the webbing, thus giving protection against the direct transmission of an impact to the skull.

The inner webbing should be adjusted to allow the helmet assembly to cover as much of the wearer's head as possible, yet rest on the webbing to absorb shock. If the helmet lacks stability fore and aft, with relation to the leather helmet, three snap fasteners may be installed in such a manner as to clip the rear webbing

(permanently attached to the summer liner) to the leather helmet at two points as widely spaced laterally as the webbing will permit.

It is important that precise care be taken by the individual in adjusting the sweat band, helmet assembly, width of spread and location of the snaps (if found necessary) in order to get the maximum protection and comfort from the helmet.

Those assemblies which have been properly modified have caused no discomfort to the wearers other than the extra weight added to the normal fatigue resulting from wearing the standard leather helmet with headphones; the added protection far offsetting the discomfort involved.

Considerable variation in the described modification can be made by the individual in attaining the maximum comfort and utility. In one method, shown in the accompanying pictures, the summer liner may be cut out immediately around the earphones, or the leather helmet may have the rubber ear cups installed directly in the leather helmet by cutting the proper

hole and inserting the earcup from the inside and sewing it in place.

The sergeant who owes his life to the one time in 43 missions that he donned his helmet is Staff Sgt. Charles W. Wilds, tail gunner in one of the bombers raiding an airfield near Rome on January 19. When the formation encountered heavy flak, Sergeant Wilds put on his helmet in response to a warning from his pilot. Although he had carried it on all missions, this was the first time he actually donned his helmet. He no sooner had done so than a burst of flak penetrated his right side window and blew the helmet off his head. He received multiple slight lacerations on the back of his neck from flying plexiglass. His helmet showed three distinct deep dents in the right posterior quadrant. One large fragment of flak was found on the floor.

It is felt certain that the steel helmet in this instance saved Sergeant Wilds from a penetrating wound of the head that presumably would have been fatal.

The helmet is on display on the bulletin board to stimulate its use by others. ☆

## China's Invincible Airdromes

By Maj. Lyman B. Lockwood

14TH AIR FORCE



Coolies and rocks are main factors in repair of China airfields.

**A**FTER an airdrome is placed in full operation in China it is a physical impossibility for the Japanese to bomb it out of commission for more than twelve hours. In December, for example, an unusually accurate force of Japs dumped ten 500-pound bombs and one 1,000-pounder in the contact section of our main runway and made other hits on taxiways, hardstands and dirt areas within the field limits. Runway light lines were cut in 51 places, markers were destroyed, the radio was knocked out and ground communications were severed.

Despite this extensive pounding we were able to guide our returning fighters and bombers (they had been bombing the Nip raiders' home airdrome) to safe landings on undamaged sections of the field. After seven hours of reconstruction our field was in first class operating condition and traffic was handled throughout the night. Before the Japs can knock out our airdromes they must first blast all the rocks and all the coolies in China.

The Chinese military authorities pro-

vide us with coolie labor, supplemented by their soldiers in emergencies, and the supply of rocks is as unlimited as China's strong backs and nimble hands. We have no airport machinery to be damaged, no scrapers, no steam rollers, no bulldozers. Our tools are picks, hoes and flat-faced shovels; our power is Chinese men, women, children - enough of them to cover an airfield. Hand carried baskets and pony-drawn carts are our transports. Enough willing hands can equal a bulldozer. A ten-ton concrete roller, drawn by 250 Chinese laborers, smoothes the patched bomb craters again.

After a raid, coolie work teams swarm over the field, cleaning debris from the craters which have been designated first in priority. In a few hours the runways are smooth again and the teams move to repair taxiways, then hardstands and finally the miscellany of less damaging craters scattered about the field.

While this work is in progress the airdrome officer is out with flag and walkie-talkie guiding our incoming planes, and

AAF crews are splicing wires, replacing connections and restoring the normal communications. When radio contact has been reestablished, runways repaired and damaged aircraft cleared away, we concentrate on night fighting facilities, setting up flares or repairing ground lights and markers. The reconstruction job after our worst raid took but seven hours.

On the personal side our living quarters aren't as nice, our chow isn't as good, our supplies aren't as plentiful, and our geographical surroundings aren't as safe - but I would not trade our principal airdrome in China for Mitchel, Bolling, Randolph, Maxwell or any other field in the States. Our field can handle as much traffic as the best of them and with the same efficiency.

We have established our Chinese bases for combat operations and we have learned through experience that we can maintain heavy flying schedules despite all the Japs can do. Rocks and coolie hands are unlimited. Our airfields are as permanently established as Chinese customs. ☆



## NOTES ON

# WOMEN'S ACTIVITIES IN THE AAF

Father is in the Air Forces, mother is a nurse's aid at the hospital or works at the sub-depot so somebody has to look after the children. Before you know it AAF women have organized a day nursery for children of post personnel. Through the "Spotters" organization, wives with training in nutritional and kindergarten work are often found to provide necessary care.



Fifteen children, sons and daughters of officers stationed at Bolling Field, D. C., have made more than 10,000 surgical dressings for the Red Cross during vacations and on Saturday mornings. The unit is made up of twelve girls and three boys, between nine and sixteen years of age.

**O**FFICERS' wives of the Smoky Hill Army Air Field have provided their own unique answer to the housing problem in Salina, Kan., with their popular Fly-a-Way Club. Names and telephone numbers of the club's "hospitality committee" are listed on bulletin boards at the railroad station, hotels and at the airbase; stranded families who arrive in town with no place to stay are invited to call members "at any time during the day or night." And they do.

The club has a practical way of discovering available rooms and apartments almost before they are vacated. The local Chamber of Commerce supplies some of the listings, door-to-door canvasses produce others and an informal "espionage" system worked out with the town's milkmen, postmen and delivery boys serves to keep club members posted on when families plan to move out.

**I**F there's apricot pie on the menu in the March Field mess, GIs can thank the AAF Woman's Club on that base. When a shortage of help endangered the apricot crop of Riverside, Calif., seventeen club members donned aprons and settled down to pitting and cutting more than 3,000 pounds of the fruit for Army use.

**W**ITHIN a few hours after the announcement that the station hospital at Barksdale Field, La., could handle no more private cases because of the shortage of registered nurses, the group of the local woman's club spotters had found in its files the names of fifteen officers' wives who formerly had been trained nurses. This group, which keeps personnel records listing special qualifications of volunteers at each post, immediately called the fifteen women and told them of the crisis. Although none had time for all-

day work, each was anxious to do part-time duty. A schedule was worked out, and on the following day the hospital's CO was assured he would have enough nurses to keep the women's ward open.

**S**PEAKING of hospitals, the Woman's Club of Perrin Field, Sherman, Texas, has installed and equipped a complete maternity ward in the post hospital where 58 babies already have been delivered. Officers' wives, trained as Red Cross nurse's aids, do a major portion of the work in this ward. As for the problem of what to do with Sonny when mother wants to get away for a day or a few hours to go to the Red Cross workroom or buy that birthday gift for Aunt Susan, these alert women have the answer for that, too. They have a day nursery service, free to any mother on the post, where a woman trained in child care is on duty. Her salary is paid by the club.

**A**AF men at the Garden City Army Air Field, Kan., now have someone to look after their wives and new babies home from the hospital. Army wives of the women's volunteer branch of the post's Personal Affairs Division are quick to respond to requests for help. They see that grocery needs are met; they tidy the house, bathe baby and give the young mother what help she needs during that difficult post-hospital period.

**N**O hostesses could be found to take charge of the officers' club canteens at Salinas Army Air Base, Calif., so members of the post Woman's Club have taken over the job. Working shifts, members are on duty from 0830 to 1700.

**M**EMBERS of the Robins Field Woman's Club, Macon, Ga., not only restored and repaired a century-old house as a service club for enlisted men on the field, but they even planted gardenias by the door for the men to pick for their girl friends. ☆

# ROLL OF HONOR

A MONTHLY RECORD OF DECORATIONS AWARDED  
TO PERSONNEL OF THE ARMY AIR FORCES

## DISTINGUISHED SERVICE CROSS

Bade, Jack A., Lt.  
Beams, James C., Maj.  
Billingsley, Leonard F., Capt.  
Brandon, William H., Maj.  
Brown, Walter I., S. Sgt.  
Caldwell, Kenneth M., Capt.  
Carpenter, Reginald L., Lt.  
Carrington, John R., T. Sgt.  
Christensen, Harold R., Lt.  
Clark, Philip R., Lt.  
Clary, Guy W., S. Sgt.  
Crandall, Donald O., S. Sgt.  
Dallas, Frederick W., Jr., Capt.  
Daiton, Malcolm C., S. Sgt.  
Dahl, John H., Jr., Capt.  
Donegan, John M., Lt.  
Ducard, Frederick W., S/Sgt.  
Dyer, Fred W., Lt.  
Edelburn, Harry E., F/O  
Emerson, Elwood R., Lt.  
Engel, Russel W., Lt.  
Elt, Uzal G., Brig. Gen.  
Faires, George D., S. Sgt.  
Fox, Edward K., T. Sgt.  
Frazier, James L., Jr., S/Sgt.  
Garris, Benjamin L., Lt.  
Gay, William M., Capt.  
Ginn, John A., Lt.  
Goldberg, Hyman M., Lt.  
Hall, Donald P., Lt. Col.  
Hardison, Felix M., Lt. Col.  
Harrison, Edgar E., S. Sgt.  
Hawkes, Thomas S., Lt.  
Hodge, Dexter A., Maj.  
Hoff, Thomas A., S. Sgt.  
Horton, Robert W., Lt.  
Hudson, Charles S., Lt.  
Hull, Charles T., Lt.  
James, Joseph H., S. Sgt.  
Jamison, Roger W., Lt.  
Johnson, Albert L., Capt.  
Johnson, Gerald W., Capt.  
Kase, Louis N., T. Sgt.  
Krug, Richard M., Lt.  
Lackness, A. B., Jr., Lt.  
Lambert, James V., S/Sgt.  
Land, George R., Lt.  
Larson, Harold B., Lt.  
Leverette, William, Major  
London, Charles P., Capt.  
Lonsway, Louis G., S. Sgt.  
Ludolph, George L., Lt.  
Lynch, Thomas J., Capt.  
Mahurin, Walker M., Capt.  
Martin, Ernest V., S. Sgt.  
Merkel, Howard W., Capt.  
Miles, James E., Capt.  
Miller, Robert E., Capt.  
Mooney, Robert C., Capt.  
Murphy, Philip J., Cpl.  
McArthur, Paul G., Lt.  
McLaughlin, Frank B., Lt.  
McLoughlin, John A., Lt.  
McNeese, Harold G., Lt.  
Nuchols, William L., Lt.  
O'Neill, Brian, Lt. Col.  
Partridge, Donald D., S/Sgt.  
Patrick, A. B., Jr., S/Sgt.  
Pear, Sidney A., Lt.  
Phillips, Reginald H., Capt.  
Ploetz, Frederick F., Lt.  
Posey, James T., Lt. Col.  
Potter, A. J., S. Sgt.  
Potts, Ramsay D., Jr., Maj.  
Rist, Robert P., Lt.  
Roberts, Eugene P., Maj.  
Rothe, John R., Capt.  
Saus, Charles H., S. Sgt.  
Saunders, Lester W., S/Sgt.  
Schiltz, Glenn D., Lt.  
Sellers, Thomas D., Lt.  
Skinner, William E., T. Sgt.  
Smith, Edmond H., S. Sgt.  
Smith, Jack E., Sgt.  
Smith, Mack H., S. Sgt.  
Steen, Zerrill I., S. Sgt.  
Thomas, Jay P., Capt.  
Van Ness, James, T. Sgt.  
Via, Charles A., Jr., Lt.  
Ward, Emery M., Capt.  
Warmer, Benjamin F., S/Sgt.  
Watkins, James A., Capt.  
Watt, James R., Lt. Col.  
Westerbeke, Donald G., Lt.  
Whalen, Norman M., Lt.  
Wherry, William B., S. Sgt.  
Whitson, William D., Capt.  
Wiegand, Arthur H., Lt.  
Wilson, Avis K., S. Sgt.  
Wilson, Frederick M., S/Sgt.  
Wright, Ellis W., Jr., Capt.  
Wylie, John W., Lt.  
Yovich, Edward S., S/Sgt.

\* This symbol designates awards made posthumously to AAF personnel.  
† This symbol designates awards made by the Navy Department.

## DISTINGUISHED SERVICE MEDAL

Brant, Gerald C., Maj. Gen.  
Edwards, Idwal H., Maj. Gen.  
Gooden, Clarence W., Lt.  
Hansell, Haywood S., Brig. Gen.  
House, Edwin J., Maj. Gen.  
McArthur, Paul G., Lt.  
Pratt, Henry C., Maj. Gen.  
Smith, Frederick H., Jr., Col.

## LEGION OF MERIT

Adazzo, John J., 1st Sgt.  
Allen, Richard T., Col.  
Allen, Ron V., M. Sgt.  
Armstrong, William J., S/Sgt.  
Anderson, Elmer, Lt.  
Antosh, Raymond L., M. Sgt.  
Arnold, Elroy W., T. Sgt.  
Ashcraft, Gus H., Capt.  
Aylino, John G., Col.  
Baker, David H., Col.  
Bailey, Daniel G., Sgt.  
Ball, Quentin O., M. Sgt.  
Ball, William, Col.  
Bandy, George R., Lt.  
Barker, John De F., Col.  
Barnhart, Lawrence E., Lt.  
Barrett, Quentin D., Sgt.  
Barron, Robert M., Lt.  
Bartron, Harold A., Col.  
Bates, Earl E., Jr., Col.  
Beam, Rosendham, Col.  
Benda, Charles J., Col.  
Benzeny, Eddie, M. Sgt.  
Bergan, Thomas J., S. Sgt.  
Bernard, Wilbur L., Sgt.  
Bertenshaw, Arthur S., M/Sgt.  
Birchard, Frederick B., Col.  
Bohon, William H., M. Sgt.  
Booth, Charles L., Col.  
Booth, William B., M. Sgt.  
Born, Charles F., Brig. Gen.  
Bowles, Luther B., M/Sgt.  
Boyd, Max B., Maj.  
Brand, Harry B., T. Sgt.  
Briggs, Leonard F., Col.  
Brunfield, Henry A., Capt.  
Bruneau, Harry A., Capt.  
Burtenshaw, Arthur S., M/Sgt.  
Buchanan, David H., Lt.  
Buchanan, James V., Sgt.  
Campbell, John E., M/Sgt.  
Carnes, Kermit, Sgt.  
Carson, Cecil W., T. Sgt.  
Caudill, Melvin, M. Sgt.  
Chapman, Wallace S., 1st Sgt.  
Chase, Jeremiah A., Lt. Col.  
Chauncey, Charles C., Brig. Gen.  
Chew, Robert P., M. Sgt.  
Choka, Norman F., M. Sgt.  
Cicella, Joseph M., Sgt.  
Claxton, William T., Maj.  
Cohen, Leonard P., Capt.  
Colanecce, Carino J., M/Sgt.  
Collins, Charles R., M/Sgt.  
Compton, Keith K., Col.  
Cook, Everett H., Col.  
Coulter, Roy H., M. Sgt.  
Crawford, Harold E., M/Sgt.  
Crawford, James M., S. Sgt.  
Creighton, Neal, Col.  
Crom, William H., Col.  
Crutched, Earl J., M. Sgt.  
Cunningham, Floyd D., S/Sgt.  
Czerniakowski, Edwin M., S/Sgt.  
Dahlman, Enoch J., T. Sgt.  
D'Andrea, Anthony P., S/Sgt.  
Danhoff, Joseph, M. Sgt.  
Dawdy, John R., M. Sgt.  
Disney, Joseph I., T. Sgt.  
Dixon, Arthur, Maj.  
Donahay, William S., Lt. Col.  
Dozier, James E., M. Sgt.  
Drown, Nathan M., S. Sgt.  
Dunn, Leonard R., T. Sgt.  
Dunn, Ray A., Brig. Gen.  
Emery, Everett H., M. Sgt.  
Evans, Robert H., T. Sgt.  
Fanning, Leo F., M. Sgt.  
Feldmann, Carl R., Col.  
Ferguson, Homer W., Col.  
Ferguson, Robert L., Sgt.  
Ficken, William L., Lt.  
Fitzgerald, Archie A., Pvt.  
Fitzsimmons, Paul W., M. Sgt.  
Flückinger, Donald J., Lt. Col.  
Flynn, William E., Pfc.  
Futchik, William E., M. Sgt.  
Gall, Joseph J., Pfc.  
Gardiner, William T., Col.  
Gardner, Edgar W., Lt. Col.  
Gatrot, Archie M., T. Sgt.  
Gerrigson, Homer W., Col.  
Gerlings, Gerald K., Maj.  
( & OLC )  
Genoa, Adam, M. Sgt.  
Giles, Adlai H., Brig. Gen.  
Gillet, Louis M., T. Sgt.  
Gomillion, Royce, T. Sgt.  
Gordon, Virgil C., Col.

Green, James C., S. Sgt.  
Green, Lewis F., Maj.  
Griffith, Henry D., T. Sgt.  
Grohmyer, John C., Lt.  
Gurbada, Felix, S. Sgt.  
Hadlow, Gordon H., M. Sgt.  
Hall, Edward M., Lt.  
Halterman, George W., Maj.  
Hartford, Dudley D., Jr., T. Sgt.  
Harmon, Theodore B., S. Sgt.  
Head, Albert M., S. Sgt.  
Heidrich, William F., T. Sgt.  
Henry, Draper F., Col.  
Henry, William A., S. Sgt.  
Hess, Samuel B., Lt.  
Hill, William G., M. Sgt.  
Hinton, Hubert B., M. Sgt.  
Habbs, Lewis E., Col.  
Hollerbach, Floyd C., M. Sgt.  
Hollister, Charles P., Lt. Col.  
Horne, Wendel C., M. Sgt.  
Hoskins, William J., Sgt.  
Howard, George E., Lt. Col.  
Hudson, Sidney G., Cpl.  
Humphrey, Watts S., Lt. Col.  
Hunsford, Thomas W., S. Sgt.  
Irland, Loren E., Lt. Col.  
Jannicke, Bernhart W., Lt.  
Jefus, John H., Col.  
Johnson, Clarence G., T. Sgt.  
Johnson, Robert J., Sgt.  
Joss, Jacques, S. Sgt.  
Kallal, George, M. Sgt.  
Kamykowski, Frank S., Capt.  
Kane, John R., Col.  
Karabinus, Joseph M., S. Sgt.  
Keelch, James O., T. Sgt.  
Keeterman, Charles W., Jr., Sgt.  
Kendall, Harry A., Lt. Col.  
Kenner, William E., Maj. Gen.  
King, Donald E., M. Sgt.  
King, Verne W., S. Sgt.  
Kison, James W., M. Sgt.  
Kopp, Robert L., M. Sgt.  
Kramberg, Joseph, M. Sgt.  
Kyle, Reuben, Jr., Col.  
Laboda, Nicholas C., T. Sgt.  
Lambert, Raymond J., M. Sgt.  
Lande, Leon, Sgt.  
Lange, Robert W., M. Sgt.  
Laroque, Joseph, Jr., Lt. Col.  
Larsen, Howard J., Jr., T. Sgt.  
Lauer, Mark R., Lt.  
Lawrence, David B., Lt.  
Lazar, John M., Capt.  
Lettler, Charles H., M. Sgt.  
Lein, Harvey J., Col.  
Lesky, Mervin C., M. Sgt.  
Lester, Raymond T., Col.  
Levine, Arnold, Capt.  
Likes, David H., Maj.  
Lockridge, Warden W., M/Sgt.  
Lockwood, Patrick B., M. Sgt.  
Lopez, Tony F., Pvt.  
Lowery, Bruce, M. Sgt.  
Ludwig, Clyde E., S. Sgt.  
Lund, Walter, Capt.  
Madden, Francis M., M. Sgt.  
Maidel, Mark J., Maj.  
Malloy, John T., Lt. Col.  
Marlonis, Ben F., Sgt.  
Markel, Kenneth, Capt.  
Martin, Roscoe J., Lt.  
Martini, Celeste, M. Sgt.  
Matheny, William A., Col.  
Maupin, Dale V., Col.  
Mears, Frank H., Col.  
Melton, Thomas O., Col.  
Merket, Edmund H., M. Sgt.  
Messmore, Waldine W., Col.  
Miller, Jack H., Col.  
Mobroten, Elmer J., S. Sgt.

Mooney, Glenn W., M. Sgt.  
Mooney, Henry K., Col.  
Moore, Ernest, Col.  
Moore, Malcolm A., Lt. Col.  
Moore, William L., T. Sgt.  
Muelber, Charles, M. Sgt.  
Myers, Ralfey E., M. Sgt.  
Neal, Harry E., Lt.  
McClanahan, Robert W., Col.  
McCombs, Robert N., M. Sgt.  
McCormick, Charles W., M. Sgt.  
McDonald, George W., Col.  
McGraw, James E., M. Sgt.  
Neal, Harry E., Lt.  
Nebleck, Charles N., T. Sgt.  
Nero, Ulysses S., Maj.  
Nichols, Mervin E., M. Sgt.  
Norton, Ralph H., Maj.  
O'Connell, Francis J., S. Sgt.  
O'Hara, William F., Capt.  
Olson, Marvin, Sgt.  
Orlich, John, Sgt.  
Ortner, Henry, Capt.  
Ostee, Hal L., M. Sgt.  
Ott, Isaac W., Col.  
Paradise, Buford G., M. Sgt.  
Paradis, Orville, Sgt.  
Pearce, Fred W., Sgt.  
Peffler, Joseph, M. Sgt.  
Pekol, Edward J., M. Sgt.  
Pendleton, James P., M. Sgt.  
Pennington, Harold E., M. Sgt.  
Phillips, Arnold H., Sgt.  
Piddock, Charles A., Col.  
Pierce, Arthur J., Col.  
Pizzuto, Joseph, Sgt.  
Pleasant, Adolph M., M. Sgt.  
Plyler, William C., M. Sgt.  
Powers, Barron C., Lt. Col.  
Presley, Carol S., Sgt.  
Procknow, John J., S. Sgt.  
Proffy, George, Sgt.  
Pronka, Adolph M., M. Sgt.  
Ptyler, William C., M. Sgt.  
Rangel, Albert, M. Sgt.  
Ray, Robert W., M. Sgt.  
Roberts, Jack, Lt. Col.  
Robinson, Ernest G., T. Sgt.  
Rogers, Wilton R., Sgt.  
Roosevelt, Elliott, Col.  
Ross, William H., Lt.  
Rosar, Donald R., M. Sgt.  
Royce, Ralph S., Maj.  
Rupert, Charles C., T. Sgt.  
Russell, Jamar S., Capt.  
Russell, William H., Lt.  
Rutherford, Howard L., M. Sgt.  
Ryder, Franklin A., Sgt.  
Salisbury, Arthur G., Col.  
Saville, Gordon P., Brig. Gen.  
Schauer, Paul C., Maj.  
Schliesman, Donald A., T/5th  
Schneider, Max F., Col.  
Schneider, William H., Sgt.  
Schuster, Fritz S., Maj.  
Seaburg, Julian, M. Sgt.  
Seaney, Charlie E., M. Sgt.  
Shand, Ian, M. Sgt.  
Shumway, Duane E., Sgt.  
Simmons, Benjamin T., Capt.  
Simmmer, Hugh P., Sgt.  
Smith, Elmer O., Lt.  
Smyers, Carl, Lt. Gen.  
Snaeth, Joseph J., Lt.  
Stone, Rodney M., T. Sgt.  
Stowell, James S., Col.  
Strickland, Aubrey C., Brig. Gen.  
Strother, Willie A., M. Sgt.  
Stumpff, Donald L., Lt.  
Tibbets, Kingston E., Col.  
Tompkins, Glenn K., M. Sgt.  
Trehon, Veranard H., Pfc.  
Turner, Harry, M. Sgt.

Twining, Nathan F., Maj. Gen.  
( & OLC )  
Umfor, Melvin J., M. Sgt.  
Veliz, Joe R., M. Sgt.  
Vidrine, Joseph A., M. Sgt.  
Virgini, Bruno J., Capt.  
Walker, Kenneth N., Brig. Gen.  
Waring, Walter W., T. Sgt.  
Wasnick, Joseph R., M. Sgt.  
Weaver, James P., M. Sgt.  
Weidner, Clarence, Capt.  
White, Donald P., Lt.  
Williams, Dewey J., M. Sgt.  
Williams, Fred L., Col.  
Williams, William R., Sgt.  
Winkle, Charles B., Lt. Col.  
Wood, Floyd B., Col.  
Wood, Wilbur H., Lt. Col.  
Woodman, William C., M. Sgt.  
Woodworth, Lynn F., Maj.  
Wooks, Hubert K., M. Sgt.  
Yest, Paul W., S. Sgt.  
Yount, Dean B., Capt.  
Zavosky, Michael, Pvt.  
Zotak, Andrew T., Lt.

## SILVER STAR

Abernethy, Robert Joseph, Capt.  
Able, John J., Sgt. ( & OLC )  
Akerman, Linnie, Lt. Sgt.  
Adamczyk, Theodore S., Cpl.  
Adams, Burnell W., Lt.  
Adams, William H., S. Sgt.  
Adkins, Edwin W., Capt.  
Adler, Charles E., Lt.  
Adler, Robert T., Lt.  
Althbeck, Torsten W., S. Sgt.  
Akors, Martin J., Maj.  
Albert, Frank J., Sgt.  
Alexander, Chester R., T. Sgt.  
Alexander, George C., Lt.  
Alger, Martin P., Capt.  
Allen, Edgar J., E. S. Sgt.  
Allen, Eugene H., S. Sgt.  
Allen, Johnson B., Capt.  
Allers, Howard C., Capt.  
Ammons, Vernon G., Lt.  
Anderson, Charles L., Lt.  
Anderson, Eugene C., Lt.  
Anderson, Harold G., F/O  
Anderson, Lewis A., Lt.  
Anderson, Orvil A., Brig. Gen.  
Anderson, Ray U., S. Sgt.  
Anderson, Wyman D., Lt.  
Andrews, Aaron L., Lt.  
Andrews, Byron G., Lt.  
Andrews, Willie A., T. Sgt.  
Arant, John R., Lt.  
Ardery, Philip P., Capt.  
Aring, Wilbur W., Lt. Col.  
Armstrong, John V., Lt.  
Arnold, Robert W., Lt.  
Atchue, Henry W., Pvt.  
Austin, Robert N., Lt.  
Avelino, Sabastiano S., Sgt.  
Averill, Carl P., T. Sgt.  
Ayres, Randolph H., S. Sgt.  
Ayling, Edward C., S. Sgt.  
Bacon, Charlie M., S. Sgt.  
Baer, Edward L., S. Sgt.  
Baganz, Paul C., Lt.  
Baird, Joseph C., Sgt.  
Baldwin, Raymond W., Jr., Lt.  
Ball, Edgar D., Capt.  
Baluta, Alphonse D., S. Sgt.  
Bancroft, Harvey C., S. Sgt.  
( & 2 OLC )

## By Way of Explanation

The names of AAF personnel to whom awards have been made are now listed in the ROLL OF HONOR only after they have appeared in General Orders. Transmission of this information to Headquarters, Army Air Forces, frequently involves a delay of several months between the time an award is made and its availability for publication in this department.

The number of names that can be listed in any one issue is controlled by the limited space available, and a considerable backlog of unpublished names has accrued. It is intended, in due course, that all awards to AAF personnel shall be listed here. If your name, or the name of your friend or relative, does not appear immediately following notification of the award, please consider the above facts before addressing inquiries to the AIR FORCE Editorial Office.

All ranks and grades given in ROLL OF HONOR listings are those held by the recipient of the award at the time it was made.

# Roll of Honor

A MONTHLY RECORD OF DECORATIONS AWARDED  
TO PERSONNEL OF THE ARMY AIR FORCES

(Continued from Preceding Page)

Banks, Jack R., Capt.  
Banks, William D., Lt.  
Barber, John  
Barber, Charles E., Lt.  
Barnes, Clayton J., Lt.  
Barnes, George R., Lt.  
Barnes, Joshua H., Capt.  
Barr, Dale F., Sgt.  
Baret, Max D., Lt.  
Barron, Dante G., S/Sgt.  
Barry, John J., Sgt.  
Barthel, Carl C., Capt.  
Barton, Bruce D., Capt.  
Bathrick, Ward R., S/Sgt.  
Baskley, Edwin L., Lt.  
Beal, Walter B., Maj.  
Beatty, Clyde W., Jr., Lt.  
Beaudry, Theodore C., T/Sgt.  
Behout, Charles R., S/Sgt.  
Beckhelm, George B., Lt.  
Beckstrom, Kenneth W., Lt.  
( & OLC )  
Besson, Duane W., Lt.  
Behling, Lincoln E., Capt.  
Bek, Philip L., Lt.  
Bellmore, Donald O., Sgt.  
Bemrick, Harold J., S/Sgt.  
Ben-detti, E. J., Lt.  
Benna, Michael A., Cpl.  
Bent, Henry L., T/Sgt.  
Berg, Harry, S/Sgt.  
Berkowitz, Marvin, S/Sgt.  
( & OLC )  
Bernstein, Fred, T/Sgt.  
Berry, Austin L., Maj.  
Berta, Wayne M., Lt.  
Bess, Bloice M., T/Sgt.  
Betha, William E., Lt.  
Bevan, William, Jr., Sgt.  
Bevory, Paul E., S/Sgt.  
Bibby, Clyde B., Lt. Col.  
Binius, Walter L., Lt.  
Bird, Ira M., Lt.  
Blain, John D., F/O  
Blais, Joseph P., T/Sgt.  
Blakeslee, Donald J., Lt. Col.  
Blanton, Joseph B., Pvt.  
Blazek, Rudolph L.  
Blocker, Robert H., T/Sgt.  
Blythe, E. C., Lt.  
Bolton, Frank R., S/Sgt.  
Bordas, Robert H., III, Lt.  
Borden, Dale E., Sgt.  
Boren, Thomas E., Lt.  
Borelli, Anthony A., S/Sgt.  
Bowles, Jack G., S/Sgt.  
Bowling, Walter L., Sgt.  
Bowman, Conrad K., S/Sgt.  
Bowman, Jack, S/Sgt.  
Boyd, Great H., T/Sgt.  
Boyle, Fred E., T/Sgt.  
Bradley, John L., Capt.  
Brady, Henry G., Jr., Maj.  
Branzell, George R., Lt.  
Brecht, Harold M., Capt.  
Brecht, James H., S/Sgt.  
Breneman, Walter K., Lt.  
Brewer, Edwin H., Lt.  
Bright, John G., Maj.  
Brook, Eldon J., S/Sgt.  
Brooks, John A., Maj.  
Brooker, Robert L., Lt.  
Brown, Charles W., Capt.  
Brown, George S., Maj.  
Brown, John K., Jr., Col.  
Brown, Paul G., Capt.  
Brown, R. D., S/Sgt.  
Brown, William M., S/Sgt.  
( & OLC )  
Brumley, Lyster A., Lt.  
Buchanan, Jim Bright, Lt.  
( & OLC )  
Bullis, Harry J., Maj. ( & OLC )  
Bunderson, Mack V., Lt.  
Bunker, Walter D., Lt.  
Burkhardt, Roy D., Lt.  
Burnside, Ernest W., Sgt.  
Burton, Jack R., S/Sgt.  
Buske, George W., Sgt.  
Butler, Robert H., Lt. ( & 2 OLC )  
Bybee, Donald E., S/Sgt.  
Byrne, Robert J., Lt.  
Cahen, George L., Lt.  
Cain, James R., Sgt.  
Cakert, Thomas F., X., Lt.  
Calderala, Frank L., S/Sgt.  
Caldwell, Richard E., Jr., Lt.  
Caldwell, John H., Lt.  
Caldwell, William R., Jr., Maj.  
( & OLC )  
Callaway, Roy L., Lt.  
Campbell, Glenn A., Sgt.  
Campbell, William B., Lt.  
Canning, Douglas B., Lt.  
Cantor, Solomon J., S/Sgt.  
Cantley, Eugene L., Sgt.  
Cantrill, Rufus H., Sgt.  
Cape, Paul N., Sgt.  
Cappocciato, Robert J., S/Sgt.  
Cappello, Angelo J., S/Sgt.  
Cary, John A., Lt.  
Carlson, David E., Cpl.  
Carlson, Ellis E., S/Sgt.  
Carnal, Walter F., Jr., Lt.  
Carney, John W., S/Sgt.  
Carroll, William B., Lt.  
Carroll, Wesley M., Lt.  
Carter, Joseph E., Lt.  
Carter, Thomas H., T/Sgt.  
Cartwright, Philip E., Lt.  
Cartwright, Roger A., Lt.  
Caruthers, Marion F., Maj.  
Cason, James R., Lt.  
Cate, Gerald R., T/Sgt.  
Cervance, Victor J., S/Sgt.  
Chadwick, Wesley M., Sgt.  
Chase, George S., S/Sgt.  
Cherry, Earl M., Sgt.  
Childers, Jack E., Lt.  
Chilson, Robert E., Lt.  
Christensen, Burden W., T/Sgt.  
Christmas, Frederick A., S/Sgt.  
Christopher, Guyton M., Lt.  
( & OLC )  
Christy, R. L., T/Sgt.  
Clack, William C., Lt.  
Cleveland, Arthur B., Lt.  
Cline, Varny D., Lt.  
Clinkenbeard, J. W., Sgt.  
Clize, Reginald J., Maj.  
( & OLC )  
Clutter, Clyde M., Cpl.  
Coatney, Donald S., S/Sgt.

Coats, James W., T/Sgt.  
Cochran, Joseph W., Lt.  
Cochrane, Alexander M., S/Sgt.  
Cody, Wathen F., Sgt. ( & OLC )  
Cohan, Joseph M., S/Sgt.  
Colburn, Frank M., Lt.  
Cole, Albert V., Jr., S/Sgt.  
Collier, Charles E., Lt.  
Connelly, Louis J., Jr., Capt.  
Conroy, Thomas C., Capt.  
Conti, Philip, Lt.  
Conway, Roger J., Lt.  
Cook, Allen S., S/Sgt.  
Cook, Bailey C., Lt. Col.  
Cook, Burnell A., T/Sgt.  
Cook, Gerald C., Sgt.  
Cook, Maxworth, S/Sgt.  
Cook, Vernon S., S/Sgt.  
Cook, Walter W., Jr., Cpl.  
Cook, William J., Jr., Lt.  
Coolidge, Barnum, Lt.  
Copley, Richard D., S/Sgt.  
Cox, Roland B., S/Sgt.  
Cox, William M., Jr., Capt.  
Craig, Dennis, T/Sgt.  
Crane, Frank S., S/Sgt.  
Crane, Ralph, T/Sgt.  
Crawback, John, S/Sgt.  
Crawford, George A., Lt.  
Crawford, William, Jr., Lt.  
( & OLC )  
Cramer, Daniel H., Maj.  
Crosby, Raymond B., Maj.  
Cross, Adalbert D., Maj.  
Crowe, James B., T/Sgt.  
Culbertson, Norman C., S/Sgt.  
Cuppner, Claude A., Capt.  
Cunningham, William R., Cpl.  
Cunningham, Clotus A., Capt.  
Cunningham, Joseph W., Lt.  
Curl, James G., Maj.  
Curran, Arthur T., Lt.  
Curry, William L., Lt.  
C'Augustino, Joseph A., Sgt.  
Dainie, Lewellyn C., Maj.  
Dallaire, Albert F., S/Sgt.  
Danahy, Richard C., Lt.  
Daniel, Denton H., Capt.  
Daniels, William A., Lt.  
Dardis, Ronald A., T/Sgt.  
Davidson, William P., Cpl.  
Davidson, William B., Lt.  
Davis, Harlan G., S/Sgt.  
Davis, Robert L., Lt.  
Dayhoff, Harry J., Lt. Col.  
Deal, Manford S., S/Sgt.  
Dean, Fred M., Lt. Col.  
Deaton, George C., Maj.  
De Boer, Eugene C., Lt.  
De Clerque, Donald A., Lt.  
Dredman, Samuel Edward, S/Sgt.  
De Fresse, Norman E., Lt.  
De Graffenrid, Edwin L., F/O  
De Loach, Ralph C., Capt.  
Delo, Rea J., S/Sgt.  
Demovich, John C., Cpl.  
Denault, Francis P., Lt.  
Derr, Herbert O., Lt. ( & 2 OLC )  
Devruye, James P., Lt.  
DeWalt, Phil C., Lt.  
Deyarmond, Jacob J., Pfc.  
Dick, Charles S., Sgt.  
Dienelt, James H., Capt.  
Di Labbio, Paul, F/O  
Dolan, Robert W., T/Sgt.  
Dolan, William G., Lt.  
Donovan, Joseph A., Cpl.  
Donovan, Stanley J., Col.  
Doofittle, James H., Maj. Gen.  
Dore, John J., Jr., Lt.  
Doremus, Robert L., S/Sgt.  
Doutson, Delmar, T/Sgt.  
Dougherty, Robert E., Lt.  
Douglas, Harold W., Cpl.  
Dow, Edgar F., T/Sgt.  
Dowd, John F., S/Sgt.  
Downer, Charles B., Lt.  
Downs, Edward F., Lt.  
Dreelman, William G., Lt.  
Du Bard, James D., Lt.  
Dubisher, Francis E., Lt.  
Duffy, Richard E., Lt.  
Dukes, Joseph C., Cpl.  
Dulae, Arthur J., T/Sgt.  
Dumont, Gabriel D., Lt.  
Duncan, Glenn E., Maj.  
Dunmore, George P., Lt. ( & OLC )  
Durbeck, Arthur G., Lt. ( & OLC )  
Durbin, Henry J., Sgt.  
Durburrow, Allen R., Jr., S/Sgt.  
Eckholt, David J., Pvt.  
Edmund, Edward F., Lt.  
Eddison, Baker E., Lt. Col.  
Edgar, Thomas D., Cpl.  
Edwards, Victor A., Sgt.  
Egan, John F., Col.  
Ehlers, Mirville W., Lt.  
Ehring, Edward H., Capt.  
Elliott, William W., Lt.  
Ellison, Coy B., Lt.  
Elrod, William W., Pfc.  
Emch, David W., Lt.  
Emerson, William J., Capt.  
Emminger, Robert S., S/Sgt.  
Engler, Howard E., Cpl.  
Empson, William S., Lt.  
Estes, Wilbur C., S/Sgt.  
Evans, Henry W., Lt.  
Evans, Joseph P., Sgt.  
Evans, Roy W., Capt.  
Ewing, Frank F., Col.  
Fahrenhold, William W., Sgt.  
Falls, Robert E., Lt.  
Fargo, Donald K., Lt. Col.  
Farquharson, Albert B., Lt.  
Farrell, Clyde R., S/Sgt.  
Farrell, James, Sgt.  
Farrar, Edward W., Lt.  
Faucett, Homer W., Lt.

Faulkner, Cecil L., Lt. Col.  
Feille, Edward A., Jr., Lt.  
Feind, Roger H., Pvt.  
Fern, Richard S., S/Sgt.  
Fields, James Richard, S/Sgt.  
Fisher, Albert E., S/Sgt.  
Fitzsimmons, Marcus C., Sgt.  
Flaspoelter, Edward P., Lt.  
Flint, Dewitt C., Lt. ( & OLC )  
Foltz, Leroy F., Lt.  
Fonda, Willard C., Lt.  
Ford, Donald J., S/Sgt.  
Forrest, Leo J., T/Sgt.  
Foster, John P., T/Sgt.  
Fowble, Edward L., Lt.  
Fox, William K., Lt.  
Frank, Magnus W., Lt.  
Franco, Victor H., Lt.  
Frankenfield, Earl R., Pfc.  
Fraser, William C., Pfc. ( & OLC )  
Fraychak, Michael, S/Sgt.  
Freeman, James N., Sgt.  
Freid, Joseph A., Lt.  
Friend, George H., S/Sgt.  
Frost, John, II, Lt.  
Frunkin, Gabriel J., Lt. ( & OLC )  
Fuka, Vern F., Sgt.  
Galyon, Walter T., Lt.  
Gamble, William C., Cpl.  
Ganem, George A., Sgt.  
Garcia, Henry, S/Sgt.  
Gardner, William T., Col.  
Garman, Ralph S., Lt. Col.  
Gatewood, Joel W., Lt.  
Gaunt, Frank L., Capt.  
Gayda, Walter A., Lt.  
Gearon, Roy T., T/Sgt.  
Genz, Raymond A., S/Sgt.  
George, Robert E., Pvt.  
Gerhart, John K., Cpl.  
Germann, Oliver R., S/Sgt.  
Gerrick, Clarence W., Capt.  
Gerry, Walter R., Lt.  
Gertz, Walter J., Lt.  
Gibson, John Lewis, Lt.  
Gibson, Junior G., Pvt.  
Gibson, Robert E., S/Sgt.  
Giesel, Raymond E., Lt.  
Giugiere, Varis, S/Sgt.  
Gilbride, James W., Lt.  
Gill, James M., Lt.  
Gill, William H., Lt.  
Gillespie, Bernard A., Lt.  
Gilmore, Edwin B., Capt.  
Gilmour, James D., Capt.  
Gilmour, Frederick T., S/Sgt.  
Ginert, Leonard A., T/Sgt.  
Giodennino, Gaiyyo W., Lt.  
Glogowski, Sylvester J., Sgt.  
Glotzbach, Gene R., Lt.  
Glyer, John R., Lt.  
Goerke, Delton C., Lt.  
Goes, John D., Sgt.  
Gonsky, William, Cpl.  
Gonzalez, Manuel E., Jr., S/Sgt.  
Goolsby, George S., Lt.  
Gormly, Samuel J., Jr., Lt. Col.  
Gorrie, Leon W., S/Sgt.  
Goulding, Robert L., T/Sgt.  
( & OLC )  
Graham, James F., S/Sgt.  
Grant, Reinhold D., Lt.  
Grantham, Charles W., T/Sgt.  
Grasso, Emilio A., S/Sgt.  
Gray, Vernon L., Cpl.  
Green, George E., Col.  
Green, Louis S., Lt.  
Green, Miles L., Lt.  
Green, William F., S/Sgt.  
Greenblatt, Victor, Lt.  
Greene, George D., Jr., Lt. Col.  
Greenfield, Bernard, S/Sgt.  
Greenfield, Robert T., S/Sgt.  
Greening, Charles R., Lt. Col.  
Greenside, Arthur M., T/Sgt.  
Gregori, Raymond P., S/Sgt.  
Gregory, Stanford W., Lt. Col.  
Griebel, Robert E., S/Sgt.  
Grier, Alexander, Jr., Capt.  
Gunn, James A., Jr., Capt.  
Gutwald, Robert R., S/Sgt.  
Gwynne, Robert W., Lt.  
Haag, Francis E., Jr., Lt.  
Haas, Vernon D., S/Sgt.  
Hagenbuch, Glenn E., Maj.  
( & OLC )  
Haerty, James R., Lt.  
Haley, Robert B., Lt.  
Hall, Gordon E., Lt.  
Hall, John V., T/Sgt.  
Hall, Thomas H., T/Sgt.  
Hamilton, Edward C., Lt.  
Hamilton, Frederick E., Lt.  
Hamilton, William M., Lt.  
Hammond, Thomas G., Lt.  
Hampton, Edgar W., Lt. Col.  
Hand, Robert L., Lt. ( & OLC )  
Hansen, Raymond D., Lt.  
Hansen, Glen R., T/Sgt.  
Hansen, John H., M. Sgt.  
Hansen, Richard E., Cpl.  
Hansen, Owen R., T/Sgt.  
Harbour, David F., Capt.  
Harrin, Ross G., S/Sgt.  
Harrisey, James O., Lt.  
Harman, James, Capt.  
Harris, Ernest A., Capt.  
Harris, Eugene T., S/Sgt.  
Harris, James J., S/Sgt.  
Harris, William J., Jr., F/O  
Hart, James T., Lt.  
Harry, William Russell, Lt.  
Hartline, Marshall L., Lt.  
Hassinger, Warren R., T/Sgt.  
Hastings, Harold T., Capt.  
Hatcher, William A., Jr., Col.  
Hathfield, Willard G., Lt.  
Hawkins, Floyd B., Cpl.  
Haxthausen, Frank D., S/Sgt.

Haymon, Albert W., T/Sgt.  
Hazel, Milton E., T/Sgt.  
Heimuth, Louis W., Lt.  
Heiland, Leonard H., S/Sgt.  
Helyer, Sydney J., S/Sgt.  
Hendricks, Sterling T., S/Sgt.  
Hendricks, Landon C., Maj.  
Henry, William M., Lt.  
Herrick, Marvin, Sgt.  
Herring, Robert R., Lt.  
Heskey, Wayne R., Sgt.  
Hess, Charles W., S/Sgt.  
Hewener, Harold G., Lt.  
Hicks, Chauncey H., Lt.  
Hildebrand, David H., T/Sgt.  
Hilken, Ronald W., Lt.  
Hill, Frank A., Maj.  
Hill, James E., Lt.  
Hill, Robert Ernest B., S/Sgt.  
Himmel, Lynn M., Cpl.  
Hirsh, Arthur, Cpl.  
Hinkle, Carson M., Lt.  
Hobson, Robert M., S/Sgt.  
Hock, Herbert L., S/Sgt.  
Hodge, Archibald B., Sgt.  
Hodson, Robert L., Maj.  
Hodson, Carl D., Capt.  
Hoggin, Joseph L., Lt.  
Holly, Richard M., Lt.  
Holman, Leslie W., Maj.  
Holmes, Walter T., Jr., Capt.  
Holmes, William W., Cpl.  
Holt, Harry, Lt.  
Holt, Robert S., Capt.  
Homer, Cyril F., Lt.  
Honaker, William F., Lt.  
Honold, John L., Cpl.  
Hood, John J., Lt.  
Hooker, Robert H., Cpl.  
Hooper, Robert E., Cpl.  
Hurd, Harris H., Pvt.  
Husman, Ralph W., Capt.  
Houser, Oscar W., T/Sgt.  
Houston, David, Sgt.  
Howard, Alton W., Jr., Lt.  
Howard, John W., Sgt.  
Howard, Robert L., Lt.  
Howard, Thomas L., Jr., Lt.  
Hoye, John J., Lt.  
Hoyt, Elton, III, Lt.  
Hubbard, Mark E., Maj.  
Huddell, Robert B., Capt.  
Huddle, John R., Lt.  
Hugh, Lloyd G., Lt. ( & OLC )  
Hughes, Adolph S., Sgt.  
Hughes, Charles E., Lt.  
Hughes, Marvin C., Lt.  
Hunt, Robert G., Cpl.  
Hunter, Charles W., S/Sgt.  
Hunter, Frank H., Lt.  
Hunter, Willard O., S/Sgt.  
Hurd, Donaldson B., Lt.  
Hurd, Earl C., Lt.  
Hurt, Liber T., S/Sgt.  
Hutchins, Emory, Cpl.  
Hutchison, David W., Col.  
Huttunen, Otto, Pvt.  
Hutter, Howard J., Lt.  
Hyman, Raymond B., T/Sgt.  
Ingenhuth, William Weeks, Maj.  
Ingram, Ira, Pvt.  
Jacob, Joseph A., S/Sgt.  
Jack, Jean A., Capt.  
Jackson, Eugene R., Maj.  
Jackson, Harold D., T/Sgt.  
Jackson, McDaniel B., Lt.  
James, John W., Lt.  
Janeshick, Frank J., S/Sgt.  
Janic, Edmund F., Lt.  
Jenna, John A., S/Sgt.  
Jensen, Aage E., S/Sgt.  
Jensen, Myron W., Lt.  
Johannes, Steve L., Lt.  
Johnson, Robert W., Capt.  
Johnson, Donald G., Lt.  
Johnson, Edward J., Sgt. ( & OLC )  
Johnson, Willet E., T/Sgt.  
Johnston, Dewitt P., Lt.  
Johnston, Ralph C., Lt.  
Jones, Alexander, Jr., Capt.  
Jones, Marcus D., Lt.  
Jones, Robert S., Jr., T/Sgt.  
Jones, William C., Maj.  
Jones, William O., Lt.  
Jonk, Elvin J., Cpl.  
Jovner, Charles, M. Sgt.  
Kabothe, Jack W., Lt.  
Kaczmarek, Joseph A., S/Sgt.  
Kable, George Frank, Jr., Maj.  
Kahn, William F., Lt.  
Kaitala, Henry B., Lt.  
Kallina, Leon P., Lt.  
Kalkbrenner, Joseph W., F/O  
Kane, Louis N., Lt.  
Karas, Casimir, T/Sgt.  
Kearby, Neel E., Col.  
Keefe, Richard M., Sgt.  
Keenan, Edmund P., Pvt.  
Keenan, Raymond D., Cpl.  
Kelley, Milton, Sgt.  
Kelley, Clifford E., S/Sgt.  
Kelly, Richard L., Cpl.  
Kelly, Thomas H., T/Sgt.  
Kelly, William J., Sgt.  
Kendrick, George E., T/Sgt.  
Kendrick, Chester G., Lt.  
Kerchner, Felix N., Capt.  
Kettison, Roger G., Lt.  
Kiley, David T., Sgt.  
Kilgore, Joe M., Capt.  
Kimball, Charles L., Lt.  
Kinn, Joseph W., Lt.  
King, Carl G., Capt.  
King, Charles W., Capt.  
Kinnett, Paul, Jr., M/Sgt.  
Kirkendall, Kenneth J., T/Sgt.  
Klein, Joseph R., Maj.  
Kline, Howard R., Lt.  
Kline, Rufe B., Cpl.  
Knapp, James W., Lt.

Knapp, Robert D., Col.  
Koerber, Joseph K., S/Sgt.  
Kohl, George C., Jr., Lt.  
Kohlsch, Donald J., Lt.  
Kollinger, Robert E., Capt.  
Kostelecky, William P., Pfc.  
Kouski, Alexander, T/Sgt.  
Kowalski, Walter F., Cpl.  
Krause, Ester L., Jr., Capt.  
( & OLC )  
Krebs, Robert N., S/Sgt.  
Kriegaum, Oscar W., T/Sgt.  
Kruetzer, Daniel J., S/Sgt.  
Krzwicki, Witold I., Lt.  
Kuhl, Otto F., Lt.  
Kunkel, Donald E., Jr., Maj.  
Kurz, Clarence J., Lt.  
Labreche, George J., Maj.  
La Casse, Leo A., Lt.  
Lacey, Julius K., Col.  
Lackey, John H., Jr., Maj.  
Lakas, George S., S/Sgt.  
Lambert, John E., Maj.  
Lampe, Marcellus A., Cpl.  
Lauders, Clyde T., S/Sgt.  
Lano, James H., S/Sgt.  
Langley, Robert B., Lt.  
Langhner, Thomas G., Jr., Lt.  
( & OLC )  
Larost, Carl E., Sgt.  
Larson, Ateron H., Lt.  
Lausman, Carl C., Maj.  
La Valle, Paul P., Cpl.  
Lavers, Jack W., Capt.  
Lawrence, B. R., Jr., Lt. Col.  
Lawrence, Irvin H., S/Sgt.  
Lawler, Charles M., Lt.  
Layn, Roger W., Lt.  
Leman, Alton D., T/Sgt.  
Lear, Dean E., Lt.  
Leary, Boyd, Jr., Capt.  
Leardon, Elzja, Maj.  
Lee, Walter S., Lt.  
Leigh, Wallace E., Sgt.  
Leint, Ray A., S/Sgt.  
Lemard, Frank M., S/Sgt.  
Lemard, Harold D., S/Sgt.  
Lemard, Joseph E., S/Sgt.  
Levine, Robert, Maj.  
Lewis, Glen, Jr., Lt.  
Lewis, Jess H., T/Sgt.  
Lewis, John L., Lt.  
Lewis, Murray L., Lt.  
Lilley, Robert F., Sgt.  
Lindgren, Edgar M., Lt.  
Linsay, William F., F/O  
Lochridge, John T., Lt.  
Lochman, William A., Lt.  
Lohse, Lester J., Maj.  
Long, William B., Jr., S/Sgt.  
Lonegre, Earl, Jr., Capt.  
Lore, James A., Lt.  
Lovett, Joseph S., Lt.  
Low, David C., Jr., T/Sgt.  
Luzenski, Charles S., S/Sgt.  
Luzner, Walter J., Capt.  
Lunardelli, Edward E., S/Sgt.  
Lunger, Lloyd G., Lt.  
Lyle, Lewis E., Maj.  
Lyons, James T., Lt.  
Machado, Henry G., Capt.  
MacFarland, Robert, Lt.  
Maddock, Jack E., Cpl.  
Madison, Willard R., Cpl.  
Majala, Leonard R., T/Sgt.  
Magness, Thomas M., Lt.  
Mair, George, Lt.  
Mahaney, Philip M., Lt.  
Maitland, Lester B., Col.  
Mancini, Armando B., Cpl.  
Manierre, Ernest R., Maj.  
Manning, John D., T/Sgt.  
Mannion, John T., Pfc.  
Mantel, Harry H., Jr., Capt.  
Manuel, Victor H., S/Sgt.  
Manuel, Donald G., Capt.  
Mancini, Nicholas, Lt.  
Marion, Howard E., Lt.  
Marlatt, Wilmot R., Lt.  
Marshall, John H., S/Sgt.  
Martine, Louis E., Pvt. ( & OLC )  
Marts, Boyd J., M. Sgt.  
Marvel, Charles E., Sgt.  
Maslaska, Stanley F., S/Sgt.  
Mason, Albert L., Lt.  
Mastie, Philip M., Lt.  
Mastie, Julian B., Jr., Lt.  
Massion, Daniel G., Lt.  
Matisoff, Jack L., S/Sgt.  
Matthews, Ralph D., Capt.  
Maul, Dwight E., Lt.  
Maupin, Warren E., Pfc.  
Maury, Dale W., S/Sgt.  
Mayer, Max H., Lt.  
Mayo, Charley H., Capt.  
Mazzafiero, Joseph R., Sgt.  
Meads, William G., Sgt.  
Meenan, John J., T/Sgt. ( & OLC )  
Meints, Harry S., Lt.  
Melbraaten, Harold E., Lt.  
Mendon, Milton, S/Sgt.  
Menezkowski, John M., Lt.  
Mercer, Gem H., Sgt.  
Merkel, Charles H., Capt.  
Messner, Jennings B., Cpl.  
Meyer, Kenneth V., T/Sgt.  
Mieciak, Carl M., T/Sgt.  
Middlebrook, Garrett, Lt.  
Middleton, Robert T., Sgt.  
Miles, James D., Maj.  
Miller, Carl H., Capt.  
Miller, Loring Corwin, S/Sgt.  
Miller, Louis I., Lt.  
Miller, Robert F., Lt.  
Miller, William A., Lt. Col.  
( & OLC )  
Mills, Styles N., T/Sgt.  
Mills, William C., Col.  
Milton, Theodore R., Lt. Col.  
Minton, Lewis T., T/Sgt.  
Mirock, George C., Lt.  
Mitchell, Edward R., Lt.  
Mitchell, Kirk R., Maj.  
Mitchell, Robert N., T/Sgt.  
Moffett, Everett L., Lt.  
Moffitt, Thomas A., Cpl.  
Moisan, John J., Lt.  
Moitner, Hjalmar L., Cpl.

(Continued on Page 56)



To airmen flying in the sub-stratosphere, Rabaul harbor looks like this on a reasonably clear day. Lakunai airdrome, one of the five airfields concentrated in the Rabaul area, may be seen at the lower right.

This picture was taken following an air attack on the airdromes and harbor installations. Shipping in the harbor at the time the picture was made consisted principally of small barges and coastwise craft.

# BLOCKING RABAUL BY AIR

By Capt. Lawrence P. Bachmann

AIR FORCE Overseas Staff

**M**EN in the operations rooms and command posts looked at the line-up and knew that by the end of the day Rabaul would no longer be of much use to the Japs. In chess, the game is won when the enemy is pinned down and held and cannot strike back. Today we were to make the check-mate move.

It was February 15, 1944. The line-up of airdromes at Rabaul was chalked up in operations rooms throughout the Solomon Islands.

Lakunai and Vunakanau seemed, from reconnaissance reports, to be the Japs' two best fields. Although they had received terrific pounding, the Japs had repaired them well. The Japs were using the other fields—Tobera, Rapopo and Keravat—principally for emergencies.

Today these five airfields were to be cut to pieces and struck again and again from shorter ranges until there would be no airfields for the enemy's planes and no planes for his airfields. American troops would land on Green Islands, thus isolating Bougainville and the Solomons from supplies to the north and from Rabaul and giving air control in the area to the Allies.

The pattern was simple. The Japs must have known it as well as every admiral and general who planned it. The method had been demonstrated with success when planes of the Navy, the Marines, the

Royal New Zealand Air Force and the 13th Air Force pounded the airdromes of Bougainville, Shortland and Buka into rubble. They destroyed systematically the enemy planes in the air as well as on the ground until no more opposition rose, and the only sign of the enemy was some ineffectual anti-aircraft fire.

Then the landing was made at Empress Augusta Bay where there was little Japanese resistance. The enemy was pushed back into the hills and left there. Remembering Guadalcanal and Munda

where the Americans did not stop until all Japanese were killed, the enemy was puzzled by the tactics. He was puzzled until it was too late, for then he was trapped and desperate. He was driven away from the territory the Allies needed in Bougainville. A perimeter of troops in sufficient force was placed around him, and he was left there to rot, starve, kill himself or die in a futile charge on an Allied pillbox.

We have taken Bougainville areas desired for air operation. We have our air-

## THE 13TH AIR FORCE

Organized largely from other AAF units which battered shipping lines from island bases in the South Pacific throughout 1942, the 13th Air Force was activated January 13, 1943. Its principal objectives from activation to June, 1943, were:

- To gain air supremacy over the central Solomons.
- To obtain ground and sea objectives in the central Solomons.
- To destroy enemy supply lines in the northern Solomons.

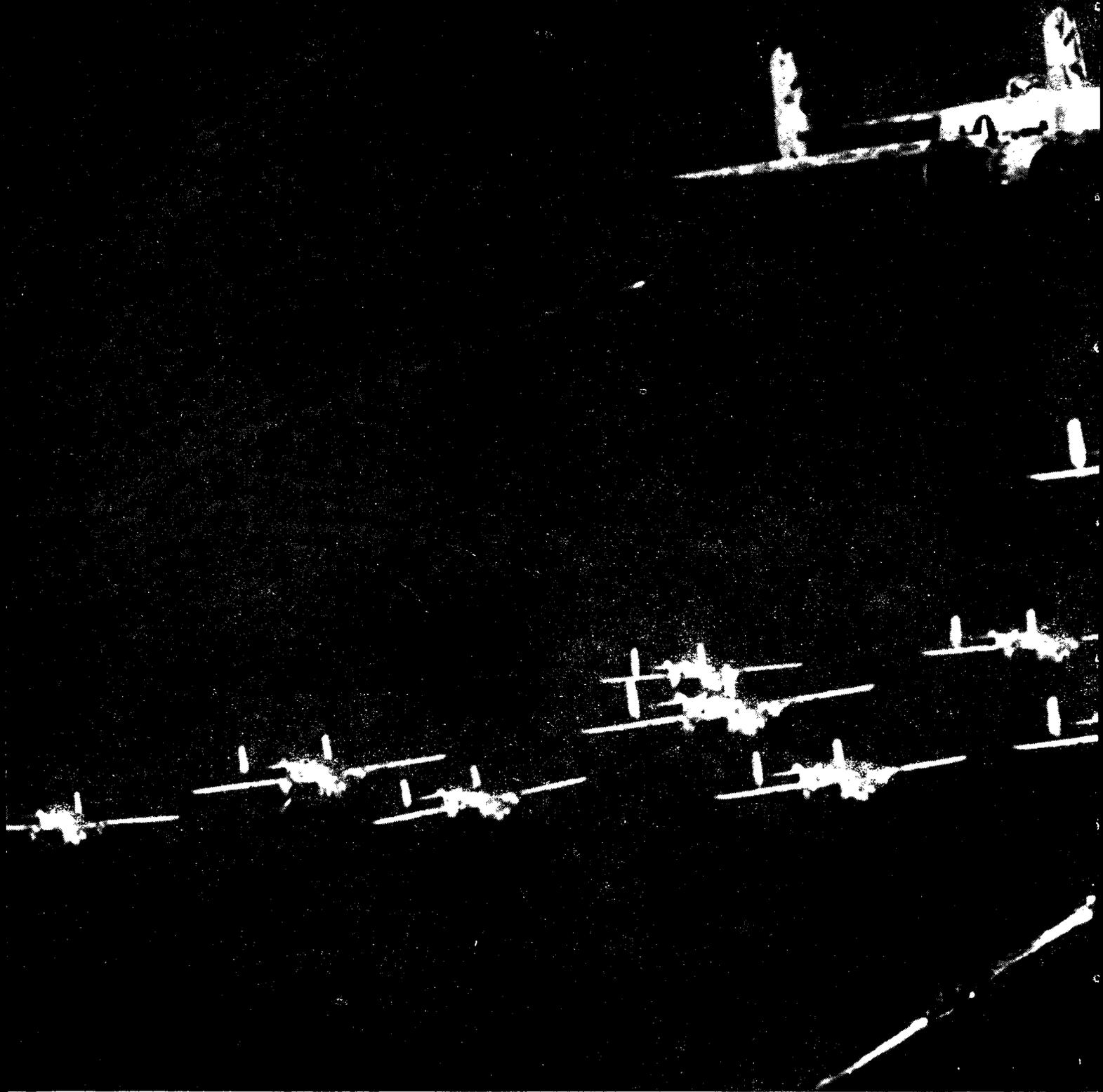
From June to December, 1943, its objectives:

- To neutralize enemy airfields and other installations on Bougainville.
- To support and protect amphibious objectives in the northern Solomons.
- To gain air supremacy over the northern Solomons.

From December to the present date, its objectives:

- Destruction of enemy airfields and other installations on New Britain.
- Destruction of enemy service supply lines over New Britain and the northern Solomons.
- Support of ground forces mopping up on Bougainville.
- Support of amphibious objectives out-flanking Rabaul.

The 13th's first headquarters was at Espiritu Santo, later in New Caledonia and now on Guadalcanal.



It's D-day in the South Pacific and this photograph depicts a momentary junction of American air and sea forces on the move. The B-25s are headed for Rabaul to blast Jap airdromes while the

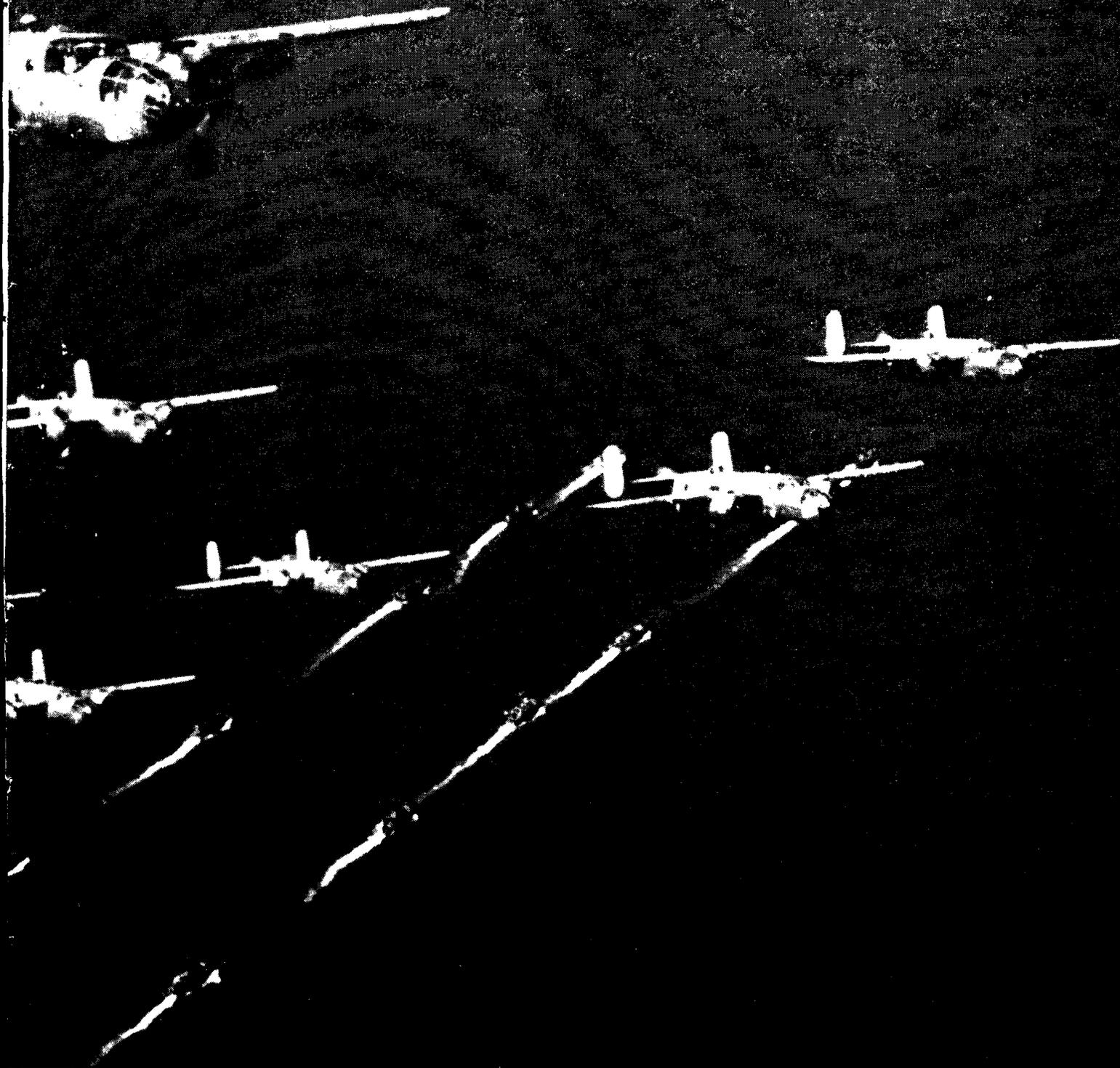
fields and as good a harbor as we want. Our pattern for warfare in the South Pacific means many things. It means that the enemy is being knocked off balance. He's getting a fast moving war of attrition. He's getting a fast moving war of position and movement. We select the spot we want, move in and take it, establish airbases and are set to move again. Mopping-up operations may be going on

months after we have taken an island; meanwhile, we have knifed farther into the Jap's zones.

This is all upsetting to the Japs. Each one of their soldiers is determined to kill one or more Allied soldiers or Marines before he dies in combat for his emperor. He is doomed to disappointment and, furthermore, he is confronted with the most horrible of all fates for the Japa-

nese: losing face. He is being cut off from supplies and is dying from starvation and disease. In this type of warfare air power has again demonstrated what it can do.

We saw this type of operation work when we built an airbase on the Jap-held island of Bougainville without the expenditure in men, resources and time which would have been required to take



invasion convoy, several thousand feet below, speeds toward the Green Islands. Captain Bachmann, AIR FORCE staff correspondent in the South Pacific, snapped this picture from one of the bombers.

the island by direct assault. Although fighting went on in the island, it was mainly the stamping out of a trapped and enraged enemy. His forces could get no larger; ours could. He could get no supplies; we could.

The same sort of tactics was to be used in immobilizing Rabaul.

In the Solomons operations in August, 247 enemy aircraft were destroyed; in

September, 171; in October, 173. The enemy was making a determined effort to hold the Solomons as a shield for Rabaul and the way to the north, to the Philippines and to Japan. Then in November we moved against Treasury and Bougainville Islands. That month 300 Japanese planes were destroyed.

Day-by-day figures show that the Japanese resist an initial drive until the tac-

tical situation or *loss of airplanes* makes further resistance in force no longer feasible. In the first eleven days of November, 255 planes were knocked down. Yet from November 12 until the middle of December when we were consolidating our positions in building airfields, only fifty Jap planes were destroyed. They simply did not have any more airplanes to throw at us. (Continued on Next Page)

In this drive to clear the Solomons the Japanese could not get their freighters through the narrow passages of the islands and they were forced to use barges and set up new, inefficient sea routes to run supplies to their troops based first on New Georgia, then on Vella Lavella, Santa Isabel, Kolombangara and Choiseul. Our B-25s and PT boats kept hammering at the barge lines.

The Japanese knew what was happening and didn't like it. Their Domei News Service told their people in December:

"The fact is that the enemy has advanced since Guadalcanal into Rendova, New Georgia and Bougainville. The means of their advances are always identical; employing a mass of carriers, they land under the cover of bombing and naval bombardments. Then they build airfields, thus extending the sphere of air influence on toward the north. It seems the opponents are making every effort to build airfields and to prepare numbers of aircraft. As the enemies themselves say, the advance is very difficult, and apparently they don't rely much on advance over land. Building up airbases there, their operations are to intercept our supply lines.

"Whenever the enemies build an airbase on an island, our communications and supply with the other islands becomes difficult. This is the characteristic phase of the war happening in this area

surrounded by water and islands. The condition is that without roads, the communications along the coast depend upon small vessels. The forces cannot rush headlong into the landing point. Thus, even though we have great naval victories, they thread their way through the lines to land and gain footholds. Therefore destroying the enemy supply line is most important . . . to do this it is necessary to have supremacy over the air and sea.

"This is the way the Americans operate. They attack us, relying on unlimited numbers of aircraft. Even though we drive them away in the air battles, as the nature of aircraft requires, our planes cannot stay up in the air beyond a limited time; so we have to return to the base. Therefore, we can hold air supremacy only a short while in a day and after that the enemy's fresh aircraft will dominate the air . . . They repeat the attacks in waves. Two or three hours after the first attacker has withdrawn, they come back with more and renewed strength. They repeat this operation. At first we can detect their appearance and take off our aircraft to intercept and battle it out in the air, but as fuel and munitions run out we have to land our craft. At that time if the enemy renews the attack on us the battle will become very unfavorable to our side.

"Meanwhile the enemy reconnaissance planes will fly over us and report the 'splendid target' by radio to the forces

waiting at the base and call tens of hundreds of aircraft. Then comes the swarm of enemy aircraft upon us. This is an everyday occurrence in the southern region. Consequently, as a general staff officer of the Expeditionary Army in the South Seas said, 'We have the opportunities, but not the planes.' We are facing the pathetic condition of not having enough aircraft to encounter them, though we had the chances to do so. . . . Our soldiers since Guadalcanal are experiencing the mortified feeling of being evacuated to another point though they are not actually defeated. As the result of the experience they encountered in that region, soldiers are saying, 'What on earth has happened to Japanese air power? . . .'"

**W**E know what has happened to it.

We also know how our air units are flying together. New Zealanders furnish fighter cover for Navy TBFs and SBIDs. Marine and Navy 4FUs and Corsairs furnish medium and low cover for 13th Air Force B-24s; the AAF's P-38s provide high cover, and B-25s might be covered by any one of a number of these combinations. Search missions are performed by Navy land-and-sea-based multi-engined planes, supplemented by the Royal New Zealand Air Force. Navy PBV-5s, known affectionately as Dumbos, stand by with a cover of AAF P-39s to rescue anyone who goes down at sea.

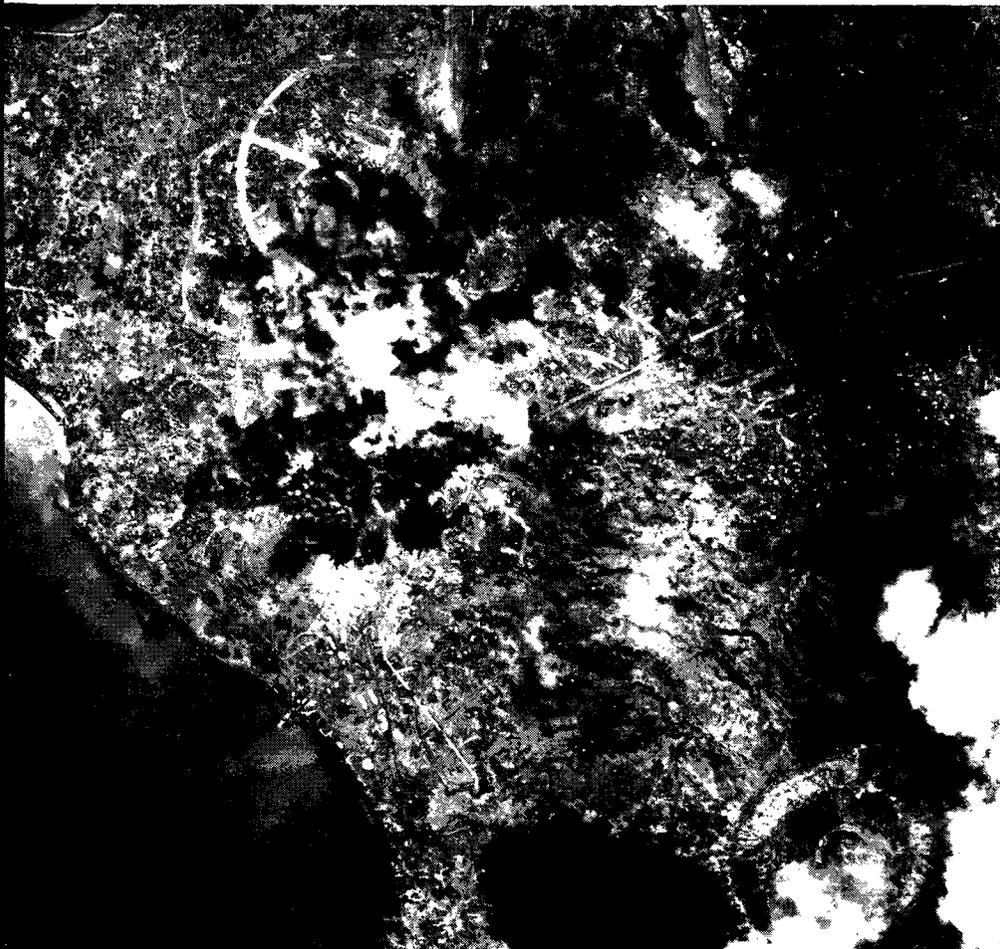
When we made the landing at Empress Augusta Bay on Bougainville on December 1, the Japanese did not have the use of a single airfield in the Solomons. The enemy worked desperately to repair the damage to their fields on the island but we kept them out of use.

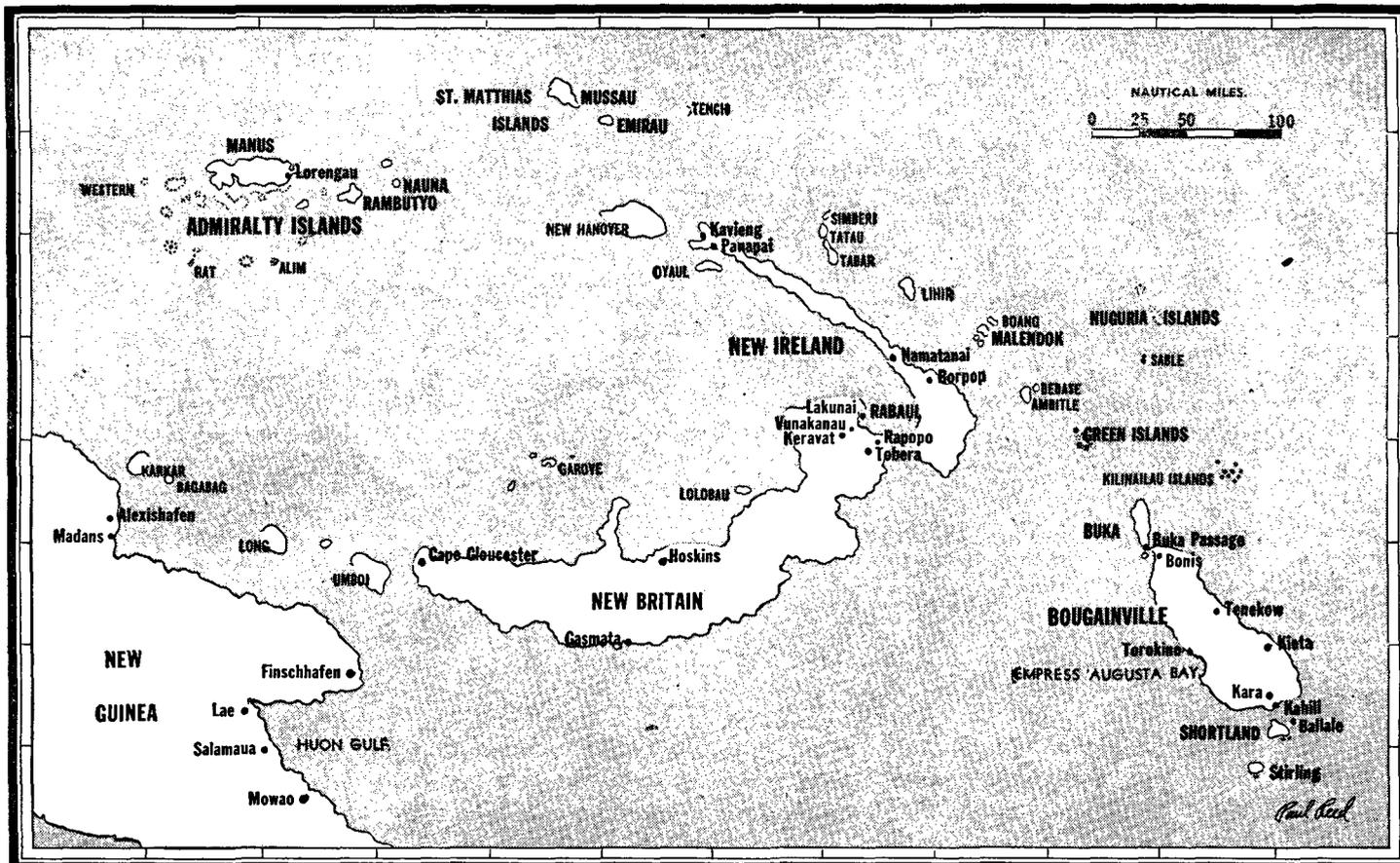
Bomber crews of the 13th Air Force see to it that these fields stay unusable.

On December 19, full scale operations were started by the combined air arm of COMSOPAC. From new fields for fighters, dive bombers and mediums, Rabaul was under direct attack.

The airdromes which are the focal point of attack at Rabaul lie in a rough crescent shape about Simpson Harbor, which is inside a hook of land in northern New Britain. Rabaul, on the harbor, was formerly the commercial center and administrative headquarters of New Guinea Territory. Its prewar population was 836 Europeans and 12,000 Asiatics and natives. Its beautiful, natural harbor accommodates naval and merchant shipping of all sizes. Since January, 1942, Rabaul had been used by the Japs as their base of operations in the South Pacific and Southwest Pacific Theatres, but, because of our attacks, shipping in that port had been on the decline. Simpson Harbor had been struck steadily until it was of little use to the Japs. At one time, it looked like a thriving port with Japanese freighters and combat ships anchored inside the hook of land. By the

AAF bombs burst on Lakunai airdrome near Rabaul. The explosives have landed squarely on the runway and parking aprons. Existence of a large number of revetments and other permanent installations to accomodate bombers and fighters indicate enemy's high evaluation of the base.





time of the Green Islands invasion there was little left except hulks and crippled ships.

The airfields around Rabaul in order of importance are:

*Lakunai*, a mile south of the town was built originally for the RAF. Its importance is due to its proximity to the town and its status as the most heavily defended airdrome of the group.

*Vunakanau* is the best field and has the finest revetments and the most planes. It is as heavily defended as Lakunai but does not have the supporting anti-aircraft fire provided by the town installations. This airdrome is located eight miles south of Rabaul.

*Tobera*, principally a fighter field, is about thirteen miles southwest of Rabaul.

*Rapopo*, a bomber field, is sixteen miles southwest of the town.

*Keravat*, still in construction, has never been used except as an emergency and auxiliary field. It lies about twelve miles southwest of Rabaul.

The fields are connected by a net-work of good roads and the entire peninsula around the harbor is spotted with anti-aircraft batteries.

At the start of operations in the end of December, weather conditions were poor. There were plenty of targets, however, and when the airdromes were closed in we bombed the town's military installations and shipping. The harbor took so

much punishment that no warships have been seen there since that time.

Two heavy strikes were made, however. The enemy fought back with intense and accurate anti-aircraft fire from ships and shore; aerial bombs were dropped and more than 100 fighters came up each time an attack was made. They bored in through our fighter cover to the B-24s and B-25s which, even so, gave a good account of themselves. The enemy followed the formations beyond Cape St. George, the southern tip of New Ireland.

On December 27 and 28 there were two fighter sweeps. In both jobs the Japanese were caught on the ground. Our fighters waited for the Japs to come up to them. The American tactics consisted in forming a large luffberry, with a high Navy Hellcat cover, and making diving passes at the more than sixty Japs who rose to intercept. After making a pass, a plane would climb back and rejoin the circle. These maneuvers paid off with a bag of 43 Japanese planes to a loss of four Navy Corsairs.

During the next week the weather still wasn't good, but our fighters still knocked down 89 enemy planes. The Allies were getting rid of the Japanese airplanes. The Japs continued sending up a lot of aircraft. They brought them in from the north, and as fast as they did we shot them down. For the Japs, it was like pouring water into a sieve.

Heavy bombers of the 13th Air Force broke through only three times in the early weeks of the campaign. On these raids, the Japanese sent up almost a hundred planes and their flak, for the most part, was intense and accurate.

The bombers really warmed up on January 8 and, for the next week, they hit an average of two airfields a day as well as making many attacks by night. Between 2211 of the 12th and 0335 of the 13th, B-24s showered frags and 500-pound bombs on Lakunai and Tobera; just before dawn B-25s followed up against Tobera, Rapopo and shipping in the outer harbor. Some TBFs made a run at the same time on merchant shipping in Simpson Harbor. There was no interception that day.

The battle began going to us between January 15 and 21. The Japanese could not replace their losses although they showed considerable ingenuity in keeping their operations fluid, moving planes quickly from one airdrome to another. We continued to shoot their planes down and bomb all five fields, switching from one to another, changing tactics and times of the attacks. At the end of day of January 21 the enemy had lost 208 planes over his own fields.

Good weather brought good action from January 22 to 28. The Japanese continually reinforced Rabaul, the key-stone of their South Pacific defenses, and

their plane losses reached the average of 24 a day. Lakunai, the most heavily defended fighter field on the peninsula, was struck nearly twice a day. On January 25 the Japanese called time out.

Fifty-two of our fighters, stacked down from 29,000 to 23,000 feet, came in during the afternoon and circled Rabaul about five times. The formations dropped to 17,000 feet and circled around in a challenging manner. They finally called the Japanese on the radio in the clear and pleaded, a little profanely, for them to come up and fight.

"Come down here on the ground and make us," the Japanese replied in very good English.

**RABAU** was "Munda-ized" so thoroughly in the week from January 29 to February 4 that the enemy couldn't even launch any reprisals against our fields on Bougainville although they were in easy range. Our fighter cover was a lovely thing and we didn't lose a bomber, although the Japanese sent up as many as 88 planes at one time. Five major strikes were made on the last two days of January. On February 4, the enemy, rather reluctantly, sent up only thirty planes when B-25s hit Tobera and B-24s hit Vunakanau at almost the same moment. The score for the month of January was 441 enemy planes shot down, not including those hit by carrier-based aircraft or shot down by our anti-aircraft batteries. On February 1 the commanding general of the South Pacific Forces received a message from General Marshall congratulating all air personnel on their destruction of Jap aircraft in the Solomons-New Britain area in the preceding ten days.

The strikes were stepped up in the week of February 5-11 to three a day. We got 91 planes and repeatedly put the Jap airfields out of commission. Coming into Rabaul, you could look out of the photographer's spot in a B-25, either the waist windows or the camera hatch and see Humps and Zekes falling like burning pieces of paper and the field below being turned to gray rubble by the bombs you left. It was a powerful, sustained attack. The enemy fought back bitterly. Lakunai was hit with knock-down blows on the 5th, 6th, 7th and 9th, and the Japanese each time repaired the field and brought new planes in. As new Jap planes were spotted at any of the fields, we would make strafing and para-frag runs on them. We began to take over the air above Rabaul. On the 11th the enemy could put up only 75 fighters against 115 of ours.

The few days before the landing on the Green Islands were marked by the greatest air activity and the greatest display of pinpoint bombing yet seen in the South Pacific. On the 13th tons of bombs were dropped on Lakunai and only two failed to hit on the runways or revetments. Photographs the next day showed the

oblong strip gone completely, almost as if somebody had erased it from the picture. The Japs painstakingly scraped the ground and made it level again.

Apparently the Lakunai fighters that were in the air during the blasting landed elsewhere, or maybe some new fighters came in from the north. At any rate, in late afternoon reconnaissance planes over Rabaul brought back photos which made the first PI officer to see them snatch up his phone and call headquarters. A number of fighter planes could be seen clearly in the revetments and aprons of Tobera.

The next morning, just before dawn, some B-25s moved in at tree-top height, wing-tip-to-wing-tip, and swept down the length of the runway and revetment area. Thirty men, repairing the battered runway, were mowed down. The planes on the aprons and revetments were shot up and burned. One machine gun on the ground sputtered unhappily at the Mitchells as they left. Later in the morning, a consolidated raid with every type of combat plane struck Vunakanau.

On D-day the enemy opposition on Rabaul had dwindled to forty fighters

which rose when the B-25s came in again to knock out Vunakanau. The Jap planes went through all manner of lovely gyrations, and it was pleasant watching them from the camera hatch even if they didn't make very good pictures. They were long on acrobatics and short on fighting that day, although enough of them finally did fight for us to knock down nine. Even the flak was half-hearted and inaccurate. Meanwhile an umbrella of fighters was covering the landing on Green Islands, a short 150 miles away.

The task force finished shelling Nissan, the main island; the landing boats ran up to shore. Jap resistance was light and it was mopped up quickly. Men began surveying the place for airfield sites. From then on, and plans were made for striking north, by-passing the immobilized Jap base, once the most important in the South Pacific. Twenty thousand Japanese were cut off to die of starvation, disease and gunshot wounds.

Meanwhile, our reconnaissance planes had been busy over more advanced areas. We were on the move—fast. ☆

## Bomber Crew Training in the South Pacific

By LIEUT. COL. H. E. JONES

13TH AIR FORCE

**T**HE function of the thirty-day course which is given to all bomber crews when they arrive in the South Pacific is to indoctrinate the men, giving them a type of training which they could not possibly get in the United States, and to cover up any possible discrepancies in their previous training. We have opened such a school through necessity, for we have learned that between 75 to 80 per cent of our operational losses occur with crews that have been here less than three months. That means only one thing— inadequate training for the type flying demanded in the South Pacific.

On arrival the men are sorely disappointed when they can't go immediately into combat. They naturally have a tendency to resent any further training. No amount of figures, statistics or talk will firmly convince these men that they are not ready to engage the enemy. So we prove it to them. We give them some tests. They are simple and thorough examinations without any trick questions or situations. The tests are operational as well as written. We might flight check a bombardier and see if he can get his bombs away in the brief time we are over a target in this theatre. Or we might ask a pilot to set a plane down on a strange field, or run a long mission and see if the engineer understands the right time and the correct procedure in transferring fuel.

If a man should pass the tests then we would readily concede that he needs no further training. To date no one has passed them.

This in no way should reflect upon the training methods in the States for a number of questions deal directly with operations and procedures in this theatre— information that no training school at home can be expected to provide, yet information that every man needs if he is to fly in the South Pacific. The attitude of the men changes after taking the examination and they get down to work.

Everything possible is done to make the school as interesting and as practical as possible. This is relatively easy. For instructors we use experienced crew members who have flown their allotted number of missions but who have volunteered to remain here to instruct the new men of the 13th Air Force. These men generally make fine instructors for they can sprinkle the lectures and flights with their own experiences, and they know the theatre backward and forward. The students, of necessity, listen to these men with respect. All manner of training aids that are particularly pertinent to this theatre are used. Complete operational mock-ups of the exact type of plane the crew will be operating are furnished. Classrooms are well lighted and ventilated and the study or intelligence war room is filled with all

manner of the latest technical books and pamphlets, as well as daily intelligence reports, so that the men can familiarize themselves quickly with all aspects of operations of this area. They can confirm the reports by the large tactical maps on the walls which are marked up daily to show strikes and other action.

During the month's course the men receive 120 hours of ground school and 90 hours of flying training. This represents seven hours of work a day. Naturally the navigators get more navigation than other crew members, but all receive some of the same lectures so that they will be familiar with each other's work.

Roughly the ground course breaks down as follows:

Fifteen hours of intelligence for all crew members. This course includes target identification, knowledge of the enemy, safety factors, how to live in the jungle and on a life raft, and the type of information needed by the intelligence officer after each mission.

Ten hours of Renshaw system of plane recognition for all men. Now and then men trained for the European theatre arrive here with a full knowledge of Nazi planes but none of the Jap aircraft.

Three hours' work for all men on range estimation.

The 3A2 Trainer is used with modification. We use turrets that have been removed from a plane. Gunners get fifteen hours of this training; the rest of the crew, ten hours.

Navigation is most important in this theatre for so much flying is done over water out of sight of landmarks. In addition, the weather is always changing and the men must know how to orient themselves quickly. Pilots and bombardiers get eight hours of basic navigation; gunners one hour in life boat navigation, and navigators have a 26-hour course. This work includes problems taken from the log books of actual mission. We also teach the navigators a number of unorthodox tricks which we have developed here through experience.

All men take the eight-hour ordnance course, including safety factors in handling bombs and fuzes.

Aviation medicine is another eight-hour course for all flyers. It deals primarily with first aid and oxygen equipment.

Weather study is treated in six hours for pilots, navigators and bombardiers. They learn the use of weather codes, how to get weather from the radio stations, the peculiarities of weather in this area. The only other crew member taking this instruction is the radio operator, who gets two hours dealing mainly with sending and receiving weather data.

Chemical warfare is a four-hour brush-up course for all men. It includes the use of incendiary bombs and smoke screens.

The armament course provides an op-

portunity for every member of the crew to check out on every gun and turret. This is done in eight hours by the pilots, navigators and bombardiers. The radio operators and engineers get twelve hours, while the gunners who must know the exact workings of all turrets and guns get sixteen hours.

The engineering course emphasizes emergency procedure for all crew members, including instruction in such subjects as fuel transfer and the emergency hydraulic procedures. Pilots get sixteen hours; navigators, bombardiers and radio operators five hours; gunners 29 hours, and engineers 36 hours, including 26 hours of actual work on the line.

Bomb training is given in five hours to all officers but the bombardier gets ten hours. This is to familiarize others with the bombardier's problems and enable them to take his place in an emergency.

Four hours of radio electronics instruction is given to pilots and navigators to familiarize them in its use as an aid to navigation and as a homing device. Radio operators get twelve hours to familiarize them in its operation and maintenance.

Code blinker is given to all men until such time as they can check out at five words per minute. This permits communication between planes in flight as well as in emergencies where the men might be in a life raft or on some island.

The air training period is for all crew members, stressing their particular job during the following operations:

Day formation assembly and landing procedure, four hours; night formation assembly and landing procedure, six hours;

formation ascent, descent and frontal penetration (going through weather safely in formation), four hours; high altitude formation flying over 20,000 feet, eight hours.

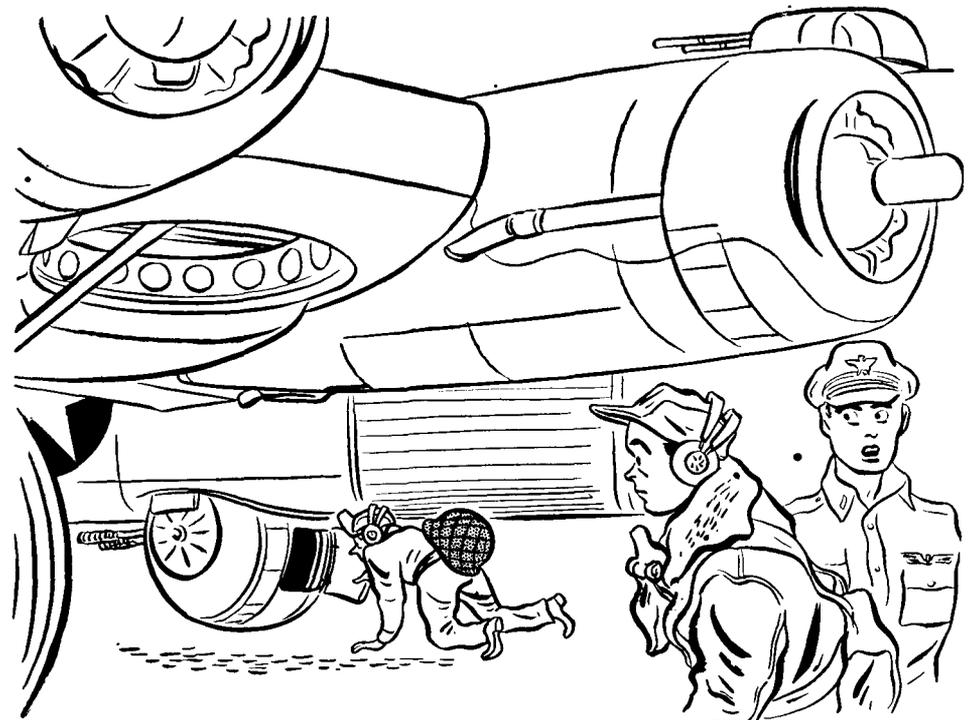
Bombing covers a combined period of 24 hours. The men can always stand more practice in this most vital of all functions. More than that, it determines the best men to use in the lead planes for formation bombing. It also teaches the men our bombing tactics on the different type targets with which we have to deal.

Ten hours of instrument instruction are designed to familiarize the men with the beams used here. This includes six hours of letdown procedures for bad weather and night flying.

Navigation is divided into two equal periods of twelve hours each for day and celestial navigation. We put two students in a plane—one in the nose and the other in the flight deck. They have a number of practical problems, such as navigating the plane out to a reef about 550 miles out and then returning to another reef that is near home but far enough away so no landmarks can be used.

There is a ten-hour course for co-pilot transition. All of our co-pilots are checked out as pilots. The necessity for this is obvious—the pilot might be shot up and the co-pilot must take his place. For that reason we stress emergency landings since it stands to reason that if the pilot is hit, chances are the plane is damaged and a trick landing will be necessary.

That our system is successful is borne out by the fact that our losses are as low as those of any Air Force. And we aim to make them even lower. ☆



"Our belly gunner wears his helmet where it'll do the most good!"

# Roll of Honor

A MONTHLY RECORD OF DECORATIONS AWARDED  
TO PERSONNEL OF THE ARMY AIR FORCES

(Continued from Page 48)

Monday, Robert L., T/Sgt.  
Money, Owen, Jr., Sgt.  
Monroe, Irving A., Lt.  
Montagano, Edmond D., Lt.  
Mooney, Robert H., Lt.  
Moore, Ballinger B., Lt.  
Moore, Cecil L., F/O  
Moore, Ernest W., Lt.  
Moore, Howard W., Maj.  
Moore, Joseph H., Capt.  
Moore, Richard D., Lt.  
Moore, Thomas H., Col.  
Moore, Woodrow W., Lt.  
Morgan, Herbert H., Col.  
Morgan, William E., T/Sgt.  
Morley, Myrnan R., T/Sgt.  
Mormon, Frank M., S/Sgt.  
Morris, Emmett L., Lt.  
Morrisey, Raymond A., Lt.  
( & OLC )  
Moseley, Jack C., Sgt.  
Moseley, Ralph H., Lt.  
Murphy, Clyde E., Lt.  
Murphy, Daniel S., S/Sgt.  
Murphy, James L., S/Sgt.  
Murphy, James T., Lt.  
Murphy, John P., Lt.  
Murphy, William C., Lt.  
Murray, Joseph F., Sgt.  
Murray, John S., Capt.  
Myers, Joseph A., Sgt.  
Myers, William C., Cpl.  
McAtee, James C., Lt.  
McBroom, Vernon, Sgt.  
McCabe, Robert R., S/Sgt.  
McCalmont, Howard V., T/Sgt.  
McCandless, George, Jr., Lt.  
McCanse, George A., Lt.  
McCarty, Ned, Lt.  
McCauley, Frank E., Lt.  
McClaran, Clarence E., Lt.  
McClellan, W. E., Jr., Lt.  
McCollom, Loren G., Lt. Col.  
McComb, William J., Lt.  
McConnell, Robert B., Lt.  
McCord, Louis D., Capt.  
McCormick, Leslie C., S/Sgt.  
McCormick, John B., Lt.  
McCroary, Marvin L., Lt.  
McCullen, John B., T/Sgt.  
McCullough, John H., Capt.  
McDonald, William B., Lt.  
McDonough, William F., Lt.  
McDowell, Francis G., Lt.  
McFann, H. Miles, Lt.  
McGee, Jesse B., S/Sgt.  
McGuire, Russell E., S/Sgt.  
McHugh, James T., Cpl.  
McKinley, Daniel A., Lt. Sgt.  
McMillan, Clinton, Jr., Sgt.  
McMillan, Longley Seldon, Maj.  
McNaughton, Edwin B., Jr., Cpl.  
McNeil, William H., Lt.  
McNow, William K., Col.  
McWilliams, R. J., Capt.  
Nakoneczny, William E., T/Sgt.  
Nance, William E., S/Sgt.  
Nazzaro, Joseph J., Col.  
Necrason, Conrad F., Col.  
Neef, Malvin E., Lt.  
Neeper, Elwood H., Jr., S/Sgt.  
Nesse, Oliver R., S/Sgt.  
Neilson, Douglas A., Lt.  
Neilson, Marshall E., Capt.  
Neilson, Robert E., Capt.  
Neilson, William M., Sgt.  
Nienemann, Ernest B., Capt.  
Nesvitch, Michael, S/Sgt.  
Neuman, George N., Cpl.  
Nevill, Clarence A., T/Sgt.  
Newell, S. P., S/Sgt.  
Newport, Louis H., Lt.  
Newton, George W., Lt.  
Nygard, Leonard R., Sgt.  
Nichols, Edgar S., S/Sgt.  
Nichols, Franklin A., Capt.  
Nicholson, Leonard T., Lt.  
Niemi, Edward V., T/Sgt.  
Nies, Albert C., T/Sgt.  
Nisson, Roy I., T/Sgt.  
Nisbet, Stewart D., Sgt.  
North, Alexander F., Lt.  
Nunn, Leslie C., T/Sgt.  
Nye, Glenn C., Col.  
O'Brien, James E., S/Sgt.  
O'Brien, William E., Lt.  
Ochsola, Carl A., S/Sgt.  
Old, Archie J., Jr., Col.  
Oliver, James F., S/Sgt.  
Olsen, Harold F., Lt.  
Olsen, Roy, T/Sgt.  
Olson, Oscar D., Lt.  
Olson, Paul V., Lt.  
O'Neill, John G., Lt.  
Ostrander, Robert E., Lt.  
O'Sullivan, Donald R., Capt.  
Otepohl, Robert B., S/Sgt.  
Overholser, John W., Sgt.  
Owens, Laurel J., Lt.  
Pacassi, Jerry G., F/O  
Pacheco, Joe B., S/Sgt.  
Padgett, James W., Jr., Lt.  
Palm, John D., Lt.  
Palmer, Andrew, F/O  
Palmer, John A., Lt.  
Papp, Joseph, S/Sgt. ( & OLC )  
Paquin, Howard M., Capt.  
Parsons, Jay B., T/Sgt.  
Pate, James E., Capt.  
Patriz, David D., Sgt.  
Patterson, Arnold M., Lt.  
Patterson, Harry O., Lt.  
Patton, Charles R., Lt.  
Patton, Richard L., Sgt.  
Paulsen, Paul H., Lt.  
Payne, John B., S/Sgt.  
Payne, Pace P., S/Sgt.  
Paz, Michael J., S/Sgt.  
( & 2 OLC )  
Pearson, John T., S/Sgt.  
Peaslee, Budd J., Col.  
Peattie, Francis G., Lt.  
Prebles, Robert M., Lt.  
Pendergast, Thomas E., T/Sgt.  
Penney, Edgar G., Lt.  
Pennington, Morris E., S/Sgt.  
Pierce, Harold R., Sgt. ( & OLC )  
Pierce, Robert G., S/Sgt.  
Pierce, Sammy A., F/O  
Pirruccello, Joseph S., Maj.  
Pittenger, Donald D., S/Sgt.  
( & OLC )  
Poland, Harold H., Pvt. ( & OLC )

Porter, James M., S/Sgt.  
Potts, Ramsay D., Jr., Maj.  
( & OLC )  
Powell, James, Lt. ( & OLC )  
Powers, John E., Lt.  
Powers, Mathias, Lt.  
Praun, Robert, Lt.  
Prentiss, Paul H., Col.  
Preston, Joseph J., Lt. Col.  
Preston, Maurice A., Col.  
Pringle, Ralph K., Lt.  
Pugh, Herbert W., Col.  
Purnell, Fred V., Capt.  
Quick, Quentin T., Lt. Col.  
Quigley, Edward C., Lt.  
Quillen, Raymond, S/Sgt.  
Rabert, Robert C., Col.  
Raher, Donald J., Cpl.  
Raines, Lewis D., Lt.  
Ramaker, Judson S., Lt.  
Raming, Herman P., Cpl.  
Ramirez, Benjamin, S/Sgt.  
Ramsey, Homer B., T/Sgt.  
Ramsey, Robert H., S/Sgt.  
Rantala, Archibald J., Lt.  
Rapasky, Bernard W., Lt.  
Raper, William S., Maj.  
Rautio, Frank I., S/Sgt.  
Ray, Wilbur H., Capt.  
Ready, William D., Maj.  
Reagh, Grant L., Lt.  
Rebich, George, Capt.  
Reed, Wiley C., S/Sgt.  
Reeves, Vernon H., Lt. ( & OLC )  
Reisguard, James M., T/Sgt.  
Regan, James R., Lt.  
Reid, William M., Col.  
Reindl, Frank J., T/Sgt.  
Reiners, George H., T/Sgt.  
Remillard, Owen C., T/Sgt.  
Renick, Reed, T/Sgt.  
Reser, Charles S., S/Sgt. ( & OLC )  
Reynolds, O'Neal S., Sgt.  
Richards, Harlan H., S/Sgt.  
Riddle, Cecil E., Lt.  
Ritner, Robert W., Capt.  
Ritnour, Arthur B., S/Sgt.  
Rivers, Walter J., Sgt.  
Rizzo, Anthony F., Sgt.  
Roberson, Rupert P., T/Sgt.  
Roberts, Eugene P., Maj.  
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Robertson, Nubran L., Lt.  
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Rogers, Arthur H., Col.  
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Romig, Eugene A., Lt. Col.  
Roper, Hugh R., Capt.  
Rosenberger, John W., T/Sgt.  
Rosengarten, Earl M., S/Sgt.  
Rothstein, Abraham, Cpl.  
( & OLC )  
Roubique, Francis B., Jr., Lt.  
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Rowton, Joshua E., T/Sgt.  
Rozow, Daniel, S/Sgt.  
Rudden, William R., Lt.  
Russell, Donald D., Pvt.  
Rutherford, James E., S/Sgt.  
Saur, Lyle G., T/Sgt.  
St. Pierre, Edmond J., S/Sgt.  
Saltzman, Ralph H., Maj.  
Sammons, James N., Capt.  
Sanson, Ernest O., T/Sgt.  
Sand, Ivan O., Sgt.  
Sanders, Albert R., S/Sgt.  
Sanders, James R., Lt.  
Sanford, Raymond Pape, Lt.  
Sarkisian, Dickran M., Jr., Lt.  
Sarsfield, William J., Lt.  
Sawyer, Jerome P., Capt.  
Sayer, Maurice F., S/Sgt.  
Scammel, Victor C., Lt.  
Schaffer, Jack H., T/Sgt.  
Schauweker, Orris W., T/Sgt.  
Schinke, Robert S., Lt.  
Schlich, Robert W., Lt.  
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Schmatz, Richard A., Lt.  
Schmidt, Budd R., S/Sgt.  
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Scholl, Walter, Jr., Lt.  
Schooler, Roy L., Sgt.  
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Schumacher, Richard P., Lt.  
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Schweigert, Delmer M., S/Sgt.  
Schwinmer, Charles L., Lt.  
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Scroggins, William A., Pfc.  
Seals, Keith L., S/Sgt.  
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Seider, Francis L., Cpl.  
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Shea, William L., Lt.  
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Shelley, Gilman F., Lt.  
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Sherline, Merwin J., Pfc.  
Sickinger, Francis G., Lt.

Simon, John H., Cpl.  
Simon, William C., Sgt.  
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Simpson, Jerome L., Lt.  
Sinclair, John D., T/Sgt.  
Singer, Donald M., Lt.  
Singer, William S., Col.  
Skeadas, Lou G., S/Sgt.  
Slack, Morris W., Capt.  
Slocumb, Clyde B., Jr., Capt.  
Slusarczyk, Julian W., S/Sgt.  
Smathers, Oda A., T/Sgt.  
Smith, Alan H., Lt.  
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Solinsky, John S., Lt.  
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Stanis, Delmar V., S/Sgt.  
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Stubblefield, Webb H., Lt.  
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Stumler, Lloyd A., Lt.  
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Sutter, William A., Cpl.  
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Swan, Jack B., S/Sgt.  
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Swanson, Theodore B., Capt.  
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Szaffir, Jean J., Capt.  
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Thues, Emil F., T/Sgt.  
Titus, Calvin P., Lt.  
Topping, John C., Lt.  
Tosch, Robert W., Lt.  
Travis, James L., Lt. Col.  
Tringham, Charles E., Lt.  
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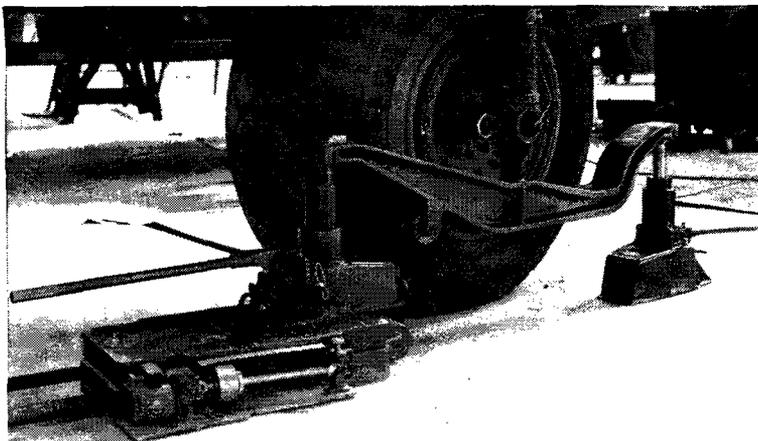
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Upshaw, Frank E., T/Sgt.  
Uphegrove, Fay R., Col.  
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Vandenberg, Hoyt S., Brig. Gen.  
Vanderslice, H. R., Jr., Lt.  
Vaneck, Emil F., S/Sgt.  
Van Hooser, Vance W., S/Sgt.  
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Vaslow, Charles, Cpl.  
Vaughan, William, Cpl.  
Vaughan, Clyde C., Lt.  
Venable, Douglas R., Jr., Lt.  
Vicente, Manuel E., Lt.  
Vickers, Athrus W., S/Sgt.  
Vickery, Clyde W., Lt.  
Villaueva, Jenaro, Cpl.  
Vindans, Paul H., T/Sgt.  
Vodra, Richard J., Lt.  
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Walker, Neil E., Maj.  
Wall, Horton T., Lt.  
Wallace, David W., Lt. Col.  
Wallace, Eugene D., Lt.  
Wangeman, Herbert O., Lt. Col.  
Ward, Willard L., S/Sgt.  
Wardle, Richard J., Lt.  
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Watson, William H., Lt.  
Weatherly, Edison, Lt.  
Weaver, Stanley C., Sgt.  
Webb, Paul G., S/Sgt.  
Webster, William H., Jr., Capt.  
Wehrlein, George V., Lt.  
Weimer, Elmer W., S/Sgt.  
Weinberg, Albert E., Lt.  
Weisgerber, Adam F., S/Sgt.  
Weitz, Arthur, Sgt.  
Wells, Charles P., F/O  
Wells, William B., Lt.  
Wellsman, John W., Lt. Col.  
Westbrook, Robert B., Lt.  
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Wexler, Haskell, Lt. ( & OLC )  
Wheeler, Herman C., T/Sgt.  
Wheeler, Joe D., Capt.  
White, Alphon W., Jr., Maj.  
White, Robert H., Capt.  
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Whitney, George W., Jr., S/Sgt.  
Whitney, Lloyd E., Capt.  
Whitlock, Charles F., Capt.  
Whittaker, Roy E., Capt.  
Wicklund, Harold A., Capt.  
Widener, Robert B., Lt.  
Widmann, Benjamin, Lt.  
Wiggins, Fred, Sgt.  
Wilcox, Gordon F., Lt.  
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Wildor, Alan W., Maj.  
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Winfrey, Dale F., Lt.  
Winter, Douglas L., Lt.  
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Wolf, Francis W., S/Sgt.  
Wolf, Leonard, T/Sgt.  
Wolf, Robert R., S/Sgt.  
Wolverton, Marvin B., S/Sgt.  
Wood, John E., Lt.  
Woods, Kenneth D., T/Sgt.  
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Wright, Forrest D., T/Sgt.  
Wright, Robert L., Lt.  
Wurtsmith, Paul B., Brig. Gen.  
Wurzbach, Clemens K., Maj.  
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Wyland, Dean L., T/Sgt.  
Wythers, Keith W., Lt.  
Yeager, Robert R., Jr., Lt.  
Yeager, Don M., F/O  
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Zalic, John P., Sgt.  
Zawadzki, Walter J., S/Sgt.  
Zeidler, Seymour, S/Sgt.  
Zerena, Joseph J., Lt.  
Zielaskowski, Alfred M., T/Sgt.  
Zimlich, Louis M., Capt.  
Ziobor, Aloysius A., S/Sgt.  
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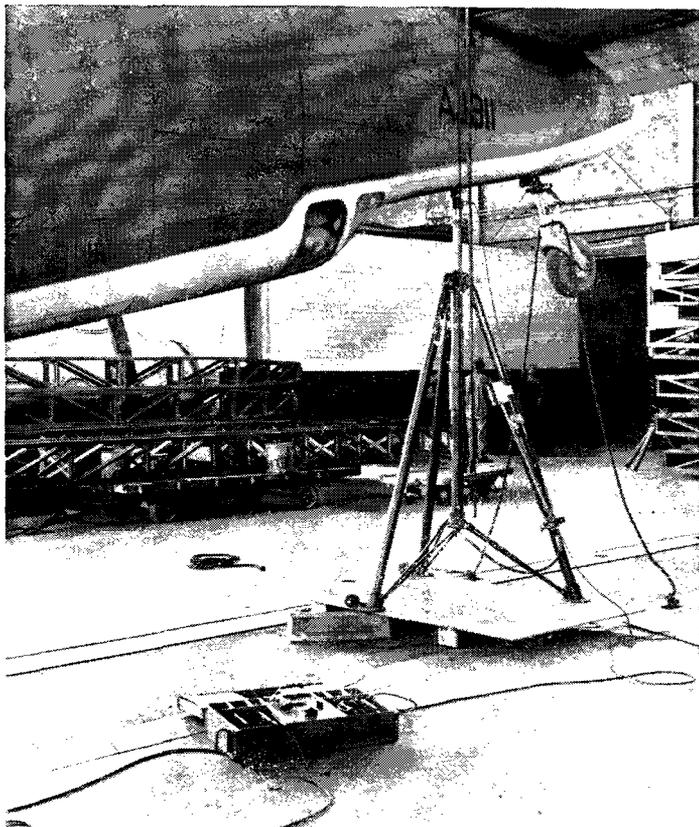
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Cape-ton, John F., Jr., Lt.  
Carlson, Norman A., Cpl.  
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Carter, Wallace A., M/Sgt.  
Carpriani, Edward R., Sgt.  
Carr, Deibert M., Cpl.  
Clark, Donald P., T/Sgt.  
Clarke, William D., Cpl.  
Clendennen, Roger B., S/Sgt.  
Coshran, Phillip G., Maj.  
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Cuthbert, Frank M., Lt.  
Compton, John T., Capt.  
Consiglio, Frank J., S/Sgt.  
Cook, Howard Gordon, Capt.  
Cool, Kenneth A., Maj. ( & OLC )  
Courturier, Alfred J., T/Sgt.  
Craibner, Martin Purdue, T/Sgt.  
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Crawsons, Samuel C., Lt.  
Crisman, Howard C., S/Sgt.  
Critchfield, Richard E., Lt.  
Cronkhitte, John L., Lt. ( & OLC )  
Cullison, Richard M., S/Sgt.  
Curtis, Eric W., Cpl.  
Daniels, Edward R., Lt.  
Danson, Warren R., Lt.  
Dean, Nelson P., Lt.  
Dean, Fred M., Lt. Col. ( & OLC )  
Deborah, Robert M., Lt.  
Debler, Donald L., T/Sgt.  
Dennis, Clifton E., S/Sgt.  
Dickinson, Thomas K., Lt.  
Dozier, Guy K., T/Sgt.  
Drake, Cedric P., Lt.  
Draper, Ray L., S/Sgt.  
Duclos, Francis W., Sgt.  
Dunn, Douglas, Sgt. Lt.  
Earls, Charles C., S/Sgt.  
Eaton, Dudley Paul, Lt.  
Eaton, Frederic C., Jr., Capt.  
Edwards, James O., S/Sgt.  
Edwards, John D., Jr., Capt.  
Elliott, Robert W., Lt.  
Enlish, Robert W., Lt.  
Erwin, William F., Lt.  
Euhank, Robert H., Lt.  
Fackler, Robert F., Lt.  
Faulkner, George D., S/Sgt.  
Faurrot, Robert L., Lt.  
Ferraguto, Leo H., Sgt. ( & OLC )  
Filley, Oliver D., Jr., Lt.  
Finch, Stanley, S/Sgt.  
Fletcher, Arthur A., Jr., Capt.  
Forsyth, Robert J., Sgt.  
Forte, Norman L., Jr., Sgt.  
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Francisco, Ahy A., S/Sgt.  
Frank, Harold A., Lt.  
Frost, John, T/Sgt.  
Fuhrmeister, Ralph S., Jr., Lt.  
Geur, John H., Lt.  
Getalka, Charles T., Lt.  
Geltz, Charles H., S/Sgt.  
Gilbert, James E., S/Sgt.  
Gibbertson, John L., Lt.  
Gobel, John E., Lt.  
Golberg, Robert T., Lt.  
Golecki, Leo E., S/Sgt.  
Golotto, Frank, Sgt.  
Gott, James E., Lt.  
Graham, Alvin G., Sgt.  
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Groesbeck, Mac S., Capt.  
Habberstad, E. C., Capt.  
Hale, Benjamin L., T/Sgt.  
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Hallstrom, Einar H., Lt.  
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Harden, Dierck, S/Sgt.  
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Helton, Elbert, Maj.  
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Hodday, Albert J., Lt.  
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Hoelle, William J., Capt.  
( & OLC )  
Holcomb, James H., Sgt.  
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Holley, James B., Cpl.  
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House, Kenneth L., Sgt.  
Howe, Eugene L., T/Sgt.  
Hubbard, Mark E., Maj.  
Hummiston, Leonard S., Lt.  
Hvey, Jack M., Lt. ( & 4 OLC )  
Izzo, Alvin, S/Sgt.  
Jacobson, Glenn Luther, Lt.  
Jacobs, Clifford T., S/Sgt.  
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Jenkins, Richard, Jr., Lt.  
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Jones, Robert T., Lt.  
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Jordan, Rufus E., Lt.  
Jurek, James L., Lt. ( & OLC )  
Joyce, Thomas B., Lt. ( & OLC )  
Judkins, Francois J., Lt.  
Kaiser, James M., Lt.  
Kaminska, John E., S/Sgt.  
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# TECHNIQUE

A Review of Technical Developments in the Army Air Forces

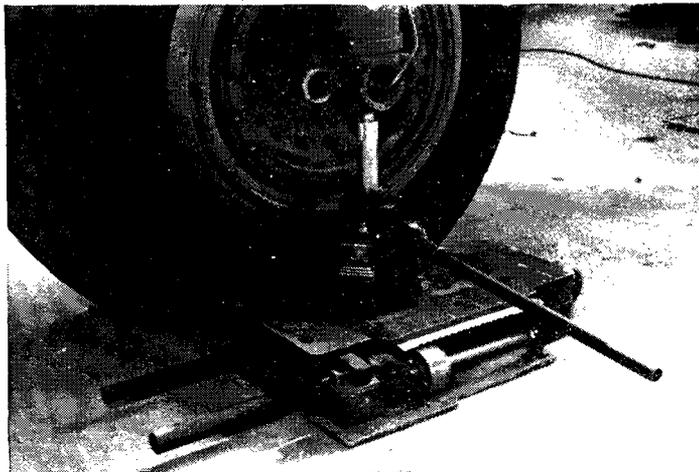


In the foreground is the scale unit with screw-type counterpoise on a weight-beam, which enables registering of weight up to 60,000 pounds. Beam is used primarily on dual-wheel landing gear (B-29 and C-54, for example) where space limitation does not permit jacking directly.



The electrically-operated scale kit is shown in use. By taking successive readings from each of three strain-gauge units, it is possible for modification mechanics to determine the total weight of the aircraft.

An axle jack supports the landing gear of a plane on this beam and lever scale which is capable of weighing loads up to 30,000 pounds.



## THE PROBLEM OF Weights and Balance IN AAF PLANES

COMMERCIAL airlines in 1938 prescribed strict procedures on the proper load distribution of cargo and passengers when they discovered that some accidents were attributable to overloaded and unbalanced airplanes.

The Army Air Forces faced a similar problem early in 1942 when it began to modify its warplanes for addition of turrets, guns, auxiliary fuel tanks, emergency and other types of equipment. These modifications increased the weight of some aircraft by several thousand pounds, thereby limiting their original performance characteristics and making it necessary to revise the scale of weights and balance. Therefore, to know the exact range of a plane, its altitude and maneuverability limitations, it became evident that weight and balance data would have to be recomputed with the addition or elimination of every piece of equipment on an airplane.

When modifications are not made according to prescribed weight and balance standards, planes tend to develop nose or tail heaviness, to fly hard, get touchy on the controls and occasionally crash on take-off. Constantly changing operational conditions, together with new combinations of cargo, bombs, fuel, crew and armament, made it necessary to have new precision methods of determining weight and balance. These were soon forthcoming and standardized by the AAF.

A Handbook of Weight and Balance Data, containing information on the basic weight of the aircraft with all of its equipment and details on its center of gravity limits, is filled out by the manufacturer and accompanies each plane as it is flown away for service. Modification centers record any weight or balance changes in this book and crew chiefs who ultimately are assigned to the plane carry the responsibility for maintaining accurate records of all weight changes made in the airplane during its service life.

A load adjustor slide rule for checking proper distribution of additional loads or for compensating for removal of equipment is included in all planes capable of carrying extra weight. To simplify further the task of keeping aircraft properly balanced and loaded, new lightweight scales have been developed for domestic and overseas airbases by weight and equipment engineers of the Materiel Command and of industry. When properly used, these scales, supplemented by the

## TECHNIQUE

(Continued)

handbook and load adjuster, will eliminate guesswork and will preserve the safety margin built into AAF planes.

Most practical for use at overseas airdromes is the portable, seventy-pound, electrically-operated scale kit which records weight from resistance-type strain gauges, and the heavier beam and lever scale capable of recording plane weights greater than that of the B-29.

The electrical scale unit is equipped with small cylindrically shaped capsules, which are connected to a recording indicator (potentiometer), and variations in resistance resulting from the weight of the airplane are registered in pounds. By turning a selector switch on the potentiometer, readings can be taken from the three weighing positions—main landing gear and nose wheel or tail wheel. The capsules are made for mounting on ordinary aircraft or axle jacks, thus eliminating the need for additional equipment.

The beam and lever scale system contains three scales weighing 192 pounds each, and three beams designed for dual-wheel aircraft, weighing 147 pounds each. One scale has a weighing capacity of 30,000 pounds and, when used with the beam and an extra axle jack, can weigh loads up to 60,000 pounds. In combination with scale units on the other two landing gear positions, the three scales can weigh planes heavier than 100,000 pounds.

These new scales will relieve crewmen of many of the complexities involved in weighing an airplane properly while providing them with an accurate scale system that can be used readily at any airbase. These scales have been standardized and are being made available through the Air Service Command (Unit MQ 1B, Patterson Field, Ohio).

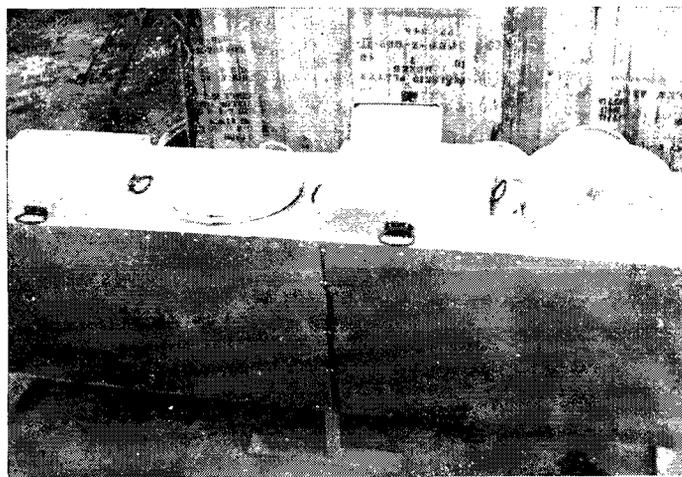
Although procedure of weighing an airplane is simple, there are many precautions to be taken to insure the accuracy of results. Fuel and oil tanks should be drained; reservoir tanks for hydraulic and coolant fluids should be filled to capacity. The plane should be cleaned of dirt, oil and grease splotches, which often accumulate to an important weight component. Equipment that is not a permanent part of the plane—bombs, ammunition, crew members and the like—should be removed.

When the plane is mounted on the scales, particular care must be taken to avoid a sudden jolt that might disturb their calibration. Brakes should be released, since brake pressure can cause a false reading by thrusting the scale platform to one side. When jacks are used, each must be centered on the scale, as nearly as the jack point location will permit, with the jack head directly under the jack points of the plane's undercarriage.

So important has aircraft weight become during recent years that, in addition to AAF Reg. 55-3 prescribing weight procedures and responsibility (. . . No pilot will knowingly accept and operate any aircraft without satisfactory evidence of correct gross weight and balance. This is a matter of safety of personnel and equipment and will be strictly enforced.), the operations officer now is held responsible at briefings for "checking of aircraft for total gross weight, including details of loading as affecting CG (center of gravity) in special cases." (AAF Reg. 55-18).—Lieut. F. T. Carroll, Jr., Weight Branch, Engineering Division, Materiel Command.

### Steam Table from Enemy Scrap

An overseas service squadron in the Mediterranean theatre recently added a touch of elegance to the field mess equipment in the form of a steam serving table made of German and Italian material collected in the area.



Front view of field steam table.



Burners from regulation range are used.

The idea for this table was developed by Maj. G. J. Albrecht after several months' experience in the field with meals served under adverse weather conditions. Results were usually less than admirable without the use of some heating arrangement since the food would become cold and less appetizing after half the men had been served. With the major's arrangement, food pans rest in water on the steam table and the water is heated by the burner from a regulation kitchen field range. In this manner the table precludes the necessity for re-heating meals for those unable to attend mess at scheduled hours.

Because of frequent moves in the theatre, compactness of all equipment is essential. The table, in two sections, can be completely disassembled in short time and requires little space for shipment. A limited number of blue prints for the steam table are available and will be sent upon request, according to Maj. C. J. Albrecht, First Service Squadron, APO 650, care of Postmaster, New York City.—First Service Squadron, overseas.

### Flying Hood Modification

The two-color substitute instrument-flying hood has been modified at Columbus (Miss.) Army Air Field to include only the student since it is considered undesirable that the instructor should sit through successive lessons under the green transparent canopy.

A student pilot learning to fly by instrument wears red goggles which permit him to see the instrument board but, because red and green are complementary colors and combine to form black, the goggles prevent his seeing through the blue-green hood that covers the cockpit during this phase of training.

The comparatively short time that the student flies under the hood is without harmful effect and, while it cannot be said to inflict lasting harm on the instructor, successive missions month after month can make him intensely weary of staring through green.

A CAAF instructor, Lieut. Keith E. Patterson, put to Lieut. A. Stevenson, Jr., director of instrument flying, the proposal that since the hood was for the student's benefit alone, it should inclose only the student. The two conferred with Lieut. Webster N. Lyche, a squadron engineer, who produced the desired hood.—Public Relations Office, CAAF, Columbus, Miss.

## Safety Platform

Nobody falls and breaks an arm, leg or back while at work on B-17 wing or tail surfaces at this 8th Army Air Forces Bomber Command base in England. A steel safety platform, made from scrap pipe and angle iron, is quickly mounted on



the boom of a wrecker when de-icer boots need pulling, when flak holes require patching or when a paint job is needed. It provides a steady platform with safety rails which can be raised to any height on the high tail of the Fortress—8th Air Force Bomber Station, England.

## Buffalo Horns for Cannon Plugs

The place of the water buffalo in combat aviation has now been clearly defined by a lathe-minded sergeant of an AAF service squadron in India.

Tech. Sgt. O. P. Smith stood in the doorway of his machine

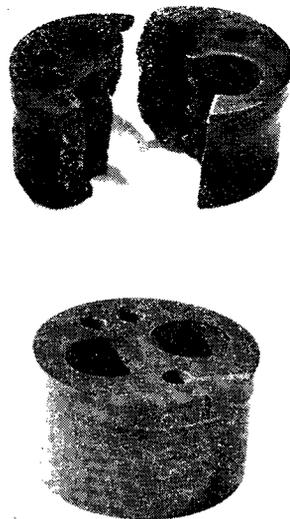
Horns of the Indian water buffalo took on new meaning for Sergeant Smith when he was faced with the problem of replacing a cannon plug.



### PICTURE CREDITS

FOURTH COVER: AIR FORCE Staff Photographer, 16; U. S. Marine Corps, 21, 22, 24; U. S. Navy, 63; Air Forces Training Aids Division. All other illustrations secured through official Army Air Forces sources.

Requests for prints of photographs for publication and official use appearing in AIR FORCE should be directed to the AAF Photographic Library, Headquarters, Army Air Forces, Washington, D. C.



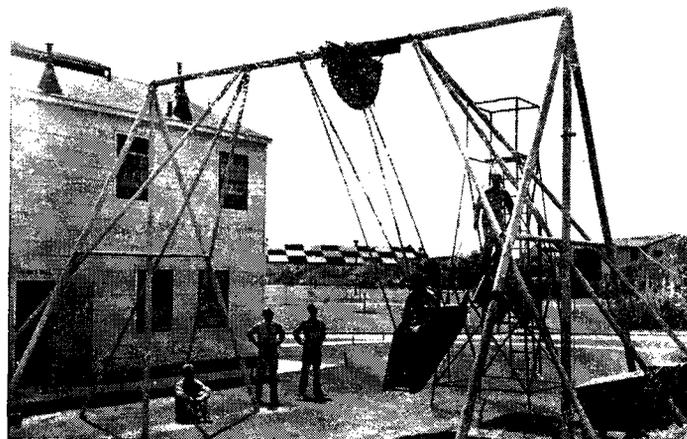
From the pattern supplied by a broken bakelite cannon plug (upper left) the sergeant made the substitute (below). He is shown testing the buffalo horn with a blow torch to determine the heat resistance.

shop one day and wondered where he could get a cannon plug for a B-24 which had just come in from one of the bombardment squadrons. Smith thought he could make a plug, but he could find no suitable material. While he was tossing this worry back and forth in his mind he watched a cart move slowly down the road, pulled by a pair of large water buffaloes.

Out of this set of suggestions and inspirations, Smith got the idea that a buffalo horn might make a cannon plug, if removed from the buffalo, of course, and tooled considerably. Smith obtained a horn from a local fruit vendor (this connection isn't made clear in our report from India) and set about checking it for insulation and resistance to heat. It stood up well under these tests and Smith got down to serious manufacture. When it was completed, he installed it in the Liberator and the bomber flew back to battle. Seven months later, the gadget was still giving excellent service. At this time, according to Smith, there are an undisclosed number of aircraft in the CBI using cannon plugs made of buffalo horns.

## Swing Test for Air Sickness

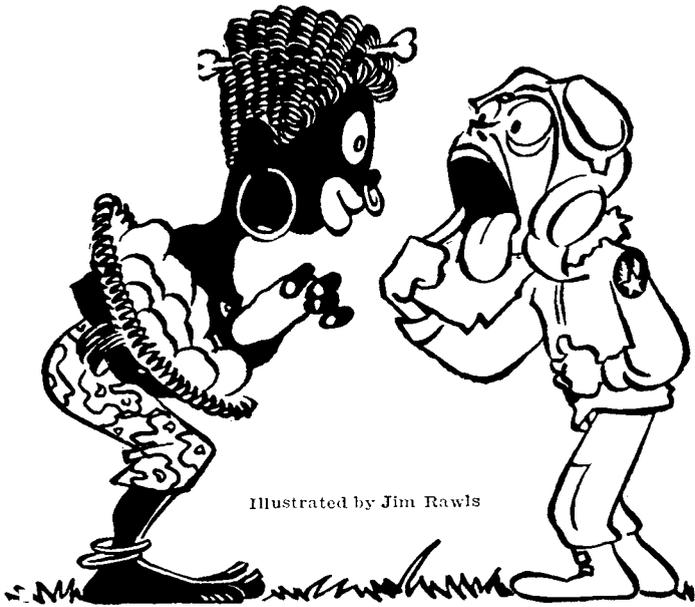
A version of an ordinary playground swing is used at the School of Aviation Medicine, Randolph Field, Texas, to test the susceptibility of flying cadets to air sickness. Here A/C S. S. Oya of Los Vegas, Calif., takes a ride with the assistance of Pvt. S. Y. Uldoft of Brooklyn, N. Y. A headset and thermocouple measures the skin temperature and reactions during the forward and backward motion of the swing. The scale on the supporting beam measures the arc of the ride. ✽



# SURVIVAL BY THE BOOK?

(PREPARED BY THE ARCTIC, DESERT AND TROPIC INFORMATION CENTER)

**Don't let your reading interfere with your being sociable with the natives; besides, the book could be wrong.**



**H**UNDREDS of AAF airmen who have been forced to bail out over strange, wild territory owe their lives to what-to-do manuals which pointed out what to eat, how to keep warm, how to determine direction and scores of other vital facts useful in such emergencies. The mere possession of a manual in a survival kit has proved a source of confidence as well as a material asset in time of need.

Many stories of bail-outs, walk-outs, force-downs and long waits have made the AAF survival-wise. We hear of errors some men have made and we are sure *we* wouldn't make them. We know better than to rub frostbite with snow; we have learned that the traditional bottled snake-bite remedy is the worst thing for a venomous bite. We have read survival stories critically and checked our knowledge against the actual experience of the officer who took his atabrine and purified his drinking water faithfully as he read selections from his manual to some bewildered natives while they paddled him to the nearest base. This officer who did things by the book, we learn, lived.

Survival books are fine things and for the most part the information in them is solid, worth staking your life on. However, many of these publications were prepared in haste to meet a desperate need and, inevitably, certain inaccuracies crept in. Clearing up these details for the record is in order at this time.

There is widespread belief, for example, that the problem of thirst on a life raft is solved: one squeezes a fish and water comes out. Or, opening a guidebook to the pictures of tropical plants, we peer through the jungle for mangoes and papayas and breadfruit. Or we look for monkeys to see what they are eating, and follow suit for safety.

Few of the available guidebooks give sufficient importance to the role of native

assistance in the survival drama. True, there is usually a statement that most natives are friendly but should be approached with respect, anyway. In the light of a mounting number of walk-out experiences, it becomes increasingly clear that the first priority of survival, at least in the tropics, should be the seeking out of natives rather than the identifying of numerous varieties of local animals and plants (mostly cultivated, anyway), or the constructing of shelters.

**O**NE popular magazine article gave wide currency to the opinion that water can be squeezed from fish.

"If you get a good catch, you can squeeze out the juice from the flesh of extra fish, and drink it," a pamphlet said.

"Fish can supply both food and drink. Fish juice has been tested and found safe for drinking; it tastes much like the juice of oysters or clams. Eat until your hunger is satisfied and if there is an excess of fish the remainder can be cut in clean pieces and squeezed in a twisted cloth to force out the juice to quench your thirst," another advised.

The fact is that much greater pressure is required to squeeze liquid out of fish

than a castaway on a life raft can bring to bear. And then, the product is not worth the effort. As a report of the Committee on Medical Research of the Office of Scientific Research and Development points out, prolonged mechanical squeezing of seventeen pounds of fish *per man per day* would be necessary to provide about a pint of fluid. When water is short, dry any fish you might catch with your kit, and wait for rain. If you're thirsty, you probably won't feel like eating fish, anyway. Besides failing as a source of water, fish is primarily a protein food. Therefore, it requires the use of large amounts of water for elimination of wastes in urine. Fish as food is "contra-indicated," as the medicos say, unless you have at least a quart of water a day to go with it.

The same with birds. Sea birds are usually rather stringy, with little fat. So if a bird happens to light on your raft, as he is likely to do because he is more hungry than you are, don't accept him as a little prayer-answering visitor from God. That is, unless you have plenty of water, or it looks like rain. Obviously, the preservation of water is the biggest raft problem.

To avoid sweating by rigging a shade or keeping the body clothed is one way of prolonging life. There is another which makes sense, but may be dangerous. "Immersion in the sea helps, since some water is absorbed through the skin," one volume states. Other handbooks omit the erroneous statement that the skin can absorb water but repeat the advice to dunk the body to save water. Such advice disregards the likelihood that after a few days of exposure on short rations, the body may be so weakened that getting back on the raft after dunking may be impossible. Furthermore, immersion will wet the feet and slop up the bottom of





## A Report on Army Air Forces Training Devices

### ▶ Cardboard Cockpit Trainers

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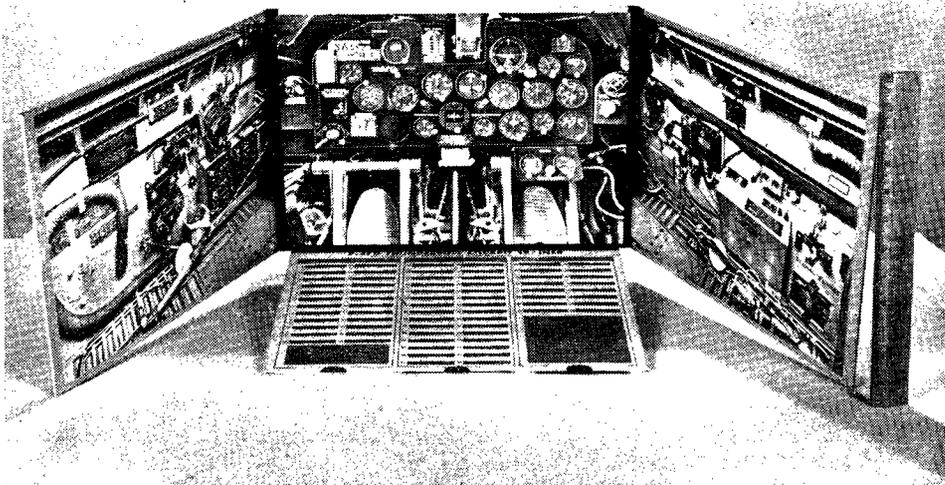
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On the average these trainers are about 15 by 20 inches when folded. Opened and set up for use, they are in the position shown in the accompanying photograph. Trainers for heavier aircraft have an extra top and front panel in order to accommodate the added instruments. Each item in the cockpit photographs is designated by a numbered arrow. A panel or "apron," provided with slots and sliding cards, comes forward from the middle section and lies flat on the desk or table. Each of the cockpit photograph numbers is identified on this panel. Identification may be blanked out by sliding the cards back, thus helping the trainee to commit the instruments to memory. When in doubt he can slide the cards forward to reveal the identification and check his progress.

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The film section has furnished various types of training, orientation and morale films.

the raft. The same purpose—keeping the body cool by wetting—can be accomplished by taking off the clothing, dipping it in the ocean, wringing it out, then putting it on. Clothing should be completely dry by nightfall to avoid chill.

**W**ATER is the main problem in the desert as well as on the ocean. Salt in relation to health and thirst must be considered in both places. Recent experimentation has indicated that some salt is necessary to preserve health even with limited water available. Thus, mixing sea water with fresh water, about one part salt to six fresh, is permissible, but the 1-3 ratio permitted by one authority is too high. Also, it is incorrect that salt tablets will "enable you to get along on less water" in addition to their actual use in helping combat fatigue and heat-stroke.

The problem of food rations is tied up with water supply. One volume lists "dried meats, fruit or Army Ration" as a desert need; another states, "As much as possible use foods that require less water to wash them down—such as packaged meats—avoid thirst producers like crackers and mealy foods." Both passages ignore the same physiological fact that pricked the fish-bubble: protein foods use up water. Crackers and mealy foods cannot be swallowed when the throat is dry, but when a little water is available they are preferable to meat. Dried fruit, which stimulates salivation, is a good ration. There has been experimentation with candy products like butter scotch or Charms as ocean and desert emergency food. These are the best. When assimilated they decompose into water, rather than withdraw it from the tissues, and still supply energy.

Most survival booklets recognize that the food problem, apart from its relations to water, is twofold: finding it and recognizing poisonous foods. Bearing in mind that the best way to find food is to find a local inhabitant first, we must still face the possibility of a bail-out in deep jungle or solitary northern waste.

In jungle, the common advice is: eat anything you see a monkey eat. Yet, monkeys eat strychnose fruit, but spit out the deadly poisonous seed, and they can swallow other fruits that would pucker a man's throat badly. Another caution is to beware of plants with a milky sap. This is good advice, but several edible tropical fruit plants *have* a milky sap.

A more inclusive formula would run like this: Eat nothing which has a bitter, soapy or burning taste. Some foods burn the mouth when raw but are safe after cooking. Most pulpy or juicy fruits are safe if they taste all right; but spit out the seeds. The larger fruits are more likely to be safe than the small ones. Nuts, dry seeds and roots are dangerous unless you know them. If a fruit is bitter, and from a plant with milky sap, steer

clear. All grasses and bamboos, identifiable by the hollow jointed stem, are safe. Beware of wild tomatoes, parsnips, cucumbers, melons, onions and beans, but wild *fruits* (as the term is commonly used), resembling cultivated fruits like strawberries and raspberries, are likely to be safe. A single rule is this: if the food looks edible, try a spoonful; save a sample for identification; if it does not make you sick or have a purging effect in eight hours, eat more.

It is well to be prepared in an emergency to discard many civilized prejudices, such as those against eating grubs and beetles, and raw meat. But remember that non-poisonous varieties of salt-water seafood are just about the only kind of flesh that can be eaten raw with no danger. Almost any other kind of fish and some other animals are likely to carry



some kind of parasite that might take up lodging in your body. Eat it raw, if you have to, but cook it, if possible.

Cooking requires fire. A match is still the best all-around fire maker. These are two obvious statements, but they must be stressed. Proper preparation before a mission will insure that plenty of matches are on hand in a waterproof container. There is a danger that descriptions of primitive fire-making methods, based on friction, will lull us into being careless about wasting matches. It is possible to make fire by the fire-plow or fire-bow method, but only after much practice and perseverance. And one is not likely in an emergency to have time to experiment with wet wood and tinder. One booklet optimistically labels as "a simple fire-maker" what is probably the most difficult of friction methods: the twirling of a hardwood twig between the palms until it ignites tinder around the point.

A number of possibly misleading statements concern animal foods. We read repeatedly of the dangers of eating polar bear's liver and rabbit meat in the north, but analysis shows the problems to be trivial. Rarely does a man see a polar bear in his native habitat. As for the odds against killing one and getting the carcass ashore where the liver can be cut out, well . . . And it is true that a steady diet of northern rabbit, with nothing else to live on, will cause a metabolic upset because of the absence of fat on the lean flesh. But the chances of a castaway airman having to subsist on a pure diet of

rabbit meat, or even his chances of finding enough rabbits to be able to start suffering from protein over-abundance (so-called "rabbit poisoning")—again, well . . . The statement that "a straight rabbit diet will lay you low in a week" presents a distorted picture of the problem.

Another arctic fallacy is found in this published statement: "Deep breathing can cause frosting of the lungs, and this will lay you up for several days." No case of actual lung-frosting has ever been reported by northern physicians. Deep breathing of cold air may cause pain in the upper respiratory passages, which has given rise to the "lung-frosting" assertion.

An important phase of the survival problem is determining direction. Under certain conditions a watch can be used as an emergency direction finder, as described in one publication. But in tropical latitudes the system is quite undependable, because of the altitude of the sun.

The Big Dipper is a dependable indicator of true north, when the sky is reasonably clear. But its value decreases in just those regions where accuracy is most important—the far north and the tropics. Since the altitude of the North Star changes with the latitude in which the observer finds himself, the star will be too high, practically overhead, in high arctic latitudes and, in the northern hemisphere tropics, so low as to be obscured frequently. However, if the pointer stars of the Dipper are visible, the approximate position of the North Star can be judged at about five times the distance between the pointers, even if it is below the horizon, or obscured. The Dipper is useless in the southern hemisphere.

The use of the Southern Cross as a guide in the southern hemisphere is neglected in most of the survival books. By projecting the long axis of the Cross to a point where it intersects a line bisecting the line between Alpha and Beta of Centaurus, one can approximate due South. Find a good star chart and check these points.

But the sum total of advice on direction-finding is that nothing takes the place of a compass. Keep it with you. Keep it dry. And trust it! ☆

Star chart of the southern sky as seen from southern latitudes: April 7, 11 p.m.; May 7, 9 p.m.; June 7, 7 p.m.

# TRAINING AIDS

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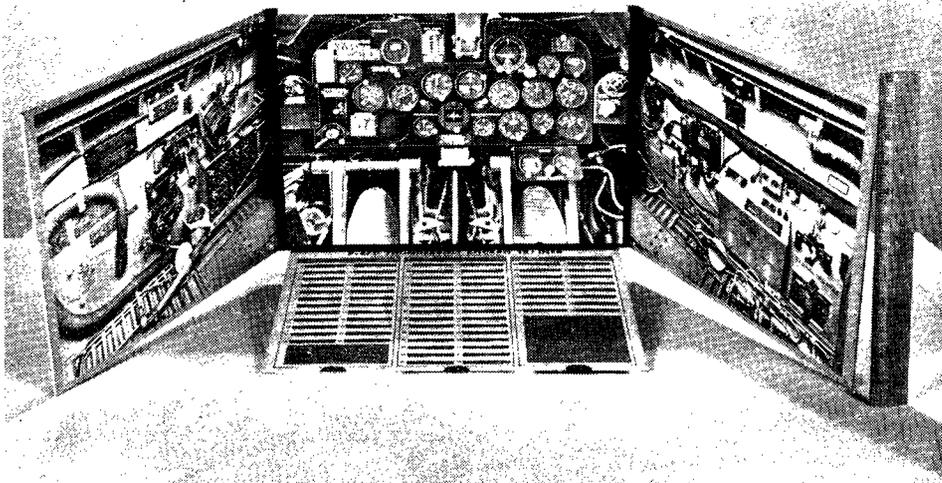
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The illustration section recently designed a booklet which was issued by The Air Surgeon, entitled "You Are Convalescing in the Army Air Forces Hospital." A copy of this booklet is being given to each patient at the time he begins his Convalescent Training Program.

The graphics section has initiated a project for bi-weekly posters on the theme of "Join a Class." Graphics also will furnish cardboard cockpit trainers of twenty different aircraft for use throughout AAF Hospitals.

The publication section has furnished material on a wide variety of subjects, including booklets on "Defense against Air Chemical Attack," "Airway Flying" and "How to Use Film Strips." Other publications cover gunnery, intelligence, map reading, navigation, recognition, weather and the like.

► **More Arms Posters**

Air Poster Series have been initiated on the 20 mm gun, 37 mm gun, "Bombs and Fuzes" and "Pyrotechnics." These are instructional charts employing the same technique as that used in the training charts for the .30 caliber M-1 rifle and the .50 caliber Browning machine gun.

\* \* \* \*

A consolidated bibliography of publications used by the Army Air Forces schools has been assembled for use of those units dealing with electronics. ☆



► **'Arctic Living' Posters**

A series of ten posters on how to live in arctic regions has been prepared by the Training Aids Division as a companion series to the posters illustrating care of equipment in cold weather areas, which were announced in the March issue of AIR FORCE.

Posters in the "Arctic Living" and equipment sets are the final results of more than 150 pencil sketches and 110 photographs made by AFTAD artists and a post photographer at the Cold Weather School, Buckley Field, Colo. Developed in collaboration with the Arctic, Desert and Tropic Information Center and the cold weather liaison officer of the Materiel Command at Wright Field, the posters offer sound advice on mistakes to avoid in the arctic in checking harmful effects on the extreme cold.

The posters are of standard 30-by-40 inch size and are assembled in the standard AFTAD binder.



## 'ONE OF MY BOYS'

(Continued from page 31)

three wing man almost literally to death.

Well, that was that! I headed for home, with him trailing a miserable couple of miles behind.

After we had landed, he met me with a very sad expression on his homely face and apologized all over the place. I hadn't said a word, but I floored him completely by writing out his pink slip right then and there in front of him.

After I had flown dual with him again he showed enough improvement for more solo. We had gotten up to about 8,000 feet when he began holding position pretty well. I got him into an unauthorized echelon and we did some pretty unauthorized rat-racing during which I pulled just about everything possible in a BT-13. Believe it or not, the kid followed me in trail and stayed right with me throughout the works.

Due to the section being SNAFUed from time to time, he was just about last to take his forty-hour check, and he developed the worst case of "checkitis" I had ever seen. I managed to calm him down a little with a lot of malarky about how, after all, it was just another dual

ride, but he didn't seem to be too much at ease and I began to worry about him a little. However, when I saw his grin as he checked back in with the dispatcher I knew that was one less obstacle for him to get over.

He began to feel pretty "hot" the next day—and he had his first accident. I think he had been trying to show some just-soloing lower classman how good he was because he had begun rolling too fast and it was the same old story. Too fast, too much brakes too quickly applied, and up she had gone on her nose. He really caught hell about that but he learned his lesson and I think it cured him forever of thinking he was a hot pilot.

Just before his class left for Advanced, he came up to me and stuck out his hand and said, "Thanks for everything." I always feel kind of funny about sending kids on to Advanced, always wonder if I've honestly given them everything they should have. So I stood there, feeling like a father whose son was going out into the world, and tried to give him some last-minute advice. Then he went out and got his stuff, and the last I saw of him he was getting into the truck to leave.

So now he's a hero. Silver Star, DFC and the Purple Heart. Just "one of my

boys," the skinny kid at whom I had yelled "more right rudder, goddamit!" until I'd been blue in the face. The same kid I had wondered about for his physical, the one who almost sweated blood on his first solo. There he is, first pilot in a Liberator, and here I am, still a back seat driver in a "Vibrator." Wonder if he remembered to use small pressures on the controls when he was on his way back from Ploesti in zero-zero weather? I wonder if he is still using ailerons excessively in those 1,000 plane formations? I think not. And I wonder if that 5,000 word essay on "Why I Should Look Around" paid off when the FWs and MEs came after him?

Well, go to it, boy. You're my only chance to take a crack at the damned Hun, so give 'em a couple of blockbusters for me. Hope you'll never let yourself get too cocky; things have a habit of happening to the guy who thinks he's too good. Remember the check list always: you never know a ship well enough to forget that. Remember the simple fundamentals you learned in school; the tougher things will come easier if you do. Remember we instructors over here speak of you over there as "one of my boys"; remember, I'm damned proud you are. ☆

### MISTAKES IN 'ON THE LINE' PICTURE ON PAGE 43

1. Four men and one hoist is "no soap" for installing a 1,500-pound wing. Proper procedure requires six men to achieve proper balance: one on each side of the inboard end to watch wing attaching bolts and proper alignment of lines and aileron torque tube; two at wing tip; one at aileron, and another to operate hoist control.

2. The horse near the wing tip is too close inboard and wing weight is not supported by ribs. A damaged wing with mashed skin and stringers will result, hampering aerodynamic cleanliness. See TO 01-1-40, reviewed in ON THE LINE in February.

3. Here's the trick question we hope you've doped out, men. It was stated beneath the picture that the landing gear is down, which is incorrect during wing installation. The wing will be thrown out of balance by the extended landing gear which is liable to hit the ground, causing severe strain on the landing gear structure. *Why is it down?*

(a) The explanation for this boner goes back to the wing repair shop, where somebody forgot to lock the landing gear.

(b) The mechs installing the wing neglected to check and make sure

that the landing gear was locked prior to installation. PS: The fluid is leaking.

4. The sergeant struggling with the inboard end of the wing is steadying himself by placing his foot on a horse with wheels. It's surprising he didn't slip before the picture was snapped. Furthermore, he's in the middle; he'd be the ham in a hard sandwich if that wing suddenly swung over to the fuselage. Reference: Common sense.

5. There's not much hope of survival for that aileron tube which will be struck and damaged by the weight of the wing. If riggers don't know about the damaged tube in attempting to rig aileron, they will wonder why ailerons won't work. Repair of the tube will be time wasted, delaying completion of wing installation.

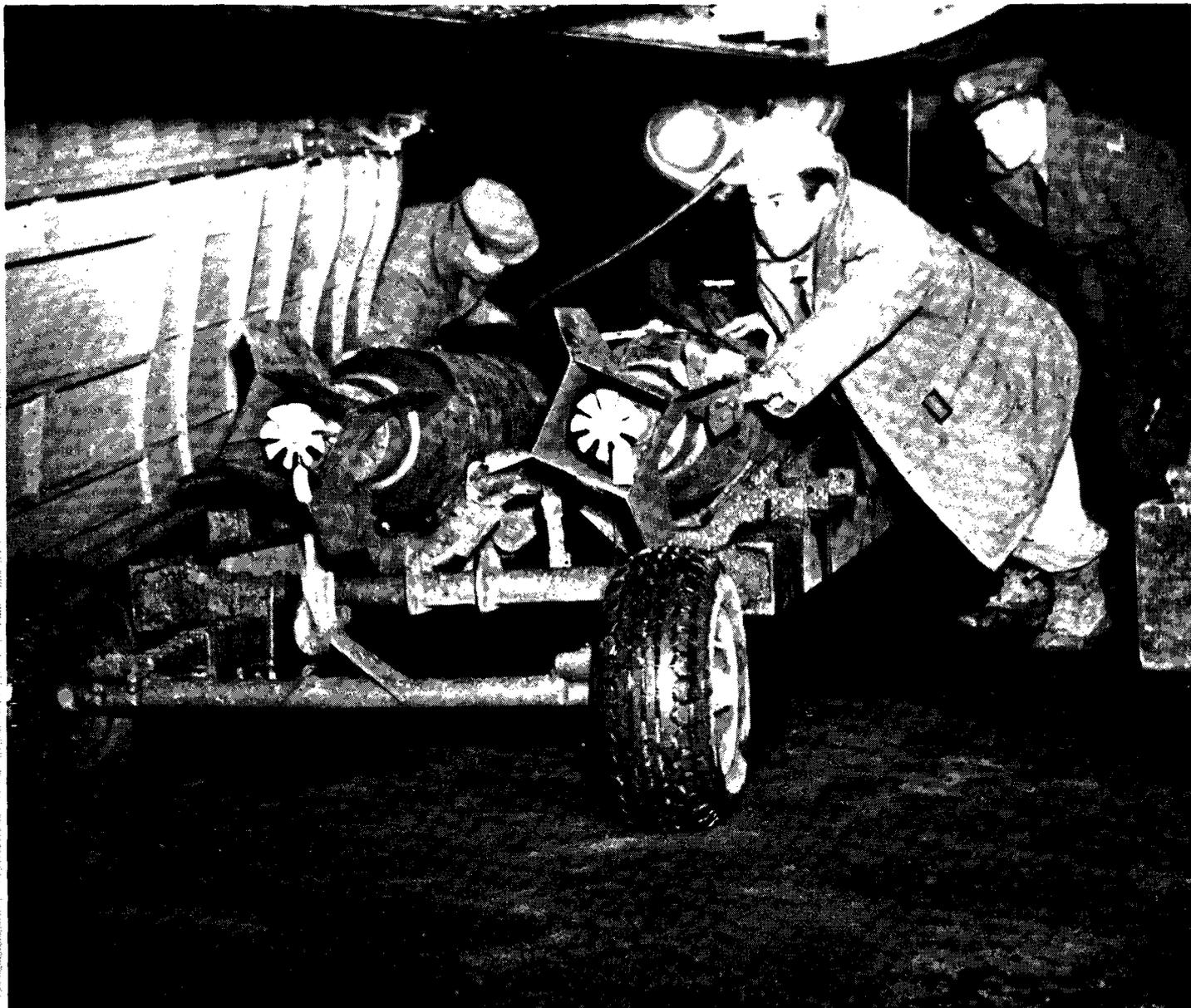
6. One of the cables from the hoist is frayed—a grave danger to the men working as well as to the wing itself. Figure 19, TO 01-65BC-2 illustrates the point.

7. For proper installation, the entire wing should be at right angle to the fuselage, not off balance as it is here. Again, TO 01-65BC-2 gives the explicit explanation.

Incidentally, nearly every post has a local regulation against wearing flying boots while working in a hangar.

### Answers to Quiz on Page 40

- (d) Twin-engine bomber
- (d) Takes pictures from low level
- (b) Louisville, Ky.
- Absolute altitude refers to the height of an aircraft in relation to the ground directly beneath it; absolute ceiling is the greatest height above sea level at which a given airplane can maintain horizontal flight under standard air conditions.
- (b) P-38
- (b) The bends
- (b) Twin-engine fighter-bomber
- (c) Thunderheads
- (c) Purple
- Supreme Headquarters of the Allied Expeditionary Forces.
- (b) Lieut. Gen. George C. Kenney
- (d) 2,100
- (a) True
- (b) False. AR 600-68, May, 1943, states, "The award will not be made to an enlisted man whose records during the required period of service disclose a conviction by any court martial, nor to one whose character or efficiency is rated below excellent."
- (d) Off the coast of Holland
- (b) False. An air mile is 6,080 feet; a land mile 5,280 feet
- (c) \$60
- (b) False. The standard Lister bag has a capacity of 36 gallons.
- (b) False
- German FW-190



# BOMBING UP FOR BERLIN

Finned and fuzed, these bombs are ready to be flown and dropped over Germany, and it is the last time the armorer will have to handle them, he hopes. In all, according to an estimate of the 8th Air Force Service Command, a bomb has to be picked up and shoved around 32 times in its moving from the hold of a ship to the bomb bay of a B-17. The moves: four, from the hold to a dock cart; three, from the cart to a goods wagon; two, from goods wagon to a truck on an ammunition train at a depot railhead; three, from the truck to the ramps on the bomb dumps; three, from the bomb dump ramp to a QM truck which takes it to the station ground; seven, from QM truck to the top of the stacks at a revetment; ten, from the revetment to the shackles in the bomb bay. This does not include other work such as covering a filled goods wagon with tarps, removing the tarps, building and camouflaging ramps, or even the handling of fuzes and fins.

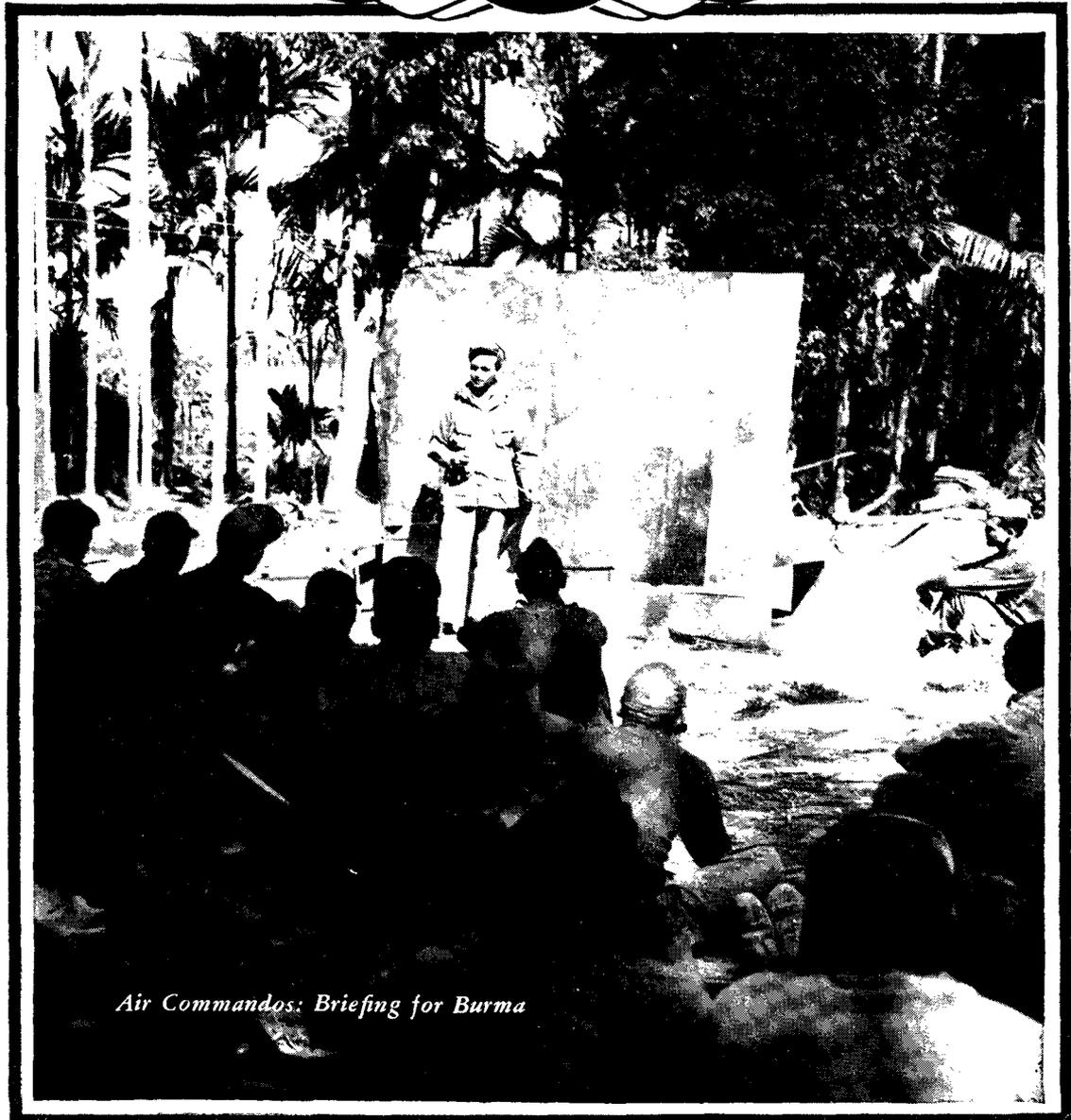
**SELF-CENSORSHIP**

**THINK**  
**BEFORE YOU TALK**

# AIR FORCE

THE OFFICIAL SERVICE JOURNAL

OF THE U. S. ARMY AIR FORCES



*Air Commandos: Briefing for Burma*

JUNE 1944

# AIR POWER IN THE SOUTHWEST PACIFIC

Read the analytical article by Lieut. Gen. George C. Kenney, commander of the Allied Air Forces in the Southwest Pacific, beginning on Page 6.





# CROSS COUNTRY

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## THE FRONT COVER

Transport and glider crews of the troop carrier command are shown receiving final briefing before a recent airborne invasion of Burma. Col. Philip G. Cochran, Air Commando leader, explains the mission with aid of a map improvised from bed sheets. For details of troop carrier operations in Southeast Asia, see page 4.

## OFFICER APPOINTMENTS OVERSEAS

Warrant officers and enlisted men in non-combat assignments overseas may now be appointed second lieutenants by their theatre commanders. To be eligible for appointment, men must have demonstrated outstanding qualifications and be employed on work so important that they cannot be released to officer candidate schools.

In selecting individuals under the new authorization, particular consideration is to be given demonstrated leadership and ability of the men and their prospective value to the service in future assignments and in higher grade. In general, the appointments are to be limited to filling positions of a command nature or those which require special technical or professional skills. The number of such appointments will be limited to filling vacancies in tables of organization and allotments. Such overseas appointments will not be made for assignment to the Medical Department or the Chaplain Corps.

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## SARDINIA SCENE

When our air and ground forces moved into Sardinia they found the civilian population coming down from the hills where they had fled to escape the heavy air attacks. They were hungry, poorly clothed. Some were without shoes. As everywhere, Americans began sharing their candy and cigarettes with Sardinians of all ages who



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this copy of  
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please  
Pass it on!

Sho Ekuse

naturally supposed the visitors had a limitless supply. The civilians showed their gratitude by offering to do GI laundry and being generous with their high octane wine. Best delicacy the troops found was the abundance of almonds which, toasted, make a fine feast.

Some of the men coming down the mountains were Italian soldiers who had deserted the Fascist army. Most of them carried American and British pamphlets which offered good treatment upon surrender. They hastened to take advantage of the promise.

One Italian infantryman walked confidently into a B-26 squadron area, armed with safe-conduct pamphlets, a serviceable rifle and enough hand grenades to hold out for a month, provided he had been of that mind. He also had brought along his barber tools which he was interested in using. After proving his good intentions, he trimmed every head of hair in the squadron before being sent on to higher headquarters.

short of the runway, the plane suddenly dropped to the ground. The landing gear buckled, the plane pitched forward, a wing tip caught the ground, and a shaken-up pilot and passenger climbed out after a hard ground-loop.

After staring at each other a moment, they turned and walked to operations to file their accident report. The pilot, a British Flight Officer, nervously explained the mishap to the operations officer.

"Sorry about it," he said, then pointed to the passenger. "I thought he had it and he thought I had it and the bloomin' thing just landed itself."

### MIAMI EXODUS

Army Air Forces schools at Miami Beach for the training of officer candidates, preflight cadets and basic soldiers will be transferred to the San Antonio Cadet Center and Sheppard Field in Texas. Between April 15 and July 1, a total of 139 Miami Beach hotels, previously taken over by the Army for training

and housing facilities, will be returned to civilian use. An estimated 20,000 officers and men, now training at Miami Beach, will complete their work at the present location. Steps already have been taken to send all future classes to Army-owned installations, and the full shift of the program is expected to be completed by mid-summer. The War Department has pointed out that the transfer is made possible primarily because the increasing number of trained

AAF personnel being moved overseas has made Army-owned facilities available.

Miami Beach will continue as the site for operations of the Air Transport Command, AAF Redistribution Station No. 2, and the Rehabilitation and Convalescent Training conducted by the Air Surgeon.

### WAIT UP FOR ME!

Lieut. John J. Davis, pilot of the B-17 Mrs. Satan, Queen of Hell, noticed that a fuel tank was leaking a few minutes after taking off on a mission over Europe. He turned back to have this repair made, after asking his leader to hold open Mrs. Satan's place in the formation.

The Fortress returned to the home field and two fuel tank leaks were repaired. They were preparing to take off again when the pilot heard a bumping noise from the landing gear. Lieut. Emil L. Johnson, navigator, got out and saw a

huge lump on the left front tire. A further survey showed that the rear tire was flat, so the ship was taken to its hangar.

Lieutenant Davis was told he might as well forget this mission, but the pilot was a determined individual. He was going along if he had to walk. A fast-working ground crew changed the two tires, and once more the Fort taxied out on the runway and took off. Just inside the enemy coast, Lieutenant Davis overtook his formation and proceeded over the target to drop his bombs with the others.

### PARACHUTES

#### LOST:

No. 42-73861, seat type, return to Operations Officer, AAF Pilot School (Basic), Majors Field, Greenville, Texas.

No. 41-1436, return to Operations Office, Clinton County Army Air Field, Wilmington, Ohio.

No. 42-33584, return to Operations Officer, Birmingham Modification Center, Bechtel-McCone-Parsons Corp., Birmingham, Ala.

No. 41-8196, seat type, return to Ajo Army Air Field, Ajo, Ariz., or, Williams Field, Chandler, Ariz.

No. 42-645780, presumably lost in a PBY which was delivered to New Orleans in March. Return to, or notify, Pfc. John J. Bullock, 2nd O. T. U., Hq & Hq Squadron, Homestead Army Air Base, Homestead, Fla.

### REDISTRIBUTION

The Redistribution Center cartoon feature which appeared on Page 25 of the April issue of AIR FORCE was intended as a semi-humorous portrayal of the recreational phase of the redistribution program and was not intended as an illustrative summary of the redistribution operation. That operation has been explained as follows:

"Developments produced by the war in the realm of science, engineering, chemistry and mechanics have their parallel in the organizational and personnel advancements which have been made in our armed forces. An example is the thoroughly realistic but obviously necessary activity known as the AAF Redistribution Center.

"This vital AAF mission is conducted under the policies laid down by General Henry H. Arnold, and is directly supervised by his Assistant Chief of Air Staff for Personnel, Maj. Gen. James M. Bevans. It is designed to further the war effort by insuring the maximum utilization of AAF personnel returned from overseas combat. Redistribution is devoted to the serious purpose of administrative and medical processing to determine what assignments returnees are best fitted to perform and where their experience and ability can best be used.

"This processing is conducted under conditions which impress upon the mind



"Me? I'm a four-engined pilot."

### NEW ENGINEERING COURSES

The AAF Engineering School is currently being reactivated at Wright Field, Dayton, Ohio, to provide short courses in basic and specialized phases of aeronautical engineering. It is anticipated that most of the graduates will be assigned to the Materiel Command or similar duty. Students will be officers who are academically well qualified for engineering. A limited number of officers completing the three-month course with very high standing will be considered for extended post-graduate work at leading educational institutions. Applications may be submitted through channels at any time, in accordance with AAF Regulation 20-36.

### TWO OTHER FELLOWS

The small PT-17 biplane was letting down for a landing on the mile-long, 150-foot wide concrete runway. The landing was proceeding well enough when, still



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please  
Pass it on!

Shir Elmer

of each man the work yet to be done and the important part he must perform in the AAF program. The returnee reaches his new duty station physically and mentally equipped to do the job selected for him, whatever that job may be.

"Redistribution is a link in the personnel chain, an attempt on the part of the Commanding General of the AAF to win the war more quickly by the proper employment of its manpower."

### TOO LATE FOR ELROD

Staff Sgt. William Elrod of Cincinnati, a radio gunner who returned recently from the South Pacific, appreciates the value of a new provision in that area which states that a combat flight of three hours or more may be considered a mission, regardless of what occurs in the air.

"I was flying with a crew on their first mission, although it was the thirteenth for me," explained Elrod, now an instructor at Sioux Falls (S. D.) Army Air Field. "After dropping our bombs on Gasmata, thirteen Zeros came after us. We headed out to sea and they knocked out two of our engines.

"After reaching northern New Guinea, the ship crashed into the surf. We waded ashore and hiked back to the field with our clothes soaking wet. We didn't get credit for the mission because we didn't bring the plane back."

### READING MATTER

Bulk distribution of a special edition of "Instrument Flying, Basic and Advanced," TO No. 30-100 series, has been started by Publications Distribution Branch, Air Service Command. One copy is to be given each pilot for his personal file, with local distribution to be supervised by station commanders. Distribution also is to be made to cadets at AAF flying schools at a point in the training program to be determined by the commanding general of the Flying Training Command. Some 250,000 copies have been printed for this personal distribution.

### OMINOREG!

We have just been apprised of the strange mishap which overtook a paratrooper at Fort Benning during maneuvers. This young man leaped from his plane, yelled "Geronimo" properly enough, but instead of going down he went up. As his many friends and acquaintances floated to the ground, just as they had been taught, this young man floated higher and higher until he became greatly concerned. With no more control over his movements than a wisp of thistledown, the paratrooper was tossed about on the point of a thermal wave. He spent half an hour watching his outfit fighting fierce mock battle on the ground. In time, the thermal wave released the young man and he came down to join his battalion as a fresh reservist.—THE EDITOR.



Vol. 27 No. 6

June, 1944

### BRIEF

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AIR FORCE (formerly the Air Forces News Letter) is printed monthly by authority of Army Air Forces Regulation No. 5-6, Sept. 6, 1942, and with the approval of the Bureau of the Budget, Executive Office of the President. AIR FORCE is published by the U. S. Army Air Forces at the AIR FORCE Editorial Office, 101 Park Avenue, New York 17, N. Y., U.S.A., for use of personnel of the Army Air Forces and allied activities, and is not to be republished in whole or in part without express permission. Direct communication with this office has been authorized on matters of editorial content, circulation and distribution. Tel., MURRAY HILL 5-1951; Teletype No. NY 1-2530; Director, Lieut. Col. James H. Straubel, A.C. AIR FORCE is primarily a medium for the exchange of ideas and information among Army Air Forces personnel, and the opinions expressed by individual contributors do not necessarily reflect the official attitude of the Army Air Forces or of the War Department.

# OUR TROOP CARRIERS IN BURMA



Ready for their vital role in the invasion of Burma are these CG-4A glider planes which transported infantry and artillery units and tons of materiel to points behind enemy lines.

## Squadron Leader H. B. Dickson, RAF

EASTERN AIR COMMAND, SOUTHEAST ASIA

**S**INCE the first day of 1944 when troop carrier operations were begun on the Burma front, the Troop Carrier Command in Southeast Asia has established a radical new principle of warfare.

During thousands of sorties the command has dropped millions of pounds of supplies to combat troops—often within rifle shot of the enemy. It has carried infantry and artillery units many miles behind the Japanese lines; it has evacuated hundreds of sick and wounded from points behind those lines. And its work is just beginning.

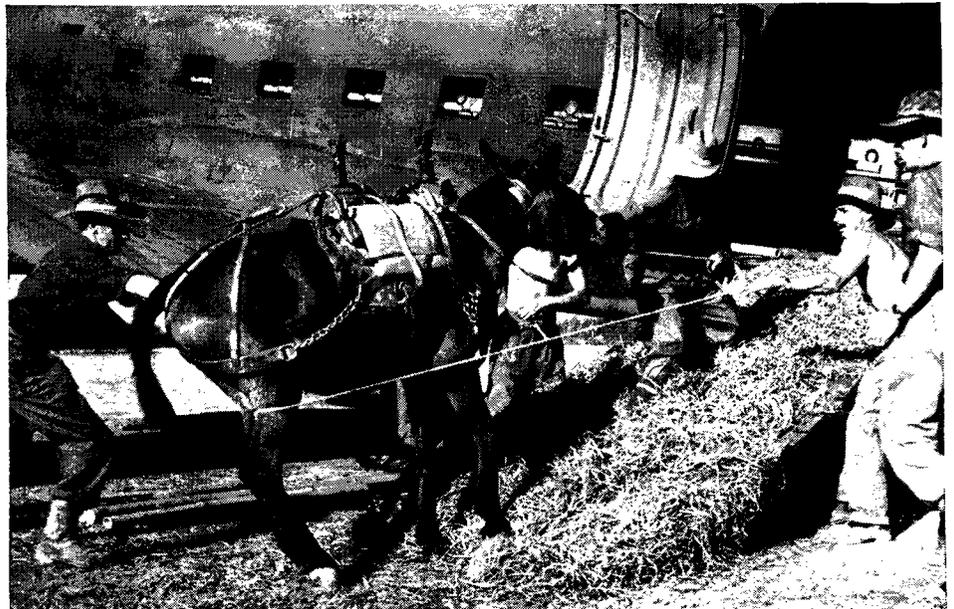
When Lord Louis Mountbatten, Supreme Allied Commander in Southeast Asia, asked Maj. Gen. George E. Stratemeyer to form an Allied operation air force for the war against the Japanese in Burma and Southeast Asia, General Stratemeyer set up the Eastern Air Command with four air arms under it. These consisted of a Tactical Air Force, a Strategic Air Force, a Photo-Reconnaissance Force and a Troop Carrier Command.

It was only logical to establish the troop carriers as a separate force for, in the unique Burma war, air supply of ground troops has been an all-important factor since 1942 when General Stilwell's retreating forces were maintained by RAF and USAAF planes during their march from Burma. The command, as set up, comprises equal numbers of RAF and

USAAF squadrons, with the RAF units nearly double the size of those of the USAAF.

Brig. Gen. William D. Old was selected to head the troop carrier operation. He had taken active part in earlier supply-dropping operations in Burma and had served as chief of staff of the 10th Air Force, whose combat organizations now were to be turned over to the Allied Eastern Air Command as operational units of the strategic and tactical air forces. General Old took command of all

Mules such as this stubborn fellow being coaxed aboard a transport plane are but one of many thousands of supply items flown by the Troop Carrier Command to front line forces in Burma. The mountain range between India and Burma makes normal methods of communication impractical.



**'Troop Carrier Command's operations over Burma have proved conclusively that with air superiority there is no such thing as encirclement.'**

USAAF and RAF troop carrier squadrons in India.

Regarded as one of the most skillful pilots in the theatre, General Old leads many flights personally. He once headed a squadron of Allied troop carriers into the Arakan on a stormy day when several other flight leaders had turned back. That flight, on which ammunition and supplies were taken to an isolated British division, is believed to have been the turning point in the Japanese offensive in the Arakan. British-Indian troops, sustained by air supply, fought their way out of an encirclement which threatened them with disaster; the Jap offensive was turned into a Jap defeat.

In January of this year, General Old's Troop Carrier Command began its career by dropping thousands of tons of supplies to Lieut. Gen. William J. Slim's 14th Army. The effort was stepped up in February when the battle for the Ngakyedauk Pass reached its climax. The 7th Indian Division was encircled, and supplies could not reach them by road.

**GENERAL SLIM**, Air Marshall Sir John Baldwin, commander of the Tactical Air Force, Eastern Air Command, and General Old conferred with members of General Stratemeyer's staff. Together, they found the answer to the problem. Air Marshal Baldwin's Spitfires and Hurricanes were to provide top cover for General Old's C-46s and C-47s which would

attend to the supply job. A few hours after the message giving the details of the encirclement had been flashed to General Slim's headquarters, the transports were on their way with fighter escort.

By day and by night they flew every conceivable commodity, from guns to newspapers, to the troops. The 7th Indian Division and the Japs were locked in a complicated series of maneuvers which resembled a game of chess. Each time the Japanese expected to checkmate the Allies, the Troop Carrier Command converted a pawn into a queen and made the Japs run for cover. During this hectic period, many troop carrier pilots flew as many as sixteen hours a day. As a result troop carrier's February tonnage far exceeds the January figure.

But behind the scene, in Lord Mountbatten's and General Stratemeyer's headquarters, an even greater job was being planned for Troop Carrier Command—the airborne invasion of Burma. It was the job of the Troop Carrier Command to fly in the majority of British ground troops to airfields constructed behind enemy lines, after Col. Philip G. Cochran's Air Commandos had flown in the airborne engineers and built landing strips capable of accommodating the C-47s. Some indication of the rising offensive against the Japanese may be gained from the fact that, in March, the supply tonnage and the sorties flown by Troop Carrier Command were fifty percent greater than in February.

From the figures available to date, it appears that April will be the most successful month—both from the standpoint of numbers of sorties and of tonnage dropped—in troop carrier's brief history in Southeast Asia.

In its operations over Burma, the Troop Carrier Command has demonstrated a new concept of warfare. In the past, it has been considered a military axiom that the cutting of the lines of communication of a force dooms it to destruction. Encirclement is fatal. The Troop Carrier Command has proved repeatedly not only that it is practical to supply an encircled force so it can function effectively against the enemy, but that it is possible to continue this process indefinitely. To quote a member of General Old's staff, "Troop Carrier Command's operations over Burma have proved conclusively that with air superiority there is no such thing as encirclement."

In other theatres, troop carrier units have transported and supplied ground troops for short emergency periods, such as the troop carrier operations during the invasion of Sicily. Following the initial invasion or attack and the establishment of normal transport facilities by boat, train and truck, the units have reverted to their routine transport operations.

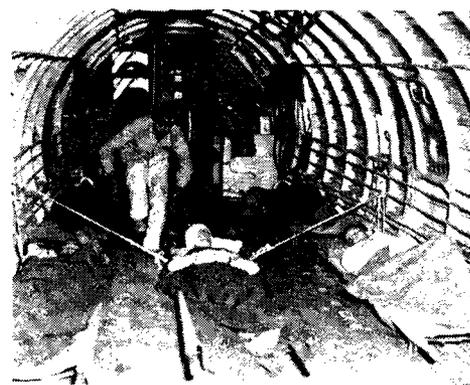
The India-Burma border, however, is a geographical freak. The walls of moun-

tains which run north and south between the two countries make normal methods of communication impractical and, as a result, any and all warfare in that area becomes, from the aspect of the Troop Carrier Command, a continuous operation. For months, USAAF troop carrier squadrons supplied General Stilwell's troops along the Ledo road. More lately, Troop Carrier Command squadrons have been doing the same thing for the American and Chinese troops under General Stilwell in north Burma as they advance down the Mogaung Valley. There, as elsewhere along this 1,200-mile front, they evacuate the wounded and sick from forward airfields, supply the advancing troops with everything they need, including mules and bullocks, and frequently drop a few bombs on Jap troop concentrations for good measure on their return flight to their permanent bases.

Troop carrier units also are currently providing a continuous flow of supplies to the special forces in north central Burma, and to the Imphal, Arakan and Kaladan sectors. Each of these is a separate front, and each represents a continuous commitment for Troop Carrier Command.

Many of the operations are performed at night, when pinpoint navigation and split-second coordination with ground troops in receiving and transmitting signals is essential. Supplies are dropped not to the rear of the troops, but directly at the front line within easy range of enemy small arms fire. As a result, many aircraft return to their bases in damaged condition—one came back recently with more than 1,000 bullet holes in its wings and fuselage—but actual aircraft losses have not been substantial.

When commitments from the various fronts exceed the number of aircraft that Troop Carrier Command has available,



After treatment at an advanced base, wounded and sick personnel are seen being transported in a C-46 to a rear hospital. Evacuation of non-effectives is among the TCC's many tasks.

additional planes and crews are borrowed from the Air Transport Command.

Just as the aircrews operating in Troop Carrier Command are both American and British, so too are the brains which direct this tremendous operation. Topping General Old's staff as deputy air commander is Group Capt. F. K. Donaldson. Lieut. Col. Willard West and Maj. Frank E. Sears also are on his staff. The former has a high reputation for his ability to organize new units, while the latter commanded the first American troop carrier squadron on the Burma front, which was cited for its operational record under his command. Wing Comdr. E. B. Fielden, who flew with the RAF in World War I and has 10,000 hours to his credit, also is in the operational side of General Old's staff. He directed RAF troop carrier squadrons of the Troop Carrier Command in the recent airborne invasion of Burma.

Anglo-American cooperation in Troop Carrier Command is paying off with powerful, deadly efficiency. It has repeatedly been the savior of both well and wounded on this battlefield of mountain, swamp, jungle and river. ☆

Engineers flown in by Col. Philip G. Cochran's Air Commandos are seen constructing a landing strip behind Japanese lines in Burma for planes of the Troop Carrier Command. The completed airfield was capable of accommodating C-47s and gliders bearing invading troops and equipment.





# AIR POWER IN THE SOUTH



**By Lieut. Gen. George C. Kenney**

**COMMANDER OF THE ALLIED AIR FORCES IN THE SOUTHWEST PACIFIC**

man in the ring with a bigger, heavier opponent. There is only one thing you can do in a situation like that. You box. We boxed with energy. We had to duck the haymakers the Nip was throwing at us and at the same time keep jabbing, looking for openings. It was difficult and heartbreaking work. In those days the RAAF (Royal Australian Air Force) was practically the backbone of our forces. The Australian airmen fought valiantly because they knew the next backward step would bring the fighting to their homes. The Americans fought bravely because they knew the step after that would bring the enemy nearer the United States.

From the mainland of Australia we conducted raids on Lae and Salamaua, using the airfields on the small part of New Guinea which was still ours as hopping-off places. We had to be careful and cautious when we staged our planes, however. Else the Nips would catch us on the ground and destroy our aircraft. With all our strength, we set about neutralizing Jap strongholds one at a time.

The first place to be taken out was Buna. During August, 1942, the Nip had fixed up a field there and it was a real thorn in our sides. Only 100 air miles from Port Moresby, his planes would come over the 13,000-foot Owen

**T**HE air force is the spearhead of the Allied attack in the Southwest Pacific. Its function is to clear the air, wreck the enemy's land installations, destroy his supply system and give close support to troops advancing on the ground.

Clearing the air means more than air superiority; it means air control—air control so supreme that the birds have to wear our air force insignia. Wrecking the enemy's ground installations does not mean just softening them up. It means taking out everything he has—airdromes, guns, bunkers, troops. Destroying his supply system means cutting him off the vine so completely and firmly that he not only cannot undertake offensive action but, due to his inability to replenish his means to wage war, he cannot even maintain a successful defense.

Before we got air control we had to fight for it, and we have had to maintain it by shooting out of the air or burning up on the airdromes every Nip plane attempting to question it.

At the time of my arrival here in July, 1942, we felt we would be lucky if we didn't have to fight the Nip in Australia. When I went up to Port Moresby for the first time, the plane stopped rolling just long enough for me to get out. It took off before the enemy could catch it on the ground. Shortly after that the Nip came over and strafed the airfield. I may have had a lot of plans and ideas but this attack crystalized one of them—the determination to clear the enemy off our lawn so that we could go across the street and play in his yard.

We did not have the strength to do it then. We were like a smaller and lighter



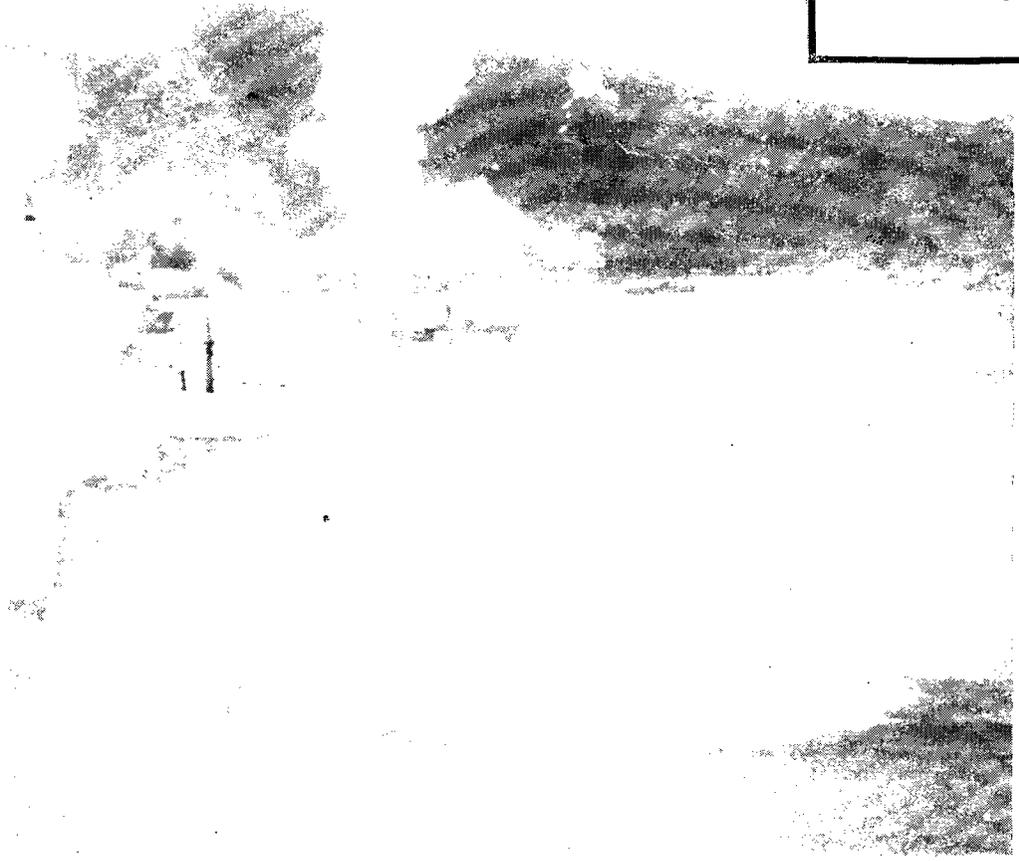
Stanley range and nose over on top of us before our inadequate warning system could give us a chance to get our fighters up. At this time the Japs were within thirty miles of Moresby itself.

The 5th Air Force went to work. Our fighters began to patrol over Buna. If the Nip came up we shot him down. If he did not come up, we strafed him on the ground. In between times, heavies, mediums and light bombers dug holes in his runways, battered down his revetments, burned up his stores and strafed his personnel. The Jap kept filling up the bomb craters and we kept making new ones. He replaced his airplanes and we promptly shot

them out of the air, or burned them on the ground. Before long, he tired of the game and didn't bother to fill in the holes on the runway. It had cost him around 75 planes and he decided that it was too expensive.

Employing the same procedure, we then started working on his fields at Salamaua and Lae and by November the Nip was out of our front yard. We could now cross the street and play in his. Meanwhile, the Australians had pushed his ground forces back across the mountains and with complete air control we ferried a division of Americans across the mountains and for the next two months, until Papua was regained, supplied them and the

- ★ **Control of the Air**
- ★ **Constantly Changing Tactics**
- ★ **Skip Bombing for Greater Accuracy**
- ★ **Increasing Forward Firepower**
- ★ **Adding Range to Fighter Aircraft**
- ★ **Rehearsing for Offensives**
- ★ **Dropping Paratroops and Flying Cargo**
- ★ **Spearheading Surface Operations**



Australians by air. Troops, food, ammunition, artillery, jeeps, in fact, everything that would go into the door of a C-47 went over the "hump" and the sick and wounded came back.

In the meantime, Rabaul beckoned. Here was the big supply base for all Jap forces in the Bismarck, the Solomons and New Guinea itself. With 150,000 tons of shipping constantly in the harbor and a couple of hundred planes on the main airdromes just outside of town, we had plenty of work on our hands. From Rabaul, too, came the convoys; eight in all, that tried to relieve the Nip forces in the Buna area. From August 1, 1942, to January 2, 1943, when Buna fell, we had not only defeated every attempt to bring convoys from Rabaul to that area but had

This surprise low-level smash at Rabaul caught Simpson Harbor full of Jap shipping. The 10,000-ton Nachi class cruiser in the foreground later was badly damaged; beyond the cruiser, at its port side, is a 10,380-ton transport, Hakusan Maru, which has been hit amidships and burns fiercely. In the background are a 5,160-ton sub tender, two 3,800-ton motor vessels, and two transports totaling 10,702 tons.

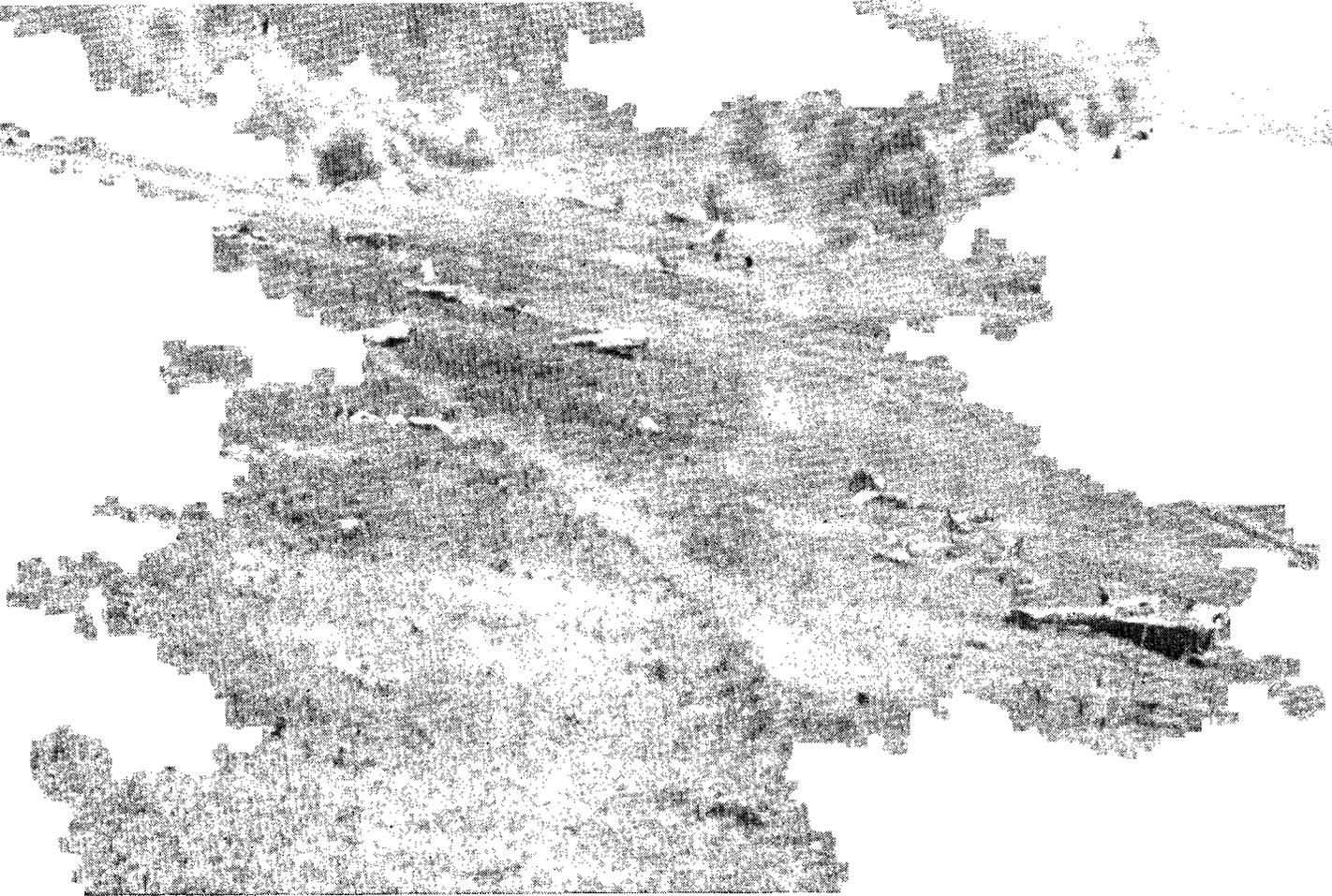
probably sunk or damaged a total of 300,000 tons of shipping trying to run our air blockade or in Rabaul Harbor itself. During the same period we had destroyed 1,888 Jap aircraft. Meanwhile, we had to conserve every bit of striking force we could muster.

Production at home had not yet reached the point where aircraft could be spared for this theatre. We rebuilt airplanes so badly shot up they would ordinarily be considered only fit for salvage. We cannibalized the ones we couldn't rebuild and used the pieces to make one or two

airplanes that could be made to fly. And we protected those we had in every way we knew how. We built a great air fortress in Port Moresby, where every airplane was closely protected by earthen revetments, wide-spaced dispersal areas and plenty of anti-aircraft guns and searchlights. We installed warning services, established observation posts up in the hills and maintained our fighters constantly on alert. As soon as we owned the ground on the north coast of Papua, we worked like beavers to build the same kind of fortress in the Buna area—a

fortress designed to give us more elbow room and to take a heavy toll of enemy visitors who tried to destroy our planes.

In addition to learning how to wrest air control from the Jap, the Buna campaign taught us some other valuable lessons. While our bombing of Jap shipping was getting results, our losses were running too high to suit us, and we were getting too low a percentage of hits. We tried night bombing for awhile to cut our losses and got some surprising results. Bombing at lower altitudes than during daylight, using flares and without



**W**hen Allied forces landed in the Hollandia area of Netherlands New Guinea on April 22, General Kenney's air forces already had smashed Jap airstrips and other defense facilities in the vicinity with repeated bombing attacks which began late in March. More than 300 enemy aircraft had been destroyed on the ground during both low and medium level assaults, with negligible losses on our part. In addition to softening up Hollandia for invasion, these air attacks had prevented Jap planes concentrated in the area from intercepting our occupation of the Admiralty Islands. The Japs held their aircraft at Hollandia and then lost them on the ground. In the foreground of this photograph, taken from a bomber during one of the attacks, Jap planes wrecked by a previous bombing can be seen. In the background, bursting bombs are destroying many of the enemy's remaining serviceable aircraft. More than fifteen demolished Jap planes of late types are shown on this small strip.

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the usual Jap fighter interference with the bombardier's work, our percentage of hits went up.

This latter point was driven home to me one day when I met a squadron of Fortresses just back from bombing a convoy heavily protected by a Jap fighter escort. The planes landed, some without brakes, some without flaps; nearly all of them badly shot up. A sergeant-bombardier crawled out of his compartment which had a dozen bullet holes through the plexiglas nose.

"How did it go, sergeant?" I asked.

"General," he said, "I've got to get some new kind of vitamins. Some new kind that'll make me tough."

He looked plenty tough to me and I told him so. He only shook his head and went on grimly.

"No, General, I need something to make me tough so that I can keep my mind on my work. When those bullets start coming through the nose and buzz past my ears while I'm bombing, it takes my mind off my job. Today, I dropped my bombs 100 feet too short. That's bad. You ought to give us some new vita-

mins or something to make us tougher."

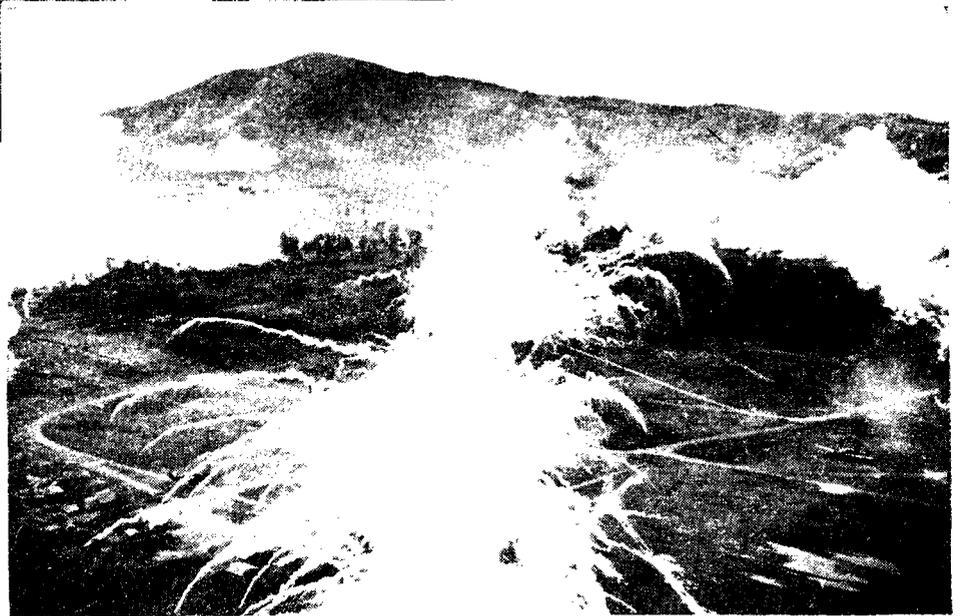
It was then that I noticed what had been distracting the vitamin-hungry sergeant and had made him drop his bombs short. His foot was bandaged where it had stopped a Jap machine gun bullet.

However, the hazards of night flying among the tropical storms between Moresby and Rabaul, and the enemy anti-aircraft were still costing us too much. We went to fighter cover for all day bombardment missions and the crews started reading continued stories again.

The question of accuracy still remained



Both harbor and airfield at Rabaul were targets of the November 2 attack. Scurrying like minnows in their frantic efforts to avoid 5th Air Force bombs, only ten of the forty Jap ships (above) escaped damage. The airstrip (right) is under a blanket of phosphorus bombs; five Jap planes can be seen on the ground.



to be solved. Skip bombing, as we call it, gave us the answer. There was nothing new about the idea. Both the British and the Germans had done what they called night-flight bombing and Fglin Field had done some work along that line.

Under the leadership of the late Maj. Bill Benn, one of the most brilliant officers in the 5th Air Force, skip bombing was developed to a fine art. For weeks, Benn practiced bombing methods on a half-submerged wreck outside Port Moresby. He experimented with all types of approaches, sizes of bombs and fuzes. There was no denying that the method was the one we wanted. Nor was there any trouble over the size of bombs. We could use any size. The timing of the fuzes had us going for a short while. We improvised by taking an Australian fuzer and cutting its delay just about in half. That worked for the time being, until the Australian manufacturers could turn out exactly what we wanted.

Bill Benn taught himself and then trained his whole squadron of B-17s. Finally one night in October, he led six planes down into Rabaul harbor. From 200 feet altitude he sent six Jap vessels to the bottom and brought his six planes back home. Skip bombing became the standard, sure way of destroying shipping, not only in Bill's bombardment squadron but throughout the 5th Air Force.

There was only one thing wrong. We

did not have enough forward firepower to take out the deck defensive fire that every Jap boat seemed to have. The B-17s didn't have it and it looked like too much of a job to remodel the Fortress. The A-20 had four forward-firing caliber .50s, but it didn't have much range and couldn't carry big bombs. The B-26 was going to be replaced by the B-25 in our theatre. By the process of elimination it looked like the B-25. We took out the bombardier, put a package of four .50s in the nose, two more packages of two guns each on each side of the fuselage, threw away the bottom turret, put some more gas in its place, balanced the plane with a little lead where necessary, and as soon as enough were ready to equip a light bombardment squadron, we started training.

Six weeks later, on March 3, in the battle of the Bismarck Sea, the bombardment squadron, led by Maj. Ed Larner,

had its first action. Twelve B-25 "Strafers," as we called them, sank ten Jap vessels in twenty minutes, scoring better than fifty percent direct hits. The greatest commerce destroyer of the war was born.

We hurriedly remodeled every B-25 we could get our hands on and made the phrase "air blockade" really mean something.

The eight forward-firing caliber .50s generally aided by the two in the top turret have proven good enough to beat down the defensive deck fire of anything we have encountered to date, from lug-gers to light cruisers. If we ever have to take on heavy cruisers or battlewagons, we will go back to high altitude level bombing but for everything else we feel that we have the cure.

The B-25 is not the only plane that has been modified here. Here every type airplane we get goes through some phase

of modification. It is unavoidable. When you get out in the show, unforeseen things happen. In the rapid development of air power it is impossible for Wright Field or the manufacturers to make aircraft that will meet every purpose. For example, no other theatre at any previous time had the barge as a target for a plane. It is not fair to ask the bombardier to keep his eyes glued to the bombsight when the enemy is throwing shells at him. He needs his "vitamins" and he and the other fliers get them through modifications in all our planes.

The B-24 provided a similar problem but for another reason. The first ones we received had five separate .50 caliber guns mounted in the nose. There was not enough room for both the bombardier and gunner during the bomb run. We made a modification which was not original with us. The Hawaiian air depot of the 7th Air

(Continued from 51)

## The already low incidence of mental 'crack-ups' among our flyers in the ETO decreases as the fury of sky battles rises. Here's why.

THESE are two notable things about flying fatigue or combat exhaustion or nervous disorders of any kind among American air crews based in Britain.

One is that such cases are so remarkably rare. The men who fly the heavy bombers to Berlin and the fighter pilots who escort them meet the toughest aerial opposition in the world. On an average mission they encounter hazards as weird and perilous and varied as human beings have ever had to face. Yet the incidence of anxiety neurosis is lower than in any recorded combat unit of World War I, and—so far as is known—has yet to be matched in World War II.

The other significant fact is that as the fury of the sky battles increases and the tempo of the air war rises, the percentage of men seriously affected is going down. One reason for this is that flight surgeons have learned how to prevent advanced cases of flying fatigue. But the main reason is that the combat men themselves understand it, and, when they understand it, it ceases to be a huge menacing threat and becomes a reasonable finite problem which can be analyzed and solved.

The fact that only three psychiatrists are currently assigned to an aerial armada that matches the RAF in size proves that the American airman does not crack easily, even under the worst conditions. In a year and a half of furious fighting there has been just one case of a flyer developing a true psychosis.

This does not mean that all the flying personnel of the 8th Air Force are lion-hearted supermen. They are not. Combat frightens them and they admit it. They would be either liars or fools if they did not. The stress of operational flying is such that everybody engaged in it suffers from fear and anxiety to a greater or less degree. But the realization that a certain amount of anxiety is inevitable does more than anything else to pull its teeth. Understanding of the sort of tricks it may play on a man is almost always enough to render those tricks much less harmful—or at least powerless to interfere with the flyer's job.

IN any form of active warfare the conflict in the participant's mind between fear and the driving forces which make him face danger is obvious. The airman, however, must meet a set of hazards which are peculiar to his profession. Many of them have never been encountered in any previous war.

In their efforts to understand these highly specialized dangers and the attendant mental stresses, psychiatrists and flight surgeons have often accompanied flyers on combat missions. At least one,

Capt. David G. Wright of Philadelphia, has been wounded in action and wears the Purple Heart and the Air Medal with Oak Leaf Cluster. Men like these, adding battle experience to their psychiatric training, constantly pass their conclusions along to the combat crews. "You can't fight fear effectively," they say, "unless you know what you're fighting against."

Bomber crews are more likely to suffer from nervous reactions than fighter pilots. The added responsibility for the safety of nine other men, the lack, in some cases, of any sense of individual combat, the comparative inaction during the long

## THE CONQUEST OF FEAR

By Maj. Arthur Gordon

AIR FORCE Overseas Staff

tense hours—all these things are partly responsible. In a bomber crew, paradoxically enough, air combat is often too abrupt, the action is too instantaneous. An air gunner on a Fortress or Liberator who gets in one useful burst at an enemy fighter in the course of a six-hour mission may have anywhere from two to six seconds in which to expend the tension that has been built up inside him. This is not enough. From a psychiatric point of view, fighter pilots who engage in twenty minutes or half an hour of violent combat are luckier. Bomber pilots and co-pilots who cannot fight back at all, who have to sit there and take it, are more likely to develop anxiety symptoms than the men who can press a trigger and see their tracers streaking off in the direction of the enemy.

This is only one of the mental hazards. Bomber crews suffer from the further disadvantage of not being able to see the immediate effects of their efforts. Fighter pilots have the satisfaction of seeing the enemy plane disintegrate under the fire of their guns—or at least enjoy the sense of excitement and participation that comes from personal combat. For the bomber pilot, in a sense, there is no victory and

no defeat. He may see his bombs fall in the target area, but even so he can only imagine their effect. The eagerness with which bomber crews haunt the photographic laboratories for a glimpse of the pictures which will stamp their mission a success proves that a specialist in any profession likes to feel that his skill and training are not being wasted.

Bomber crews and fighter pilots alike must face the violent contrasts that make up the life of an air fighter based in Britain. One evening a man can be having dinner in a modern hotel with most of the comforts of civilization; the next morning he may be a human clay-pigeon five miles up over Germany. The transition is unbelievably abrupt. There is no time to become adjusted, to get set mentally. An infantryman in the front line has usually arrived there gradually, adapting himself slowly to changing conditions. When he goes into action there has been a preparatory period of days or even weeks. The flyer has no such opportunity, and the incongruity of these pendulum swings between war and peace produce a certain amount of nerve strain.

ANOTHER difficulty peculiar to airmen arises from the basic love they have for their job. To most of them flying is the noblest of all occupations. They seldom verbalize it, but the beauty and balance and perfection of mechanical flight, the sense of detachment from the affairs of earth, the close bond of brotherhood with other flyers—these things are the most important realities in their lives. Flying is their religion. It is deeply shocking to them to see this ideal profaned by combat, to experience the bloody horror that some missions can become, to see their comrades killed by the profession which means so much to them. For many flyers, the constant effort to reconcile flying with death and destruction is no easy task.

Then there are the stresses that result directly from facing great physical danger. Every member of the armed services engaged in combat faces death in a variety of unpleasant forms, but air warfare, being three-dimensional, involves a greater number of separate hazards than any other. The flyer knows, consciously or subconsciously, that on any given mission he may have to ditch in the Channel or the North Sea, he may be forced to bail out with his chute on fire, he may be killed by point-blank 20 mm cannon fire from an attacking fighter or wounded by flak fired by an unseen gunner five miles below. He faces the dangers of aerial collision, of failure of engines on take-off, of frostbite, of anoxia, of explosion in mid-air. (Continued on Next Page)

This variety of possible deaths or fates can and does affect specific people in specific ways. Thus, one flyer may regard one possibility with a particular dread; another flyer may worry about an entirely different eventuality. In extreme cases this fear may become identified with certain dangers, revealing itself as a dread of fire, or over-water flights or even a particular type of aircraft or crew position.

Against all these negative forces are ranged certain powerful incentives that produce a sort of dynamic stability in the average combat flyer—stability being defined as a continuously reforming equilibrium between conflicting motives and impulses.

Most important is understanding on the part of the flyer himself of the interplay between anxiety and these incentives. Once he realizes what is happening to him, he is not nearly so likely to let his fears run away with him.

The next most important factor is probably individual pride. The typical airman is a handpicked specimen whose life has been characterized by more vigor, persistence and self-respect than the average person's. Such an individual is not likely to admit to himself that he can fall down on a job—or to enjoy living with himself if he does.

Besides this personal pride there is crew or unit loyalty. The ties that bind a bomber team together are close; there are often times when the main thing that keeps a flyer going is simply an unwillingness to let the unit down.

One of the strongest incentives, of course, is a very real love of flying. To a less degree, flyers are aware of the importance of the job itself, the necessity for winning the war. But generally speaking, patriotism as such is not an important factor. Nor is hatred of the enemy. In fact, except rarely, there is no real enmity toward the German flyers at all—rather a candid respect for their courage and admiration for their flying ability.

When the pressure exerted by the negative forces exceeds the positive incentives by any substantial margin, the flight surgeon may step into the picture with some simple and common sense remedies.

A flyer beginning to suffer from operational fatigue may come to the flight surgeon with a variety of complaints. The physical symptoms are fairly easy to recognize: heart pounding, dizziness which may be the result of changes in blood pressure, sweating and breathing fast, hands and feet being cold, nausea during or before a mission, a feeling of fullness in the stomach. The psychic symptoms are less obvious; the flyer himself may not be entirely aware of them. They may include a sense of unreality which seems to pervade everything, depression, an inability to concentrate, which worries most flyers considerably, used as they are to split-second thinking and decisions. Irrita-

bility is another sign. Anxiety, fear, and anger usually go hand in hand, and when a flyer becomes surly and morose, resents authority, lashes out at everything from the alleged stupidity of higher echelons to the table manners of his best friend, the flight surgeon who observes him is likely to decide that the time has come for him to be taken off combat for a rest.

Occasionally, anxiety may aggravate minor physical ailments such as sinus trouble, especially if they are of such a nature as to keep the airman grounded. The symptoms may be perfectly genuine.

## **DON'T . . .**

**put this copy of AIR FORCE in your personal file, your foot locker or your barracks bag. We count on you to see that the service journal goes to as many AAF readers as possible every month.**

## **READ IT . . . PASS IT ON!**

The flyer may not even be aware that he is the victim of a neurosis which is exaggerating his condition, but he is. Other misplaced anxiety symptoms—phobias or strong aversions to such specific things as flak, oxygen masks, or even a particular airplane itself—these are the result of an instinctive attempt on the part of the flyer to blind himself to the basic cause of anxiety. The phobia usually attempts to serve the double purpose of allowing the victim to fool himself and at the same time avoid the real cause of the trouble, which is combat flying.

The best treatment for these mild maladjustments—and they usually are mild—is explanation, rest and change. The rest homes maintained by the air force are preventives rather than cures. It is the job of the flight surgeons to determine when a flyer needs a rest and see that he gets it before his anxiety grinds him too thin and his cutting edge loses durability. To accomplish this job, the flight surgeon should be a good listener, and on such close terms with the men that they will talk freely to him. Once a flyer comes to the flight surgeon with his problems, half the battle is won. Often an explanation of the symptoms and assurance that he can handle them himself if he knows what they mean are all that is needed to eliminate them.

Once in a while, operational exhaustion may reach a point where curative action is necessary. Symptoms of this condition were noted among RAF fighter pilots during the battle of Britain and have varied little since, although the incidence

nowadays is far smaller. The flyer who reaches this state will almost invariably be suffering from loss of weight. He will be unable to eat or sleep normally. He will look pale, drawn and hollow-eyed. He will be tense, depressed, slow-thinking, irritable and self-accusatory. As a rule he will have complete insight into the cause of his condition. He will not be happy about his inability to continue fighting. His attitude will be "Get me well, if you can, so that I can complete my combat tour." Until he is cured, he will have very little interest in life and absolutely no joy in it.

Seventy per cent of these men can be rehabilitated by methods pioneered by Brig. Gen. Malcolm C. Grow, surgeon, U. S. Strategic Air Forces and Col. Harry G. Armstrong, surgeon, 8th Air Force. The patients return to their units, back to the situation that precipitated the trouble, as well as they ever were—in some cases better. As for the remaining thirty per cent, no attempt is made to salvage them for combat, although after careful evaluation they may continue to perform useful non-combatant jobs.

The treatment which reclaims the majority of these men is neither complicated nor dangerous. Reduced to its simplest terms, it is an artificially induced period of mental and physical relaxation that to date has brought more than two-thirds of the patients so treated back to normal. The best description of it was given by an air gunner talking to a pal. "It's a substitute for time," he said.

**As** a result of such therapy and of the general experience gained by 8th Air Force psychiatrists and flight surgeons during the last eighteen months, signs of operational exhaustion are less prevalent than in the early days of our air effort, even though the number of men engaged in combat has increased immeasurably. The time has passed when flyers, nerves stretched to the breaking point, were known to shoot out the lights like the cowboys of old. Today, flight surgeons are trained to spot such incipient cases early and take appropriate action. All the psychiatric training they get in this theatre is directed toward prevention.

There is plenty of danger left in the skies over Europe today. The air war is still tough. But the men America is sending to do the job are equal to it. They have the motivation and they are capable of gaining the understanding that robs anxiety of most of its dangers. The majority of them will be helped at some point by their flight surgeons but will never need actual treatment. If a few of them should, the treatment is always available. But, all things considered, despite the intensity of the air war, flyers who come to the ETO can rest assured that the chances of their "cracking" are practically nil. ☆

# NO REST FOR THE LUFTWAFFE

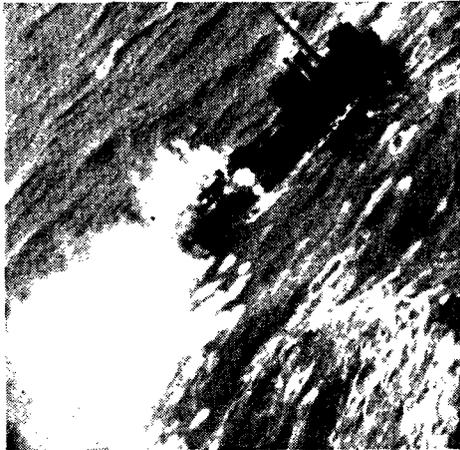
**Maj. Arthur Gordon, AIR FORCE staff correspondent in the ETO, continues his monthly round-up of AAF operations in that theatre.**



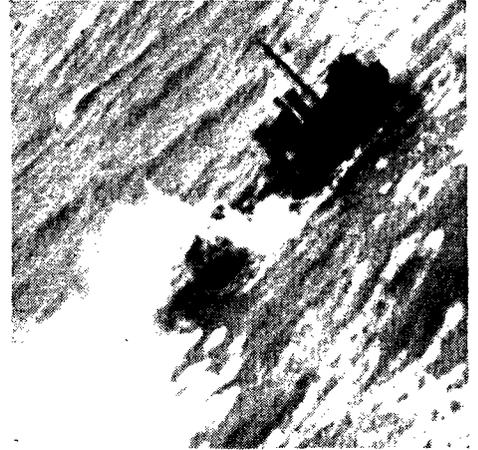
A P-47's gun camera recorded this destruction of an FW-190. The P-47 jumped the FW out of the sun, kept firing until only ten feet away.



Another P-47 gets its sights fixed on the lead ship of a convoy caught off the Dutch coast. As the P-47 moves in, the bullets splash in front of the trawler then catch it along the deck, starting fires



and registering solid hits. During this run the pilot was subjected to heavy anti-aircraft fire from three other ships in the convoy. These pictures were taken from movie cameras mounted in the wings.



As April ended and invasion fever mounted inside Hitler's contracting fortress, the harried Luftwaffe suddenly found itself with a new and painful thorn in its side.

Since January, American heavy bombers based in Britain and Italy had been blasting GAF aircraft factories until production was reduced to a fraction—some experts claimed less than twenty percent—of what had been ordered for the spring of 1944. As a result, thousands of new German fighters had simply failed to materialize. Furthermore, air defense of the Reich against these attacks had been expensive, costing the Nazis nearly 3,000 planes in the first three months of this year.

In an effort to conserve its dwindling forces, the Luftwaffe had taken to sitting on the ground at airfields deep inside Germany unless good weather and visual bombing conditions made defense of key targets essential. Suddenly, in April, even that margin of safety was seriously threatened. In good weather or bad, Americans began sending out their 8th and 9th Fighter Commands to blast the Luftwaffe on the deck.

For a long while, fighter pilots protecting bomber boxes over Europe had been in the unenviable position of a feline-hating dog who has a bone to protect and yet frequently encounters a cat. Chasing a cat in anything like a satisfactory manner involved leaving the bone unguarded, and there was a point in the American air offensive last fall when such neglect was unthinkable. Improved German defensive tactics had made it necessary to protect the bombers at all costs.

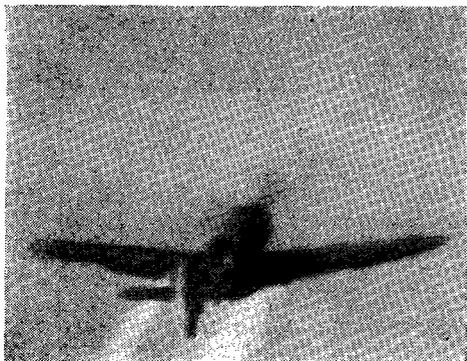
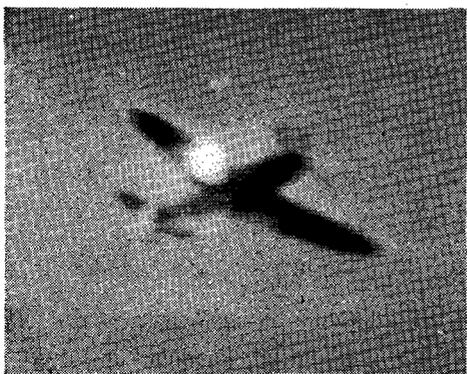
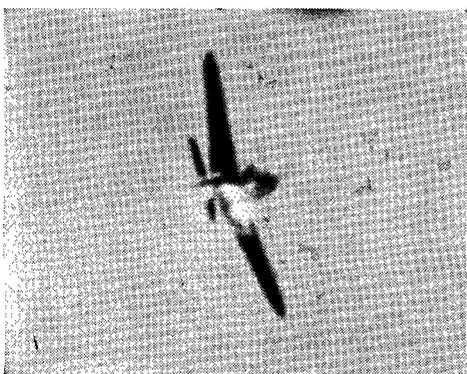
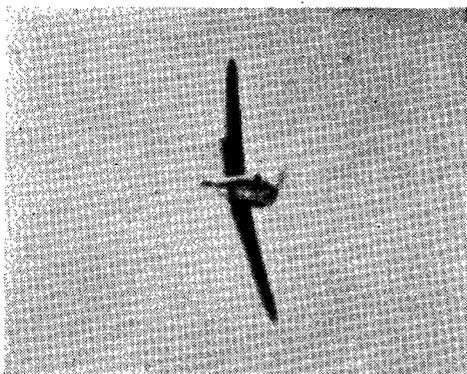
Fortunately, long range fighter escort proved the answer to German rocket-carrying fighter-bombers. Our bomber losses dropped from the autumn high, and our replacement capacity increased. The emphasis in the role played by the fighters shifted somewhat. The bombers still needed protection and they still got it, but with invasion just around the corner, the main objective for fighters became the destruction of the Luftwaffe. If Jerry would not come upstairs to fight, then American fighters would go down and beat his ears off on the ground. For the first time, Fighter Command had a strictly offensive job to do.

It was recognized at once by combat



Low sweeps over Nazi airdromes are risky but they pay off in enemy planes destroyed. Here a P-47's gun camera shows hits on parked fighter.

flyers, if not by everyone at home, that destroying an enemy plane on the ground was just as difficult and considerably more hazardous than killing one in the air. Roaring in at tree top level and better than 400 miles per hour, our American flyers had only split seconds in which to aim and fire. The danger of being hit by light flak was high; the chances of bailing out, low. The element of surprise was



an advantage only if the Nazis were asleep. If the attacking plane was damaged it faced a long, hazardous flight across hostile territory. It was inevitable that fighter losses should rise in proportion as ground strafing was attempted.

This did not discourage the fighter pilots unduly. Based on a proven superiority of four to one in air combat their morale was high. It sagged only when, for any reason, their particular group did not seem to be getting a fair share of the fighting. There were compensations for the perils of low-level attack in the excitement of seeing flak towers fall silent, grounded aircraft burst into flames, and locomotives blow up under the fire of their guns. Moreover, they knew their ships could stand considerable punishment. One Thunderbolt pilot limping home with a blown cylinder head found time to attack two German fighters and shoot one down. A pilot of a Mustang that came back with several yards of heavy cable lodged in its radiator happily reported twelve Nazi telephone conversations probably destroyed.

In March, 8th Air Force fighters reported 504 enemy aircraft destroyed, of which 98 were killed on the ground. In April the ground score was much higher. On April 8, they got 48, on April 11, 65, on April 13, 35. Jerry certainly did not like this but there was not much he could do about it except alert his airdromes and try to get his fighters airborne before the Americans arrived. Often there wasn't time and German planes were destroyed in the process of taking off.

The patience, skill and experience required to put 1,000 fighters into the air and have them at the right place at the right time has never received the acclaim

Over Germany, at 25,000 feet, the automatic camera in the wing of a P-47 filmed this dog-fight with an ME-109. In the top frame, the attacking Thunderbolt is on the tail of the ME, but the pilot's first burst goes wide of its mark. The Nazi pilot, in the second picture, has whipped over into a dive, causing the Thunderbolt's second burst to miss the target. But in the third frame, the P-47's eight fifties have started hitting pay dirt. As the pilot presses home his attack, scoring hits on the Messerschmitt's wing, the Nazi pilot breaks off, turning into a steep glide. In the fifth frame, the P-47 is less than 100 yards from the enemy fighter, still pouring it on. Smoke steaming from its engine, another ME is knocked out of the sky.

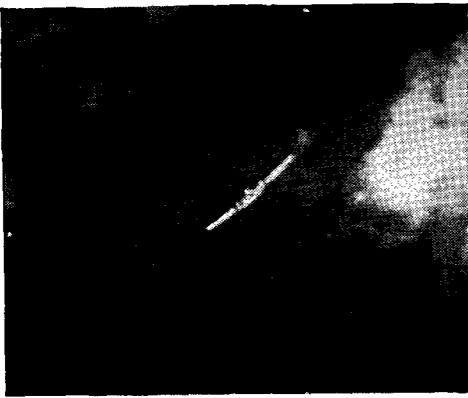


it deserves; nor for that matter has the strain on the individual fighter pilot been recognized. Let a man strap himself in a chair and try turning his head constantly as far as it will go for five hours; let him imagine flying under conditions where the cold is so intense that instruments are frozen, the canopy is coated with ice, and his hands and feet are so numb that he can't feel them; let him contemplate engaging German pilots who are relatively warm and rested and who can bail out over their own territory, if necessary. The bomber crews know what it takes. As one Liberator pilot remarked with typical sincerity: "Any time a fighter pilot wants a shoeshine from now on, all he has to do is come to me."

But until recently fighters have had to play second fiddle to their "big friends." One reason was that long range fighter escort did not make its appearance until the heavies had been operating over Europe for almost a year. The theory that fighter cover could be provided over such targets as Berlin or Regensburg met with considerable skepticism from those who were accustomed to the operational radius of Spitfires or even Thunderbolts without extra tanks. In July, a handful of P-47s first showed what could be done with drop tanks. By the end of the year more than 400 fighters were escorting heavies. In April, 1944, with the 9th Fighter Command lending its strength to the 8th, that number has been approximately doubled.

When word reaches fighter command that bombers will need support over certain targets, intensive work is necessary before field orders go out to the groups a few hours later. Rendezvous must be arranged with split-second timing so that fighters reaching their operational limit will be able to hand over their big friends to succeeding fighter groups. Combat intelligence reports are scanned for latest information on the disposition of German fighter strength. Estimates are made of points at which Jerry will make his heaviest attacks. No effort is made to avoid a fight. On the contrary, certain groups may be assigned to go down deliberately to stir the Germans up. Spread thin in their attempt to guard the long bomber procession, American fighters are outnumbered in most encounters. They cannot guarantee always to frustrate German attacks but can usually prevent repeats. Plans must be made to allow for rapid concentration of strength. A veteran group may know how to squeeze an extra fifty miles out of its limited gasoline supply. Dozens of tricks are used in this type of air fighting. Ambushes are set, traps are sprung. The Germans are far from stupid and the battle of wits is unending.

The three basic fighter airplanes used in the American air offensive from Britain are the P-47, P-51 and P-38. The Thunderbolts, pioneers in deep penetration, still



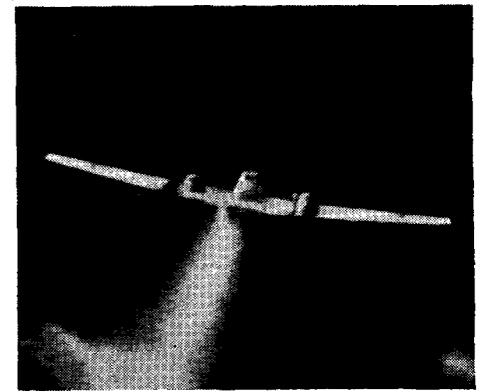
The P-47 from which these pictures were taken with a 16 mm gun camera surprised a Messerschmitt 110 by diving on it out of the clouds. As soon as he was aware of the Thunderbolt, the Nazi pilot began violent evasive action and went into a dive, as shown in the first frame above. In the second picture, the attacking fighter has caught the left wing of the Messerschmitt with a strong burst. Pieces are flying off the German plane in the third frame and fire has broken out as the P-47's attack begins to bring results. The picture at right shows the Messerschmitt headed for the ground in flames. The Thunderbolt pilot was given credit for a "kill."

predominate in numbers. With their great firepower, diving ability and capacity for absorbing punishment, they are the shock troops of fighter command—fullbacks, to use a football analogy. The Mustangs, less heavily gunned and less ruggedly constructed but with greater range and an even more spectacular record in air combat, are the cavalry. Like ends on a football team, they are fast downfield and deadly on a tackle. The Lightnings, with great range and versatility, usually stay upstairs and give top cover to the bombers. To them went the honor of being the first American aircraft over Berlin.

Lightning pilots have labored under certain handicaps in the European Theatre of Operations. In their exposed cockpits at extreme altitudes they have suffered badly from cold. At times, their half-frozen pilots have had to be lifted from their cockpits. Furthermore, the distinctive silhouette of the Lightning militates against it. The American P-38 pilot has to look twice before he can distinguish a P-47 from an FW-190 or a Mustang from an ME-109. The German pilot can and does take a crack at anything with a twin-boomed fuselage that crosses his path.

Recognizing the Lightnings at a distance, Jerry can either avoid combat or wait until he has marked superiority. These factors have been responsible for the comparatively low Lightning claims of enemy aircraft destroyed. Disregarding the consequent lack of publicity, P-38 groups have continued to function quietly and efficiently. They have carried out experiments in high level bombing, which may complement the Thunderbolt's dive bombing when the signal is given for all out support of ground forces.

INTENSIVE though they were, operations of the two British-based fighter commands were only one facet of the gigantic spring air offensive. Heavies of the 8th Air Force maintained their pressure on German aircraft factories. On a typical day, April 9, they hit old targets at Tutow and Warnemunde and revisited Marienburg, flattened exactly six months before in what General Arnold called the best precision bombing of the war and feverishly rebuilt by the Germans. The same day on a 1,700-mile round trip into Poland, they hit a new target, the Focke-Wulf factory at Posen. On April 18, they

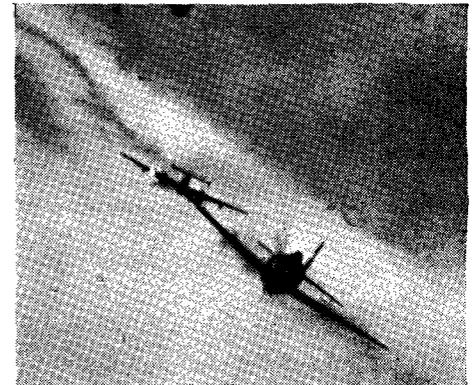


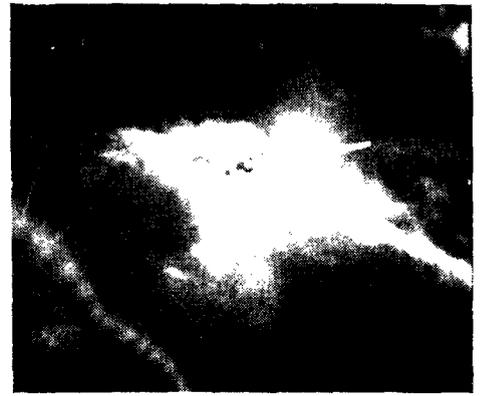
went back to the Berlin area. Opposition seemed to be weakening. In the 36 hours ending midnight April 19, more than 4,000 British and American planes were dispatched from England. Only 49 were lost. In general, American bomber losses remained at a satisfactory level—under three percent. Fighter losses moved up slightly to more than one percent.

Meanwhile, Italian-based heavies were giving spectacular support to the advancing Red Army by hammering Balkan communications as the Germans scuttled westward out of Odessa. Forts and Liberators of the 15th Air Force bombed Sofia, Bucharest, Budapest and Ploesti. In the Balkans they encountered some 200 enemy fighters but the pilots were not of the same calibre as the defenders of south Germany who offered stiff resistance at Steyr on April 2. (Continued on Next Page)

The three pictures below demonstrate how two Thunderbolt pilots collaborated to stop a rocket-carrying ME-110 from attacking a formation of bombers which they were escorting. In the first frame, one P-47 is firing on the Messerschmitt and, as

its gun camera films the action, a second Thunderbolt swoops down on the Nazi to help with the kill. The next frames show that strikes have been scored on the left wing of the Messerschmitt, and a moment later both pilots watched the German plane go out of control and spin earthward in flames.





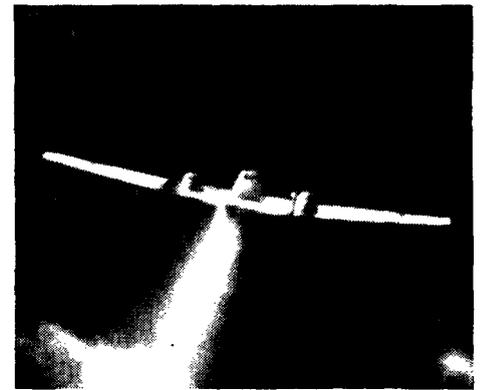
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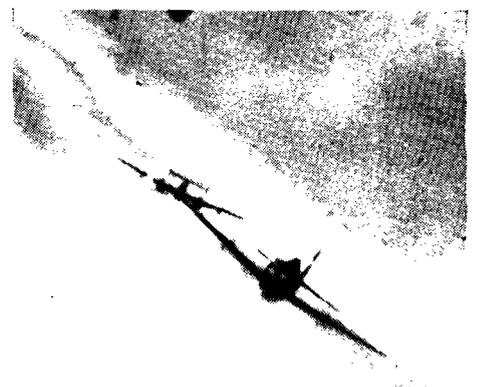
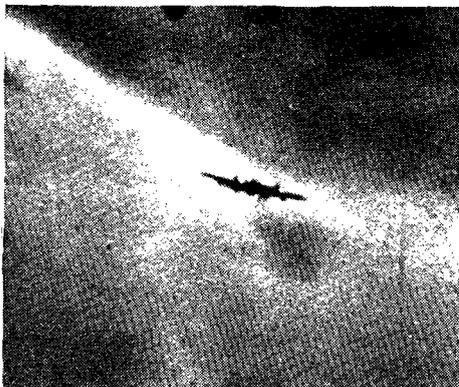


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The railroad yards at Brasov, Rumania, are a vital part of the Nazi escape route over the Transylvanian Alps to the west, and Brasov itself is less than 175 miles from the present Soviet-German front in northern Rumania. On April 16, Italy-based bombers of the 15th Air Force struck at this point, scored over 75 hits on the railroad yards, cut lines to the west, damaged adjacent industrial areas and smashed a nearby airdrome during the mass attack.

Both in England and Italy, medium bombers of the tactical air forces kept busy. The Britain-based Marauders flew as many as 600 sorties in one day against marshalling yards, airdromes and coastal defenses in Belgium, Holland and Northern France. A-20s also made their appearance over the same targets in Italy. Fighter-bombers attacked bridges and communication lines while mediums of the 12th Air Force turned in some of the best precision bombing of the war.

One thing was increasingly clear: The

air war was getting too big for easy simplification, casual predictions or capsule conclusions. There was no questioning the fact that the grip of the air pinners on Germany was increasing relentlessly as D-day drew near. How long the Germans could withstand that pressure, how long they could maintain their facade of fighter strength with replacements reduced to a trickle, nobody could say with finality. The Allies were prepared to keep on tightening the screws exactly as long as proved necessary. ☆

### A BREATHLESS INTERLUDE WITH CAROL-N-CHICK

**T**HE B-24 Carol-N-Chick was flying tail-end Charlie in a formation of B-24s over Germany. There were persistent contrails, intermittent clouds and strong headwinds, and the pilot, Lieut. William B. Brown, had a rough time flying behind planes he couldn't see.

Then the Carol-N-Chick went into her dance.

In a blind spot, the Liberator was caught suddenly in the prop wash of a hidden plane. It went up on its tail, hit another prop wash and rolled over on its right side. The big plane rolled back on its belly only to coast on over to the left side, then roll back to the right. The bomber went back and forth, swinging like a pendulum. "It looked like a falling leaf," a crew member in another plane commented later.

Finally, the Carol rolled over on its back, went into a spin at 20,000 feet and dropped at terrific speed, bouncing the crew members from one side of the fuselage to the other. One of the waist gunners, Staff Sgt. William A. Duprey, hung for awhile at the waist window, unable to move against the punishing centrifugal surge of the spin. The other waist gunner, Staff Sgt. R. E. Flaminio, anchored himself to his guns.

In the cockpit, Lieutenant Brown and his co-pilot, Lieut. Kenneth W. Barnet, fought the controls with their combined strength. The control wheels pushed into their stomachs until the two men were in great pain. The engines screamed, and the twisting strain of the spin caused the B-24 to creak and groan. Finally, at 10,000 feet, Lieutenants Brown and Barnet managed to pull the ship into level flight.

"Our purpose in going over the Continent," said the bombardier, Lieut. William L. La Bonte, "was to bomb. After our exhibition we were determined to bomb regardless."

Believed lost by crew members of other planes in the formation, the Carol-N-Chick proceeded to the target and unloaded. The bomber was escorted by two P-51s whose pilots had witnessed the dance. Other crew members of the Carol-N-Chick were Lieut. Frederick L. Saltus, navigator; Tech. Sgt. Clarence W. Schrader, engineer and top turret gunner; Staff Sgt. Oliver L. Blone, radio operator; Staff Sgt. Jacob M. Lebovitz, tail gunner, and Staff Sgt. H. B. Johns, ball turret gunner. ☆



This is not Shantytown but a place somewhere in England that the boys call Crate City. Buildings are made of glider packing cases. The barber shop (upper left), once covered glider parts. A soldier (upper right) reads a letter at the post office. A view across the roof tops of a portion of Crate City is afforded by the photograph below.

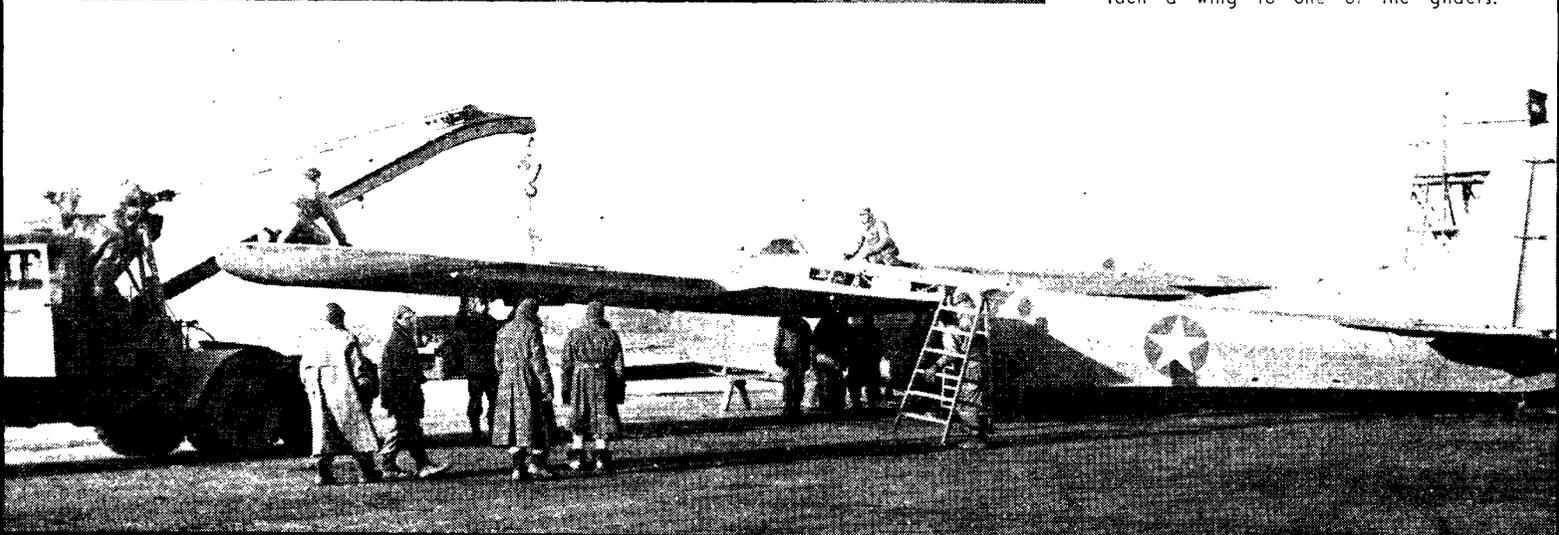


**G**LIDERS to carry our troops into the enemy's territory on D-day are given plenty of attention in the assembling of necessary invasion equipment in the United Kingdom. Specially trained mechanics of the 9th Air Force Service Command remove these gliders from their crates and assemble them for their future passengers who are undergoing intensive training on the beaches and the English countryside. At this depot, the gliders are turned over to Troop Carrier units charged with delivering glider-borne troops and equipment in support of landing forces. With American talents for improvisation, personnel at the glider assembly depot have constructed a complete town from the crates which carried these aircraft from the United States. Everything is there, barracks to house personnel and a business section of sorts to provide the men with living essentials. ☛



17

Below, service command mechanics attach a wing to one of the gliders.



# Dumbo, I LOVE YOU!

By Capt. L. P. Bachmann

AIR FORCE Overseas Staff

FIGHTER planes circled and zoomed about the seaplane that flew lower and lower as it approached the Japanese-occupied coast at Cape St. George on the southern end of New Ireland.

It was during the early days of the strikes against Rabaul and all the land they could see was held by the enemy.

Below them floated a life raft heavily loaded with human cargo. Four men paddled frantically while their two wounded companions sat huddled in the bottom of the dinghy.

The seaplane soared just above the heavy sea, then settled upon the swells. The hull protested and there was a sound like that of rivets giving way. The sound continued as Dumbo taxied up to the raft but white spouts in the green-blue water gave evidence that the noise was created not by rivets tearing loose but by Jap shore batteries opening fire at the seaplane and the circling fighters. Obviously, the enemy had not previously seen the raft.

Back at fighter interceptor control at an advanced base, men guarding the frequency heard conversation between the seaplane and the fighters. There was nothing they could do but sweat it out. They tried to visualize what was happening.

The fighters circled up and out to sea. Then they turned and came diving out of the sun. One after another they strafed the shore line like a basketball team prac-

ting breakaway formations under the basket before a game. The P-40s picked out each battery by its flashes, then fed it plenty of its own medicine.

Before they had found the range of the seaplane, the Jap installations were forced to divert their complete attention to the attacking fighter planes.

As the shore battle reached full fury the six B-25 flyers were helped from the raft into the Navy plane. The idling props revved up, a white wake widened, a hollow appeared under the broad beam and one last swell reached up to slap at the plane. Then Dumbo was airborne.

While the crew gave first aid to the injured men and drinks and food to the others, the pilot contacted the main base to report the rescue and take-off. Then he called the seaplane tender to announce his estimated time of arrival and to request that two litters be made ready.

The men who had been listening up and down the chain of Solomons for the mission's result breathed a sigh of relief.

The P-40s made one more run on the Japs and turned out to follow Dumbo. As they flew by, two of the fighters strafed and sank the abandoned raft to eliminate the possibility of its drifting out to sea and later being reported as a newly discovered craft.

The seaplane was in flight fifteen minutes when it received a call from a

Ventura search plane, which had sighted a man on a raft fifty miles from Dumbo's position. Could Dumbo pick him up? Dumbo could but the fighters would have to return to their base, having just about enough gas to get there. Need for a cover was quickly filled, however, when another Ventura searching nearby cut into the conversation and volunteered to do the honors.

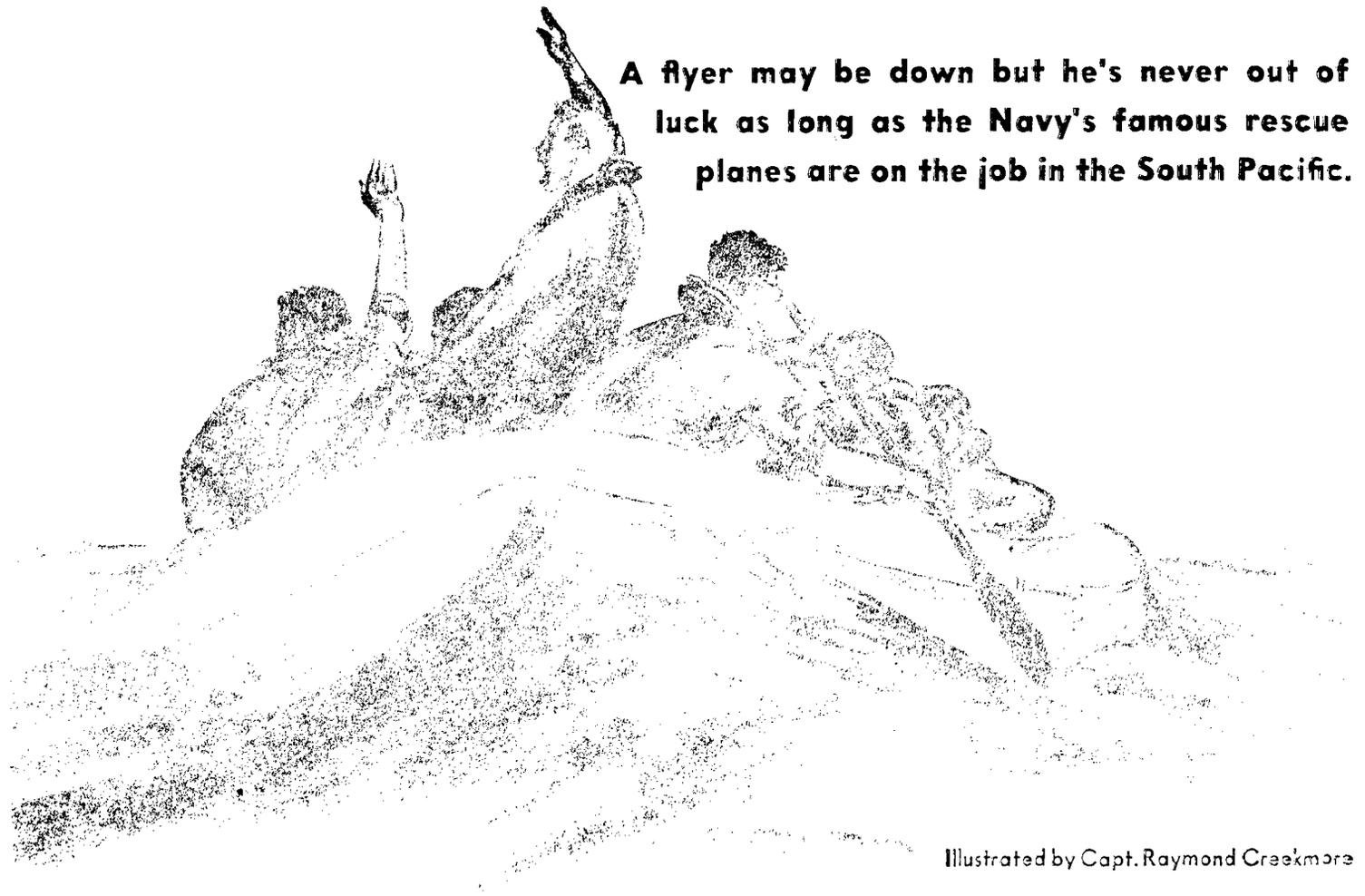
The Ventura was circling over the raft when Dumbo arrived. Seeing that the survivor was in rather poor condition, two of Dumbo's men immediately dove into the water, adjusted a line about the man and lifted him into the plane.

In a rusty voice the survivor, a Marine F-4U pilot, explained that he'd been shot down over Rabaul nine days before. He said he had parachuted to ground on New Britain. But that still didn't account for his being so far out in the ocean.

His cracked lips hurt as he grinned.

"I knew Dumbo would pick me up if I could get out to sea," he said. "When I landed I buried my parachute so the Japs wouldn't find any trace of me, but I saved my jungle kit and raft. I headed for the sea. After seven days, I think it was—I can't remember now—I came to a river. I inflated the raft, got aboard and floated downstream, finally reaching the sea last night. I knew all I had to do was wait for Dumbo. And here you are."

**A flyer may be down but he's never out of luck as long as the Navy's famous rescue planes are on the job in the South Pacific.**



Illustrated by Capt. Raymond Creekmore

Officially, Dumbo is known as the PBV-5. Sometimes it is referred to as the Catalina or Cat or the Ruptured Duck. But when it flies from the famous seaplane tender, which is the most forward-based ship of the South Pacific fleet, it is called Dumbo.

The insignia of the service is an elephant with a sailor's white hat on his head and K rations, canteens and a machine gun on his back. Seated in a rubber raft, he is scanning the horizon with a telescope.

PBV Dumbo service is not new. In every theatre where combat flying is done over water, seaplanes are used for rescue purposes. The South Pacific Dumbo service is not as extensive nor as elaborate as the British Air Sea Rescue. The two cannot be compared. The English Channel and adjacent waters which are crossed to and from combat are small and well patrolled. The South Pacific expanses are enormous and the area covered keeps changing as the U. S. forces move forward. There is relatively little shipping or any other means of patrolling the water except by air. And yet the percentage of rescues will stand comparison with any similar service. The rate has steadily increased until now more than 75 percent of all flyers shot down in the theatre are rescued at sea.

Before December 1, 1943, the Dumbo rescue service in the South Pacific was similar to that in any other theatre. Dumbos were called out when needed. Generally they were search planes that filled in during an emergency. But with the stationing of the seaplane tender as far forward as our most recently won airfields and the assigning of a certain number of PBVs to the service exclusively, Dumbo really came into its own.

Since then, every consolidated field order issued by COMAIRSOL, which plans all tactical air operations in the Solomons, calls for a Dumbo mission. No matter who flies—the Navy Strike Command's TBFs or SBDs, the 13th Air Force's bombers or fighters or all of them hitting at the same time—a Dumbo is ordered into the air.

Meeting fighter cover at a point the tactical planes will pass on their return from the mission, Dumbo circles, watches and listens for word that some plane is about to ditch. Often Dumbo will trail a plane that is running low on gas or is flying on only one engine. If the plane goes down, Dumbo will go after it and pick up the flyers.

On the rare days for which no strikes are scheduled, the Dumbo crews and planes wait, alerted, at the seaplane tender. A report that a life raft has been sighted may come into advanced headquarters

from one of the search planes that cover thousands of miles of water. In a few minutes headquarters notifies the tender giving the position of the raft and the point at which Dumbo will be picked up by the fighter cover.

MEANWHILE, the search plane will circle over the raft, for there is nothing more difficult to see than a raft from the air, as witness the many stories survivors tell of being unable to attract the attention of planes which passed directly over them.

Although flyers downed in the South Pacific have come to have great confidence that they will be picked up by Dumbo, their joy is nonetheless unrestrained as the PBV waddles toward their raft.

"Dumbo's the most beautiful thing I've ever seen," said a P-38 pilot as he sat in the tender's wardroom munching a Dagwood sandwich shortly after his rescue. "Sounds kind of funny now—maybe it doesn't. Anyway I couldn't help it. When I saw the plane I just started to cry."

On a rescue mission, Dumbo flies low and approaches a raft downwind. From the moment he sights the wave-tossed float, the pilot never takes his eyes from it. As the plane passes over the dinghy, two smoke bombs are dropped—two in the event that one fails to work. Dumbo then makes a 180-degree turn, sets down



**I**N a raging inferno, set and kept alive by bombers of the Allied air forces, Europe's principal war production centers are gradually burning to death.

Plant area after plant area has been set afire from the air. Scores of warehouses, docks, shipyards and rail centers have been reduced in many instances to ashes.

As the AAF's attack on Fortress Europe roars to a climax, the havoc wrought is evidence of the effectiveness of the incendiary—an instrument of warfare that dates back forty centuries, almost to the time man discovered how to produce a flame.

Now in its highest form of development as the airborne incendiary bomb, the weapon under some conditions pays greater dividends per pound of weight than does its high-explosive comrade and its use has increased tremendously in recent months.

In the early stages of U. S. participation in the present conflict, aerial fire-bombs accounted for only approximately five percent of AAF bomb loads. Lately they have averaged 35 to 40 percent and in some instances loads have been totally incendiary. In a recent raid on Berlin, 350,000 fire bombs were released.

During the month of March, 48 percent of the 4,799 tons of bombs dropped on industrial plants in the vicinity of the Nazi capital were incendiaries.

### **Incendiary bombs—modern version of an ancient weapon—pay big dividends in AAF attacks.**

Broken down into individual raids, the incendiary percentages were as follows:

<i>Date</i>	<i>Total Tonnage</i>	<i>Incendiaries</i>
March 4 . . . . .	67	48%
March 6 . . . . .	1,508	27%
March 8 . . . . .	998	70%
March 9 . . . . .	796	30%
March 22 . . . . .	4,430	64%
	4,799	48%

Today's fiery calling cards not only are a far cry from the battle incendiaries introduced in the ancient and middle ages, but they also represent a world of improvement over the crude fire-producing implements of World War I.

History first records the appearance of incendiaries in 2000 B.C.—in the form of flaming arrows shot in India. Centuries later, the Romans catapulted lattice-work bombs filled with inflammable substances, and "Greek Fire," a makeshift hand grenade, is said to have saved the Byzantine Empire from enemy domination for a thousand years. In medieval times, fire-balls were floated against shipping while

blazing torches were attached to lances hurled by horsemen to ignite fields and buildings.

With the development of firearms, causing armies to engage each other at greater distances, and the substitution of earthworks for battlements, the effectiveness of incendiaries became limited and their use was almost entirely abandoned.

It remained for World War I to revive interest in incendiary weapons and munitions and to provide practical demonstration that they were adapted to modern warfare.

Although the artillery incendiary shell was invented in 1878, it was not tested in combat to any appreciable degree until the early days of World War I, when it was directed as anti-aircraft fire against observation balloons.

By the end of 1915, both sides were using improved incendiaries. Earlier in the year, the Germans had introduced flame throwers against ground troops and their Zeppelins had dropped fire-bombs in a raid on London, marking the first use of incendiaries from aircraft.

But the incendiaries of World War I can no more be compared with today's rain of fire from the skies than can the feeble glow of a match be likened to the roaring flame of a blast furnace.

Unprecedented progress in the fields of



aviation and munitions has brought incendiary bombing to a high degree of efficiency. So rapidly have improvements in equipment and technique been made since the war's outset that the Nazi incendiary raids on London in 1940 must be considered tame in contrast to the AAF's current devastating attacks on German and Japanese installations.

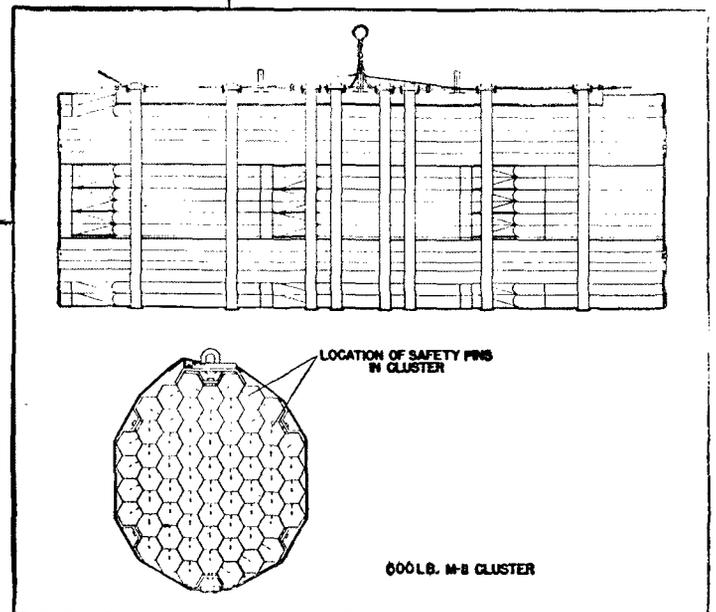
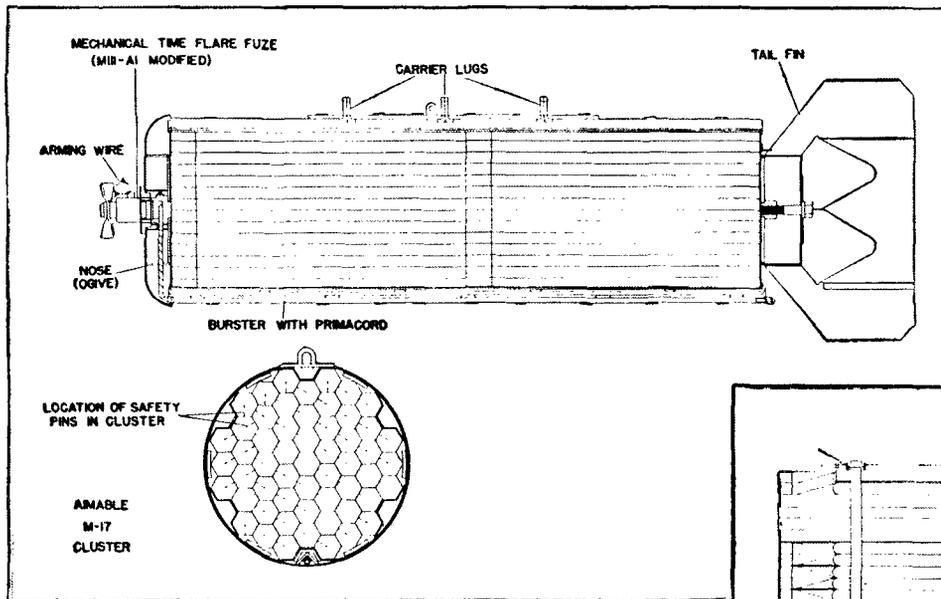
Several types of incendiary bombs are used by the AAF. They differ in conformation, size and chemical content. Ranging from the two-pound "firestick" to the 500-pound "blockburner," they may be classified generally as magnesium, thermate, gasoline-rubber, phosphorus and jellied-oil bombs.

Choice of the kind and number to be used on a mission depends upon the physical make-up of the target—its construction, composition and proportions.

*Magnesium* bombs come in two varieties—the AN-M52 two-pounder and the M-50 four-pounder. Both have hexagonal, cored, magnesium alloy bodies with hollow, sheet steel tails and they contain a thermate burning composition and an igniting charge. The four-pounder also has a fuze mechanism and a blunt, cast iron nose. Either type burns from six to eight minutes at a temperature of 2,300 degrees Fahrenheit.

Highly effective upon targets difficult to ignite is the four-pound *thermate* bomb, which burns fiercely at a temperature of 4,350 degrees for approximately a minute after impact. The intense heat melts the bomb's tubular body, releasing molten metal which runs in all directions, scarring everything in its path and igniting all combustible material it touches.

The six-pound *gasoline-rubber* bomb burns longer than the thermate bomb but at a lower temperature. It has an explosive charge which splatters the sticky substance over a wide area, in which the blazing particles adhere to walls and other



Operation of the M-11 cluster, one of two types used by the AAF for dispersal of lightweight incendiary bombs, is demonstrated (top) in photo made during a raid on Nazi shipyards at Kiel. A second or two after leaving bomb bay, one cluster has burst open and is scattering its load. The other, pictured still intact, broke up an instant later. The drawings show both types—the M-11 (right) and the more recently devised M-17 aimable cluster (above). The latter speeds earthward with precision, retaining its packaged fire until reaching a point about 5,000 feet above the target. It affords accuracy for greater than that offered by the M-11, which opens soon after its release.

upright structures. Used as an anti-personnel agent as well as an incendiary is the 100-pound M47A1 *white phosphorus* bomb. Containing about 93 pounds of phosphorus, the bomb upon impact scatters the flaming material over an area 50 to 100 yards in diameter, producing dense clouds of white smoke. Upon contact with the human body, the phosphorus causes serious burns which are most difficult to heal.

*Jellied-oil* bombs have proved tremendously destructive in raids on factories, rail centers and shipyards. Three types now in wide use by the AAF are the six-pound M69, the 100-pound M17A2 and the 500-pound M76.

The M69 is hexagonal in shape. Bursting upon impact, it throws flaming jellied-oil from its tail 25 yards in all directions.

The M17A2 has a thin-walled, rolled steel cylindrical body, 45 inches in length and eight inches in diameter. When empty it weighs only 20 pounds. Formerly filled with gasoline mixed with crude latex, caustic soda and coconut oil, it now contains jellied-oil which is hurled in flaming chunks over an area 40 yards in diameter. The solidified oil clings to whatever it strikes and burns for several minutes.

**T**HE M76 is the most recent type of incendiary to plague Germany. Known as the PT or gel-filled bomb, it carries a mixture of jellied-oil, finely-powdered scrap magnesium and other ingredients. When combined with other incendiary material, the ground magnesium becomes a highly effective fire agent which is exceptionally difficult to extinguish.

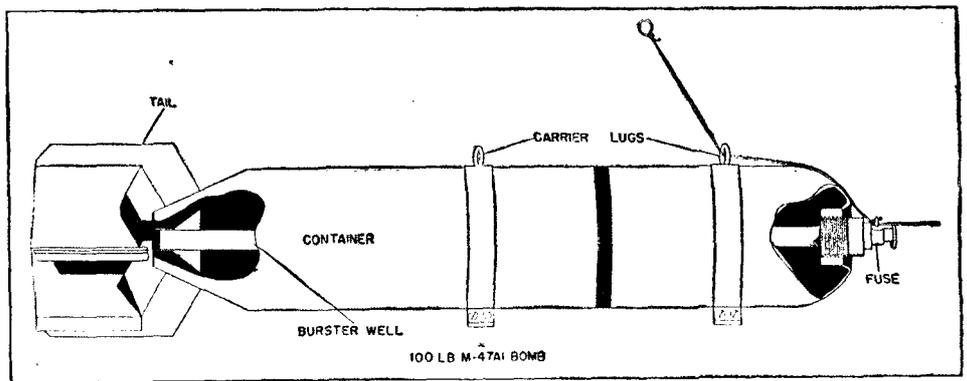
Because of their light weight, the magnesium, thermate and six-pound jellied-oil bombs are released in clusters, later dispersing to fall individually.

The M17 *aimable cluster* is the latest development in incendiary bomb-packing. Having a nose and tail like an ordinary bomb, it speeds earthward with precision. When the projectile reaches an altitude of about 5,000 feet, a primacord charge is exploded by a time fuse and the cluster breaks open to distribute its load over an area 300 feet in diameter.

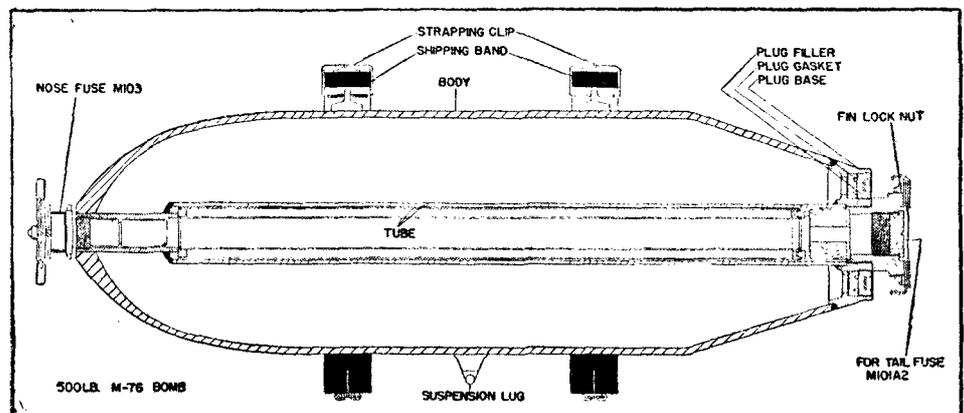
Permitting far greater accuracy, particularly with the small two-pounders, the aimable cluster offers vast improvement over the earlier-devised cluster which opens automatically when released from the bomb bay and disperses its packages high above the target.

The aimable cluster carries 165 two-pound bombs, 110 four-pounders or 38 six-pounders. The older type cluster, in its 100-pound size, packs 51 two-pounders, 34 four-pounders or 14 six-pounders; in its 500-pound size, 192 two-pounders, 128 four-pounders or 60 six-pounders.

Some bombs in each cluster contain a small but lethal charge of TNT. Their delayed explosion discourages extinguish-



Scores of incendiary bombs are seen hurtling on their fiery mission toward the Continental Gummiwerke plant, Hanover. Targets such as this plant, which was the Nazis' chief producer of airplane tires, are highly vulnerable to the destructive fires created by incendiaries.

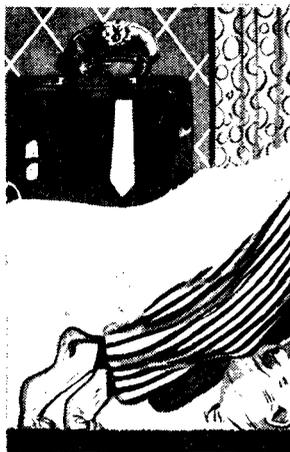




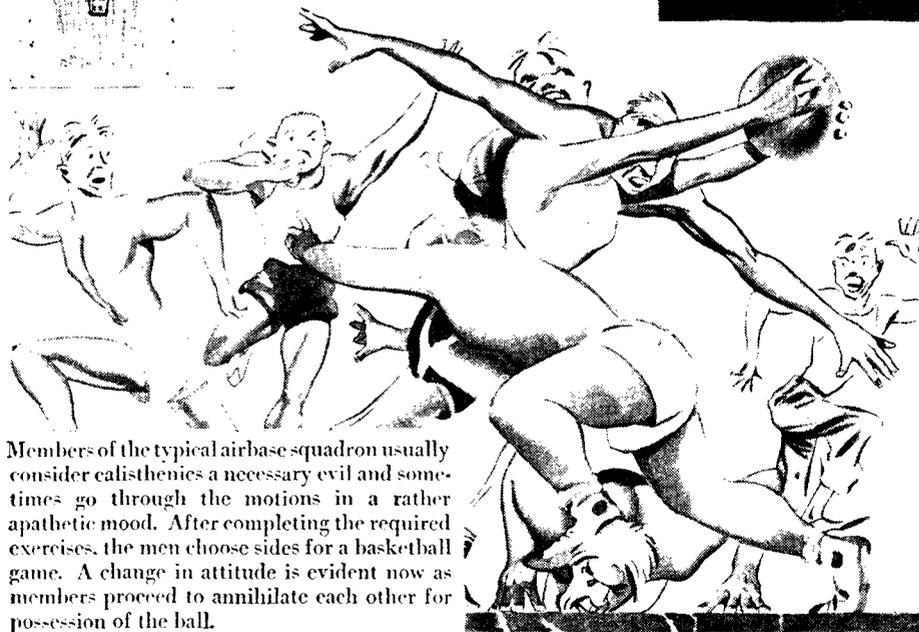
# PHYSICAL FITNESS (DOMESTIC)

By *Lieut. Wm. J. Lent*

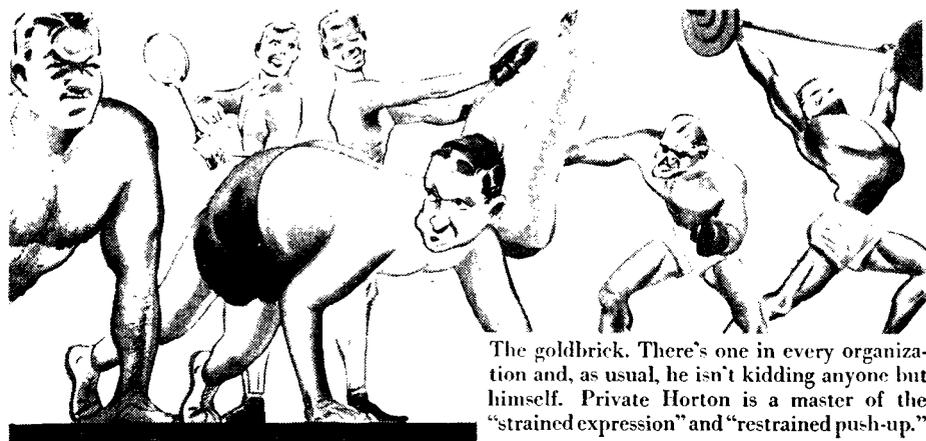
The post order, calling for fitness tests for all men under 40, catches Major McNicol, base finance officer, with his muscles down. In his first trial he gives his all on the pull-ups despite distractions by mythical PT gremlins and a diabolical-appearing instructor who keeps score.



Nowadays many a Washington apartment doubles as a gym and groans to the cadence of the leg lift as Headquarters officers comply with the memorandum on morning and evening workouts. Colonel O'Gripe's wife is in hearty accord with the program that is making progress toward one goal in particular—that of deflating her husband's bulbous mid-section.



Members of the typical airbase squadron usually consider calisthenics a necessary evil and sometimes go through the motions in a rather apathetic mood. After completing the required exercises, the men choose sides for a basketball game. A change in attitude is evident now as members proceed to annihilate each other for possession of the ball.



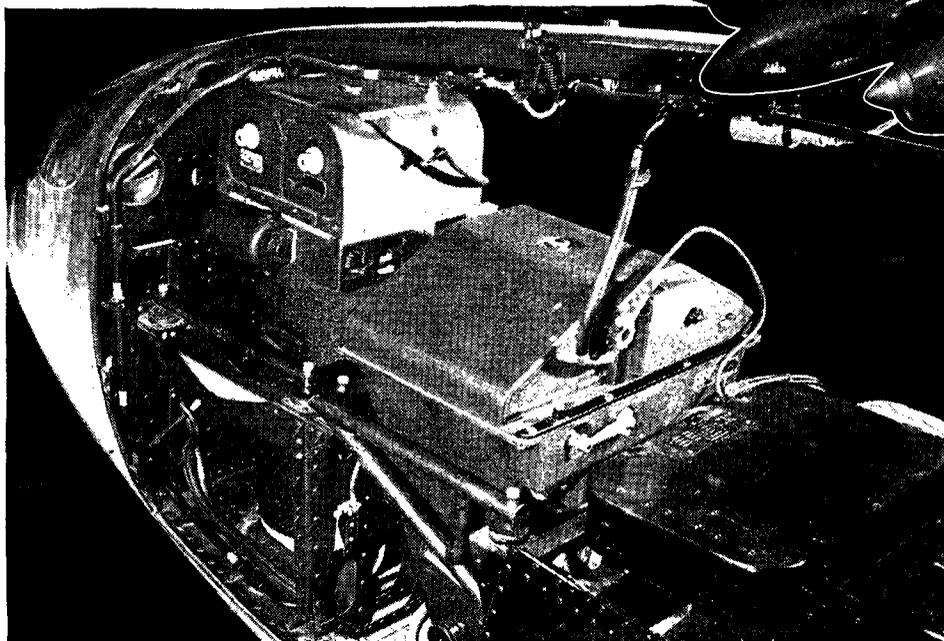
The goldbrick. There's one in every organization and, as usual, he isn't kidding anyone but himself. Private Horton is a master of the "strained expression" and "restrained push-up."



The greatest stimulus to physical fitness is the competitive spirit. Colonel Newlife is nearing 60 but voluntarily takes the test monthly. Here he proudly displays his rating card to a couple of junior officers. It's a cinch the youngsters will be out to beat the colonel's record of 60 sit-ups, 12 pull-ups and 55 seconds for the shuttle run.

# PHOTO-RECONNAISSANCE

## A One-Man War



Cameras replace guns in the nose of the F-5 (stripped-down Lightning). A net saving of about 400 pounds increases the normal speed and range.

By Herbert H. Ringold

AIR FORCE Staff

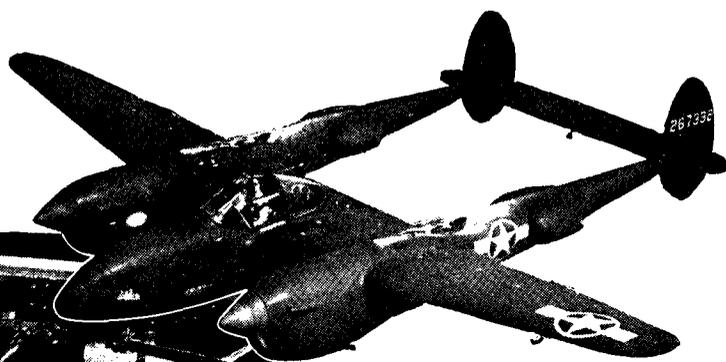
**I**N England, A-2 wanted to know how many freight cars the Germans had at a particular marshalling yard and whether the cars were loaded or empty. In the South Pacific, the Navy requested information concerning the precise nature and location of all hidden reefs in the waters just off Arawe, New Britain. Bomber command in China required a report on the number of enemy aircraft based at an airdrome on Formosa, including specific details as to their type, armament and dispersal position. In India, facts were desired to show how and where the Japs were getting freight cars over a section of the Irrawaddy river after the only bridge over it had been bombed out. Allied headquarters in Africa wanted to know the location of enemy airdromes on Sicily, the number, type and placement of all defensive artillery protecting the fields, the best method of approach for our ground forces and the strength of the enemy troops.

Photo-reconnaissance supplied all of this information.

At the marshalling yards in occupied France, pictures established that the Nazis had 186 freight cars. Interpretation by men familiar with railroad procedure determined that approximately 95 of the cars were fully loaded. Strafing planes were sent out to shoot up the works.

When landing boats invaded Arawe, the helmsmen carried small photographs which charted the location of the hidden reefs protecting the invasion point. Pictures given to the attacking troops showed the exact position of enemy gun installations. Our landing casualties were "extremely light."

Bomber command in China was informed that fifty Jap planes were based on Formosa. A detailed map was drawn up from pictures supplied by photo-reconnaissance and the complete method of Japanese aircraft dispersal was indicated. The target was attacked in the morning; that afternoon PR pilots found that thirty of the enemy's planes had been destroyed. No further missions were needed immediately.



"Photo Joes" in India discovered three different places where the Japs were putting freight cars on barges and floating them across the Irrawaddy river. An operation was scheduled to break up this important supply line.

In the Mediterranean theatre, photo-reconnaissance planes flying out of Malta provided Allied headquarters with detailed information on twenty enemy airdromes on Sicily. The Sicilian air war was waged largely on the basis of these photographs, and the strategy of the ground forces was not finally determined until recon pictures showed where and how the infantry could best attack.

PR pilots have one assignment: find out everything about the enemy. Exactly how much damage did the Fortresses do to Regensburg? Are the Japs moving convoys down to reinforce Truk? What are the principal German flak installations on the bomber route to Berlin? What is the type, class and name of the German boat hidden in a Norway fjord? Do the Japs have barbed wire protecting their airfield on Bougainville? Everything the enemy has done, is doing and will do—that's the information the PR boys must get.

To bring back their pictures, they fly wherever the bombers go—and, now and then, where the bombers won't go. Their planes are completely unarmed. There are no escorting fighters. They fly up to nine-hour missions without co-pilots, automatic pilots or box lunches. Usually, the missions are flown above 25,000 feet, which means oxygen all the time—and you can't eat through an A-10 mask. They fly on instruments over unfamiliar territory through weather which sometimes turns back the bombers. Yet they have no navigators or radio operators. The PR pilot fights a one-man war.

They often cover one target at 30,000 feet and another from 300 feet, both on the same mission. At high altitudes they have to watch for enemy fighters; on the deck they must dodge flak and small arms fire and, at the same time, pilot

their planes, navigate, line up the target for a good photograph, watch their instruments and keep a sharp eye out for targets of opportunity.

However, PR pilots feel that they are in less danger than other combat airmen in the AAF. Capt. Joe D. Scalpone, veteran photo-recon pilot, comments: "Protection? We have more protection in our unarmed planes than the boys in the bombers. We've developed a technique for staying out of trouble. That's easier than fighting your way out."

Photo-recon pilots won't be able to tell their grandchildren about the enemy planes they shot down. When an enemy is sighted, their instructions are to get out of the area immediately. But Col. Karl L. Polifka, CO of a recon group, argues, "The average fighter pilot, if he's lucky, knocks down ten enemy planes before his flying career is over. The average PR pilot at the end of fifty missions will have photographed a thousand targets, which is a hell of a lot more important."

The vast majority of PR missions are made in stripped down P-38s—F-5s. Modification of the Lightnings for photographic purposes included the removal of guns and firing mechanisms weighing 900 pounds, and the installation of camera equipment totaling 500 pounds. The net saving, together with a smoother nose made possible by removing gun ports, has greatly increased the normal speed and range. Extra belly tanks are part of the standard equipment.

Camera installations are of two types. In one instance, two cameras take overlapping pictures, shooting straight down from a single window. The trimetrogon method, on the other hand, consists of three cameras shooting three different surface views. One is parallel with the ground and is flanked by two others whose optical axes are depressed thirty degrees below the horizon. The result is a horizon-to-horizon photograph.

There are three standard camera types. The K-17 with a six-inch focal length used for general orientation and for charting purposes; the K-17 with a 12- or 24-inch cone and the K-22 with a 24- or 40-inch cone for large scale pinpoints over strategic targets from great heights; and the K-18 with a 24-inch focal length for strip photography. When minute detail is not required, the small focal length may be used. The resulting photograph will cover a large area but show only its general characteristics. When information concerning a specific installation is needed, the larger focal length is used to provide a picture covering a very small area but indicating its characteristics in precise detail.

Working the camera is a PR pilot's simplest job. All he does is push a button and the camera works automatically. But determining the right time and the proper position requires a high degree of

## Without guns or escort, our PR pilots stick their noses into the enemy's business for information which helps determine what we do, when we do it—and then proves what we did.

training. Night photographic work has added to the complexity of PR missions. Magnesium flash bombs are dropped to light up the target area. Recent experiments with Edgerton flash units—a system of electric charges—have been made with considerable success. All night missions are flown in B-25s or A-20s.

According to the table of organization, photo-reconnaissance units in combat areas are directed by a priorities board which operates under the theatre commander and determines the over-all policy. Actually, PR units are highly flexible organizations, operating for the air forces, various branches of the ground forces, the Navy and our Allies. In the Mediterranean theatre, it was not unusual for PR pilots to fly missions for bomber command, the French Army, the Royal Navy and the American Infantry, all in the same day.

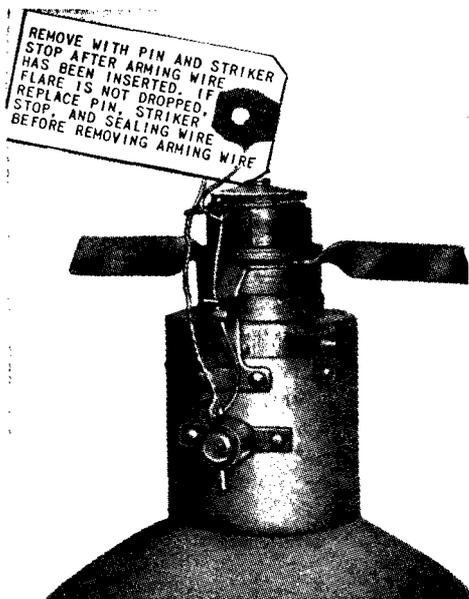
An examination of the function of photo-reconnaissance units in the various theatres will show that although the type of their work varies with the needs in each theatre, their overall purpose is always the same. Find out as much about the enemy as the enemy knows himself.

One of the principal functions of photo-recon in the European Theatre of Operations, for example, is bomb damage assessment. It is necessary to determine exactly how much damage our bombers have done to their targets. To get this information, PR pilots fly over the bombed area, often within an hour after the bombers have left. They wait at least that time for the smoke to clear and then they come in generally from above 25,000 feet, take their pictures and get out in a hurry. Within a day, higher headquarters can determine if the mission was successful, and if and when another attack must be scheduled.

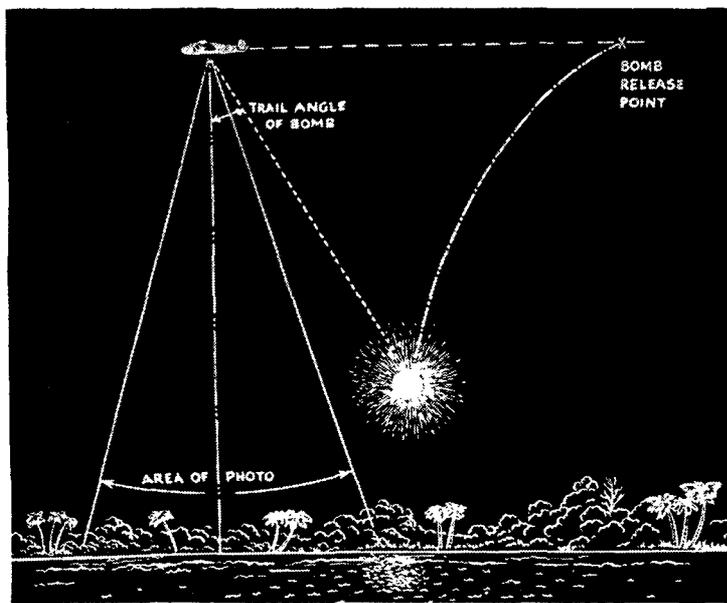
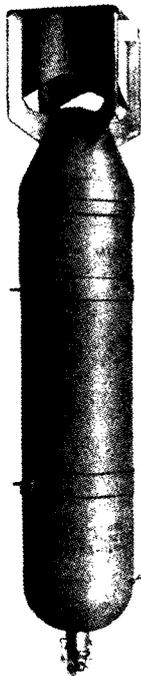
If the target has been bombed successfully, PR pilots watch it on a regular schedule. The enemy will usually begin to rebuild, and we want to know exactly how he's coming along. His activities are carefully followed while he is using up valuable man hours and critical material. Then, when he is just about finished, the bombers come back. That is one of the answers to why the heavies keep returning to Brunswick, Hamburg, Wilhelmshaven and other consistently at-

Returning from another mission, a PR pilot found this target of opportunity. Interpretation determined that it was a synthetic rubber plant in Germany, high on the bomber priority list.





At right is the photo flash bomb used for night aerial photography. At the peak of the flash, it provides about one billion candlepower. Above is a close-up of the bomb's fuse head.



This diagram shows the principle of night photography. The photo-bomb explodes behind the plane and a photo-electric cell works the camera.

The photograph below was taken from a B-24 at night from 10,000 feet. The glare on the left resulted from the explosion of the photo-bomb.



tacked areas. Hamburg was covered every day to see how many more raids would be required to knock it out. The submarine pens at Vegasak were watched once a week, for a month. They were hit when the Nazis had them almost reconstructed.

In addition to bomb damage assessment work, PR pilots have a routine job of watching important German installations just to find out what's going on. Sixty-five enemy ports from France's Mediterranean to northeastern Germany are covered at varying intervals, some as often as every two days, others once every two months. Four hundred enemy airdromes are visited on a regular schedule. Pictures of 35 factory airdromes are made about once a month. Twenty-nine U-boat construction yards come in for attention once every two months, some every two weeks. In addition, gun installations on the coast, navigation beams and radio detection stations are covered at intervals of from two weeks to two months.

Now and then, a PR pilot will come back with a lucky strike—an important target of opportunity. Maj. James Wright, returning from a routine mission near Huls in southwestern Germany, followed normal procedure by turning on his cameras to use up the unexposed film on the chance that he might find something. He did. Interpretation of his pictures showed that the Germans had built a large, seemingly important factory in that area.

In cases of this nature, the target is not attacked immediately. It is necessary, first, to find out what the factory is manufacturing in order to determine how important it is. Then, bomber command wants to know what kind of material it is made of so they can decide how best

to attack it. The location of defending fighter fields and flak installations must also be discovered to pick out the best route and method of attack. Photo-recon pilots looked after that factory with loving care on an almost daily basis. It turned out to be a synthetic rubber plant, high on the bomber priority list. A special mission was made to get it—the entire operation based upon information supplied by photo-reconnaissance.

The Germans realize that our PR pilots bring back vital information. As a result, they give special attention to attacking these unarmed, unescorted planes. From detection devices, they know immediately when a PR pilot comes poking into Europe. PR pilots must master the fine art of faking in order to escape.

Major Wright reported a mission he planned for one of his pilots. He relates, "We sent him across the channel near Dover at Abbeville and faked a route one hundred miles north of Paris. As he went due north of that city, he suddenly cut down to Romilly, fifty miles to the

southeast. From there, he made a sharp turn northeast into Paris and covered three important airdromes. Then, he headed for Dieppe on a continued northeast route. But he executed another reversal and turned southwest to take the airdrome at Beauvais. And we finally brought him back on a circuitous route which included a fake into southern Germany. We have to do that kind of flying all the time."

ONE of the most important jobs of the PRUs based in England has been the securing of photographic information vital to the invasion of western Europe. The location of every important highway, bridge, river, mountain, forest and town has been provided to the proper authorities. Practically every enemy airdrome has been covered to show its defenses, the position of hangars, gas tanks, dispersal areas and the best land approach for our ground troops. Artillery maps have been made to show the exact spot of the enemy's installations, and to pick

out proper positions for setting up our big guns. The defenses of Fortress Europe are no secret; we have millions of pictures so detailed that they even show enemy machine gun positions. From 30,000 feet, a PR picture will reveal as little as a six-foot elevation in the ground. Barbed wire can be picked out with relative ease, and you can count railroad ties.

The European coast has been photographed more often than the most popular Hollywood star. Pictures of certain locations have been taken three times a day to determine the nature of the tides in the early morning, at noon and in the evening. The exact height of barriers erected by the Germans to protect their installations is known by headquarters. What kind of bridge will be needed to cross a certain river? Photo-reconnaissance knows. Do the Germans have 88 mm guns encased in concrete along a certain road? That information is available on PR pictures. Where is the best place to land our bombers in Europe? Look in the files—the photographs are there. Photo-reconnaissance is providing all the branches of the service with complete and detailed pictures showing the position of the enemy, his strength and firepower, and the best routes of attack.

The function of photo-recon units in the South Pacific is somewhat different from that in England. Original mapping work was one of the first jobs given to

PR pilots based on Australia and New Guinea. Most of the available maps had been charted back in 1880, so the PRU boys had to map about 100,000 square miles of territory. After the over-all area had been covered, specific operational requests were fulfilled.

There are no landings made in the Pacific without pictures taken by photo-reconnaissance. Every inch of the ground is photographed to show the best attack point, the proper method of approach and the extent of the enemy's defenses. Before paratroops were dropped at Nadzab, New Guinea, photographs showed what the area looked like. Buna and Salamaua were bombed from pictures taken by PR pilots. At Arawe and New Gloucester, every Jap installation was detailed for the invading ground forces.

Remember that attack on Wewak when we caught 200 enemy planes on the ground? That mission was made as a direct result of photo-recon information. The airfield had been watched daily as the Japs brought in their planes. One day, a picture showed that the enemy had aircraft lined up wing-to-wing-tip. That was the beginning of the end.

On missions over Rabaul, our bombardiers carried small photographs showing the position of whatever installations were still standing. In the Marshalls, our landing troops had pictures of beach contours, elevations and enemy positions,

all provided by PR pilots. Photo-reconnaissance is building up a similar file on every island along the route to Tokyo.

In many instances PR missions are successful if they provide negative information. Such was the case in operations over the Wakde Islands, north of Rabaul. Information was received that the Japs were pouring planes into these islands, and headquarters wanted to know exactly what was going on. Usually, PR planes fly alone, but this mission was so important that two planes were dispatched just in case one did not return. But both ships got back with information that the Japs had only fifteen planes in the islands. As a result, our bombers were able to hit Rabaul in strength without worrying about interception from Wakde.

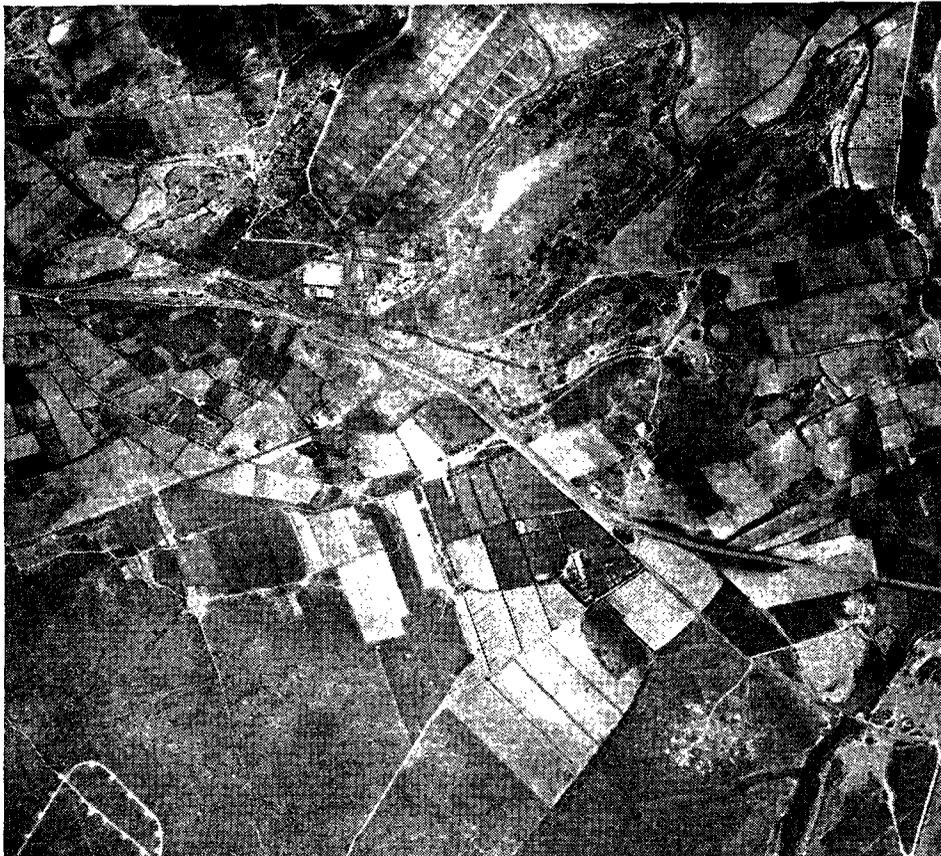
**D**UE to the importance of naval activity in the Pacific, much of the photo-recon work there has to do with enemy shipping. When pictures are taken of an enemy vessel from 30,000 feet, first phase interpretation can indicate the type of craft. Second phase can tell you its name. And, PR pilots jokingly claim, that third phase interpretation can count the number of men on the deck and indicate whether the fourth man from the left had a shave recently.

Down in the South Pacific, PR men fly long hours over open water and jungle. Often, they fly up to seven- and eight-hour missions. On the Wakde operation, Maj. Alex Guerry was gone for seven and a half hours. As he says, "That's a lot of sitting on your rear end." But requests for photo-recon missions are numerous and the vast distances create an added problem. Maj. John Foster is reported to have told a liaison officer of the 5th and 7th Air Forces that "you want a picture of every wave between New Guinea and New Britain, and a shot from behind every tree on every island in the Pacific."

In the Mediterranean theatre, the photo-reconnaissance situation was different again. The job there was more of a tactical nature, with operations being conducted in direct support of the attacking ground forces. Following the 5th Army in Italy, photo-recon pilots made three missions a day right over the battle lines to pick out the German defenses and help select artillery targets. One of the neatest tricks pulled by the PRUs was the way they watched the enemy attempt to evacuate Bizerte. German boats were observed coming down from Corsica. When they landed at Bizerte, pictures were taken regularly. From the size of the boats, experienced photo-interpreters determined exactly how long it would take the enemy to load them. When the Nazis had their ships fully loaded with retreating troops, the bombers came over and hit them in force.

In the battle of Sicily, PR helped

Photo-recon planes need not go down on the "deck" to get detailed information. Even the naked eye can determine detail from this photograph taken from about 30,000 feet over France.



Allied headquarters predetermine exactly what the Germans were going to do. When it became apparent that the Luftwaffe would have to evacuate Sicily, our next move was to decide where they would go. At Gerbini, they had used a system of satellite airfields so it was suspected that they would probably do the same thing when they fell back on Italy. Foggia was selected as the point to which they would most likely retreat, so PR pilots mapped it long before the Germans moved in. They covered the fields there on a daily basis. When the Germans did transfer their planes to the satellite airdromes around Foggia, photo-reconnaissance showed the actual location of every airfield and the precise position of each airplane on the fields. Attacking fighter pilots carried photographs with them detailing these locations and the fields were strafed with great success.

During the attack on Pantelleria, photo-recon coordinated with bomber command to an unusual degree. PR pilots went over the target just before the bombers attacked. Then they swung out to sea while the strike was made. After the heavies left, the PR planes came back and had a "before and after" shot on the same roll of film.

Coordination from a time standpoint was also worked out with precision. Flying out of Malta at first light, PR planes photographed all the airdromes on Sicily, then continued to Tunis for a landing. Their films were processed in an hour

and a half and flown to Strategic Air Force headquarters before 1300. The bombers went out after the indicated airfields in the afternoon and photo-recon pilots followed within an hour after the attack. That evening, bomber headquarters knew the exact damage done.

In Italy, as in England, continual routine missions are run to watch the important German installations in the northern part of the country and in southern France. Most all strategic bombing targets are selected from pictures provided by photo-reconnaissance.

The function of photo-recon units in India and China combine all of the operations of every other theatre. Original maps must be made of uncharted territory, bomb damage assessment is provided, and information for bomber missions comes in on a daily basis.

**T**HE Myitnge bridge over the Irrawaddy river in Burma had been the target for a great number of bomber attacks until it was finally knocked out. But photo-reconnaissance proved that the Japs were still getting materials across without using the bridge. From pictures taken on a daily basis, interpreters were able to count the number of freight cars on both sides of the river. A series of pictures showed that the number of cars on the far side was increasing while the number on the near side was decreasing. PR pilots covered the area thoroughly and discovered three places where the Japs

were using barges. That was all bomber command wanted to know.

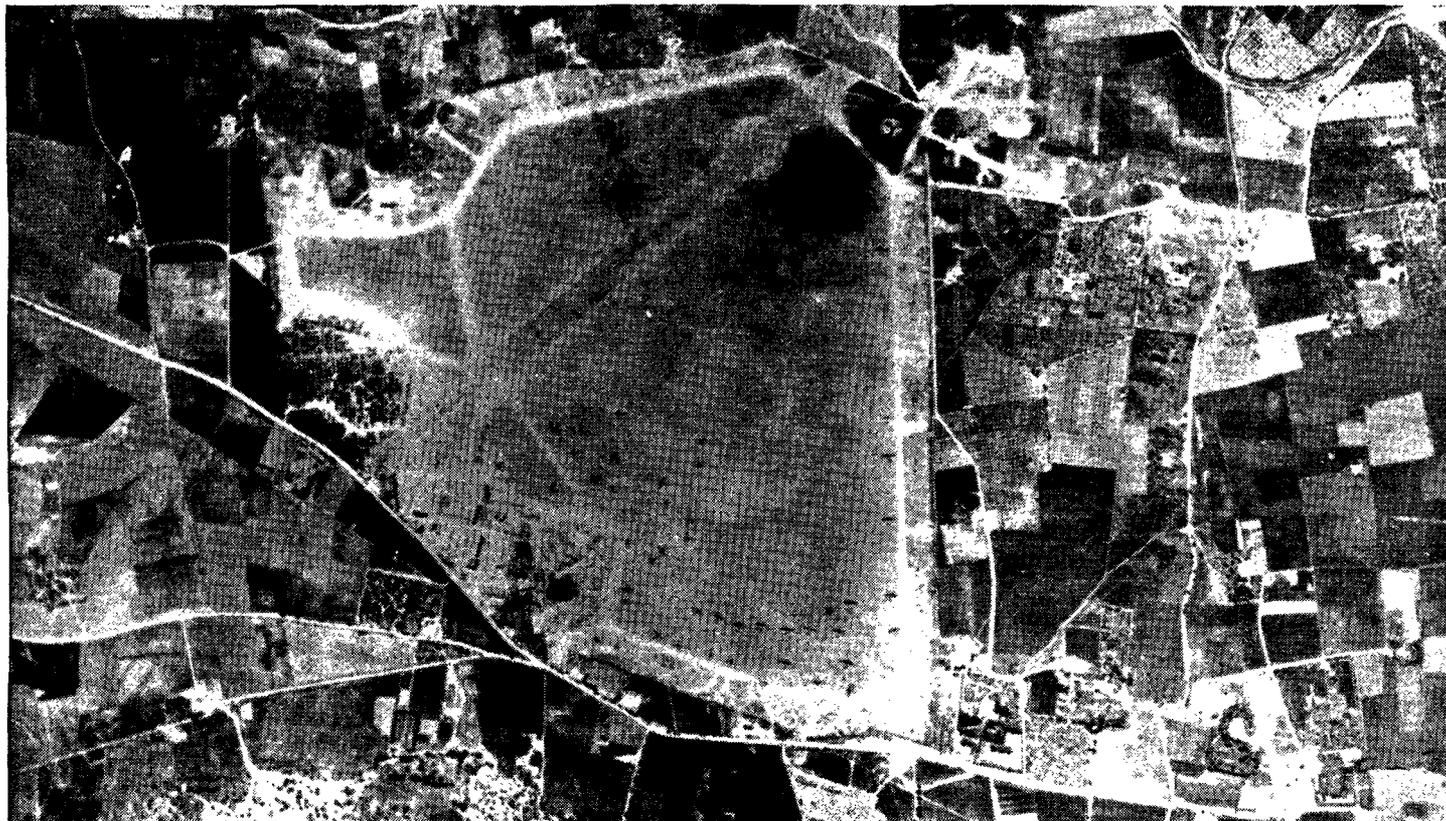
Bomber crews in India attacked an important railroad roundhouse in Burma, but reported that only half of the structure had been hit. A second mission was planned, but photo-recon pilots proved that the structure actually had been completely gutted. Photo-reconnaissance saved the bomber crews a mission over a target which had already been destroyed.

In Burma, most operations stop during the monsoon season. But there is a dry area in central Burma where it was thought the Japs were continuing their activities. Headquarters wanted to know what was going on in the area so they would have information on hand when our bombers would be able to get off the ground. PR pilots flew through the weather on an eight-hour mission to a point about 450 miles from their base. They found boats going up the river, carrying supplies to a construction camp which was building airfields. When the weather cleared, that area was first on the list for our bombers.

In every theatre of operations, wherever our aircraft are based, photographic reconnaissance planes are stationed nearby to provide Operations with the necessary attack information, select special targets and indicate the damage done to them. The over-all job of photo-recon was best summed up by a PR pilot in a letter home. "My job," he wrote, "is sticking my nose into other people's business." ☆

Photo-reconnaissance pilots make routine missions over all important enemy airdromes. From this picture taken during the battle of Sicily,

interpreters counted 122 German aircraft on the Milo airfield. There are 60 single-engine aircraft, 29 medium bombers and 33 transports.



# Sky Quirks

By Lieut. Herbert G. Dorsey, Jr., and Lieut. Oscar Shaffel

ARCTIC, DESERT AND TROPIC INFORMATION CENTER

**P**ROBLEMS of visibility faced by flyers and ground travelers in arctic and desert regions should be thoroughly understood and mastered for successful operations. Refraction phenomena and some special varieties of mirage, caused by thin air, ground haze, dust storms and other atmospheric factors in these areas, may not have been even paragraphs in training textbooks back in the States.

The extreme transparency of the air in both arctic and desert terrain has given rise to this formula in judging distances: "Be extravagant, then multiply by three."

Those parts of mountains which normally can be seen over the earth's curvature appear dark and solid even at a distance of 100 miles. And flying high, with vision less hindered by the earth's rotundity, Admiral Byrd, Henry George Watkins and Sir Hubert Wilkins reported seeing or photographing capes and mountains in the arctic and antarctic at a distance of 200 miles.

A disadvantage of this exceptional visibility is that novices on snow or sand become overconfident of their ability to reach shelter or vegetation. Unwary pilots, in addition to misjudging flying distances, often make landing mistakes by underestimating altitude and leveling out high.

Clear air is clean air. Great visibility results from the absence of foreign substances in the air, especially water. The cold air of the northern winter can absorb little moisture. On the other hand, there is almost no moisture in the desert to be absorbed. And there is little smoke cluttering the air where the population is so small as in these regions.

Arctic and desert skies are not always clear, however. In the northern summer the air absorbs moisture, just as warm air does anywhere. Desert air is less clear at mid-day than during the morning and late afternoon. The great heat at the surface about noon causes the air to rise in convection currents. The resulting turbulence is likely to swirl loose dust and sand into the air. At morning and evening, when temperatures close to the ground and higher up are nearer equal, there is less blowing around of dust.

Dust and sand storms may make a return to the airbase difficult. The pilot

must watch for breaks and clear spots and get down through them quickly before they close. Since the storms move, the pilot by appraising their direction and speed can decide whether to try to beat them into the field or to wait them out. Sometimes a narrow dust area may go as high as 10,000 feet, yet the airplane can be through it in a minute or two. An extreme of this is the dare devil, a dust swirl which may reach hundreds of feet into the air. These are easily avoided.

Another useful detail is that often dust will be set going by wind in a valley, but at higher levels there will be no dust because hillsides and hilltops are weathered and swept bare of loose sand and dust.

A dangerous visibility condition in the north is ground haze resulting from a combination of low cloudiness and new snow. Without sun, there is no shadow. All surface objects are obscured, and contrast or relief is lost. A ground traveler can fall into an open crevasse, which is invisible right before his feet.

When this haze occurs, it is even hard to keep one's balance because there are no points of reference such as the horizon. A man straightening up suddenly from a bent-over position may fall over backward because he has no way of knowing when he is perpendicular.

**W**HEN there is the ever-present danger of encountering the ferocious polar bear. In the haze, the animal's fur blends with the snow-covered landscape. By the time the bear's black nose and claws catch the traveler's eye the huge, shaggy-haired killer is poised for the attack. Escape, except through dropping the animal by a quick, lucky shot, is impossible.

Experienced pilots dread "flying in milk." Because of limited visibility and lack of contrast, it is difficult to determine whether the plane is at twenty or 200 feet. Even with fair visibility, altitude is hard to judge. There are several reports of plowing into the snow or hitting a wing tip when the pilots thought they had plenty of altitude.

It doesn't take an Einstein to know

about refraction—the deflection of light rays in passing from one medium to another of different density. For example, a stick appears bent when placed part in, part out of water. Refraction occurs also when the air through which light travels varies in density. Light travels faster through rare air than through dense air. Thus visibility changes as the temperature changes at different levels, expanding and contracting air.

**S**URVEYORS must make adjustments in their figures for air temperature and altitude, although ordinarily the effects are slight. The higher one goes, the less the air pressure, because there is less air above bearing downward. But this thinning of the air is offset to some extent by the tendency of the air to get colder with higher altitude, and therefore to contract. On the other hand, when the upper air, in addition to its low pressure, is also warmer than ground air and, therefore all the thinner, refraction of light is emphasized. These "temperature inversions" cause interesting visibility effects.

One effect of the bending of light rays in rarefied upper air is the "superior" mirage, the result of warm air layers over colder ones. Objects at great distances seem larger. They loom and come closer. Objects far over the horizon suddenly become visible. The portion of light in the higher, thinner air will move faster than that in the lower, denser air, and the path will be curved toward the earth. Light rays originating below the horizon will thus be curved around the earth.

This looming or towering effect is a common phenomenon in high altitudes. Usually, however, superior mirage illusions in the north involve great distances only, because the range of temperature differences is slight (ten degrees centigrade in layers hundreds of feet thick) and the rays thus are bent in flat curves.

Temperature inversions can bring to the view of an observer either on the ground or in a plane landmarks hundreds of miles away. The distance of the objects seen is deter-

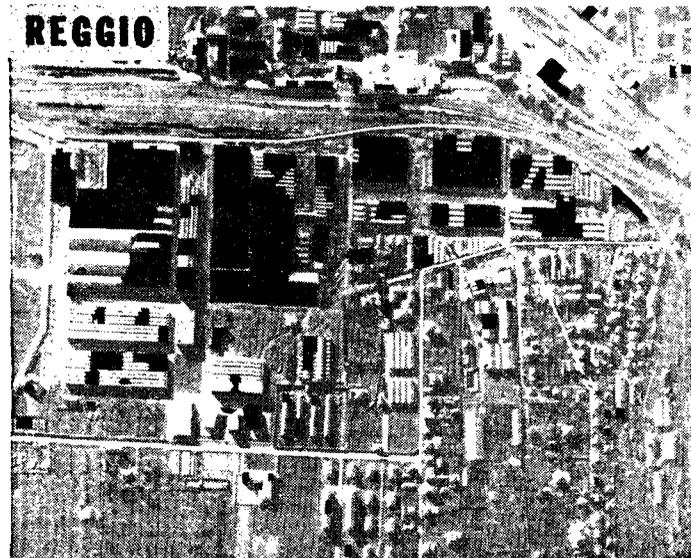
(Continued on Page 56)



This is the Caproni aircraft factory at Reggio in northern Italy, before an attack by bombers of the Mediterranean Allied Air Forces.



Wellingtons and Flying Fortresses blanketed about 29 acres of the 50 acres which the Caproni factory covered. The photo above shows how the area looked following the attack. The hangars, assembly shops, work shops and other installations either have been destroyed or seriously damaged. Black areas dubbed in the picture below indicate components which were completely knocked out.



As part of the January offensive, Centocelle Airdrome was bombed three times by B-17s. The devastating attacks made the Germans place an unserviceability cross on the field, warning pilots not to land.

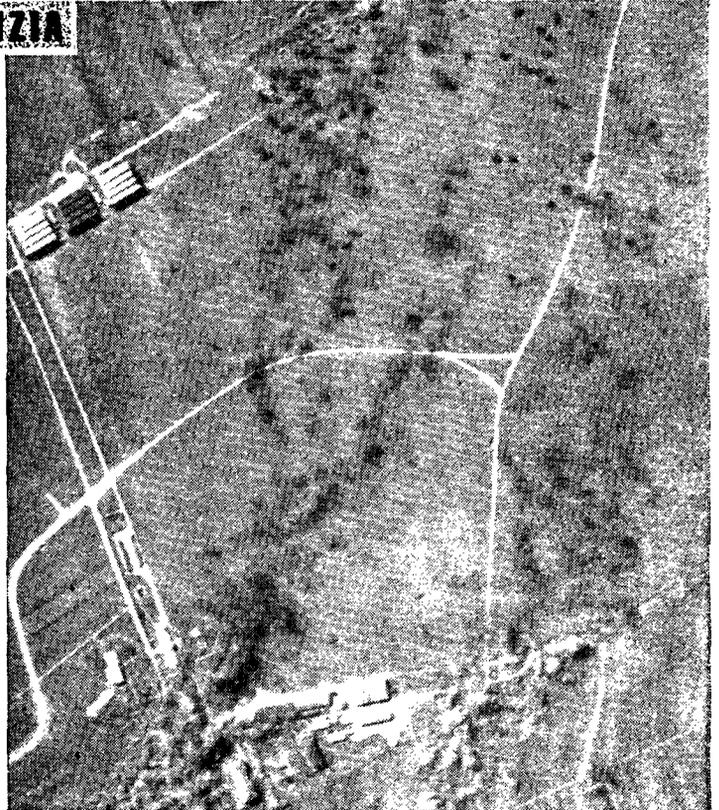
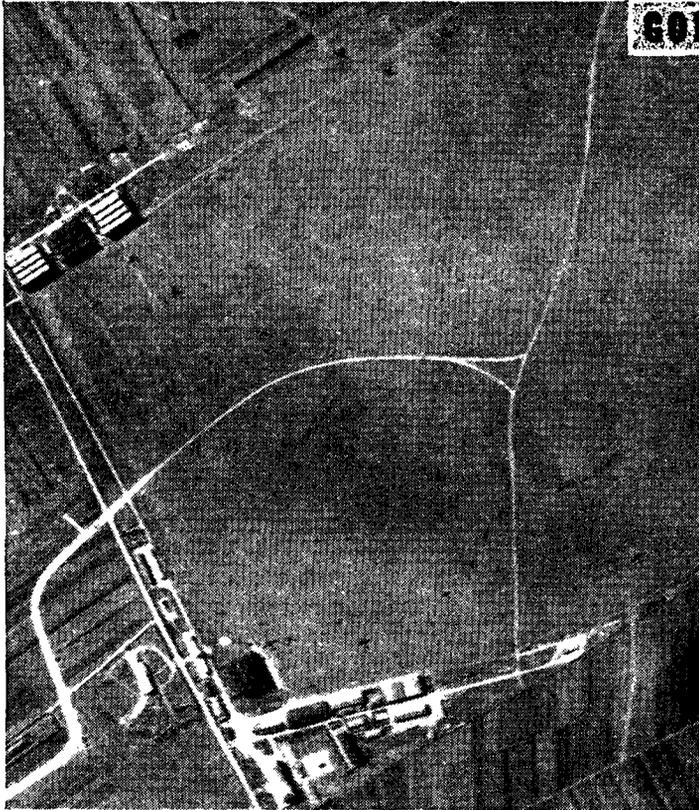


**T**HE Mediterranean Allied Air Forces assist ground operations in Italy by flying a double-barreled offensive against Nazi rail communications and aircraft installations. The campaign against the airdromes was started in January in support of the Fifth Army's landing at Anzio. By January 21, all but one of the major Rome fighter fields were unserviceable, bases for long range German bombers were battered, and the Nazis were seriously handicapped by the destruction of their long range reconnaissance base. The

important fighter fields near Rome were reduced to a jumble of ruined buildings and craters. An intelligence report for this period states: "In the course of these operations a total of eleven airdromes were attacked and rendered unserviceable or damaged so severely as to interfere seriously with their operational utility." The MAAF has followed up these attacks with bombings of Nazi airdromes and aircraft factories all the way up to the Alps, in a continuing effort to keep the Luftwaffe pinned to the ground.

Liberators of the MAAF recently struck at the Gorizia airbase in north-eastern Italy with excellent results. The photo at left shows how the airfield looked to the B-24 crews as they came in for their runs. The

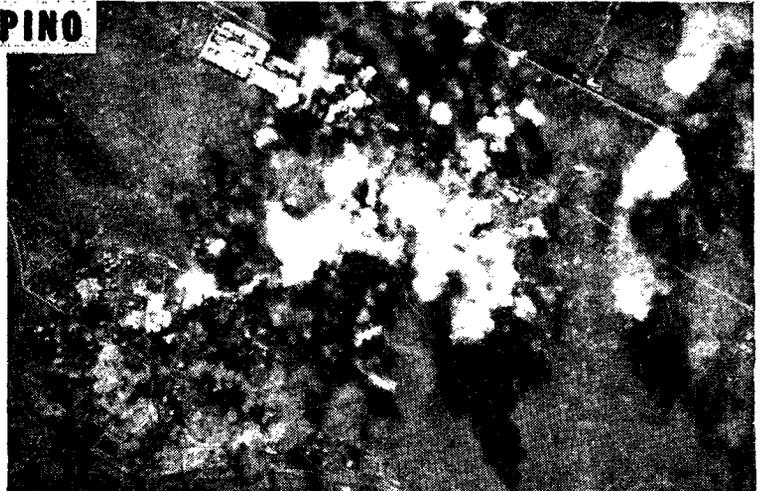
picture at right was taken at the height of the attack which destroyed 33 German planes on the ground. A few planes managed to get into the air but most of these were knocked down by fragmentation bombs.



The Ciampino airfield, German fighter base, is in reality two fields with common hangars and service buildings between them. The photograph at left, taken before the attack picture (right), shows the bomb damage

of previous AAF assaults. At the bottom of the left photo is the Ciampino race track, now used for airfield installations. The attack by 15th Air Force Fortresses on January 19 rendered both fields unserviceable.

**CIAMPINO**



# PREPARE FOR INSPECTION

## TIMELY ADVICE FROM THE AIR INSPECTOR

Administrative



Tactical



Technical

*Matters presented here are informative only and are not to be considered as directives.*

► **Expecting a Discharge?** While awaiting discharge, a man will find it advantageous to acquaint himself with the following subjects covered by the directives indicated:

(1) Procedure for continuing National Service Life Insurance in civilian life. (WD Cir. 336, 1943.)

(2) Availability and location of employment centers. (Sec. IV, WD Cir. 40, 1944.)

(3) Provisions for receipt of mustering out pay. (WD Cir. 50, 1944.)

(4) Requirements and procedure for obtaining the honorable service lapel button. (WD Cir. 79, 1944.)

(5) Advisability of filing an application for disability pension (Veterans Administration Form No. 526) before discharge, if being discharged for disability (WD Cir. 13, 1944, as amended by Sec. V, WD Cir. 84, 1944.)

(6) Procedure for entering claims for items of pay and allowances remaining due and unpaid subsequent to discharge and final payment. (WD Cir. 45, as amended by Sec. I, WD Cir. 86, 1944.)

(7) Advisability of consulting com-

petent legal counsel concerning any will that may have been previously executed. (WD Cir. 97, 1944.)

► **Strong Batteries:** Many a pilot has wished his airplane batteries had more "zip" in an emergency. Technical Order O1-1-66 was written to assure adequately charged batteries in flight, but technical inspectors report that auxiliary power plants are not being utilized for engine starting and ground testing of electrical equipment as prescribed by the directive.

► **Unit Funds:** Do you know the following points about unit funds?

They will not be used for the purchase of motor vehicles for the duration of the war. (AR 210-50, Ch. 11, 14 February 1944.)

Payment of premiums on bonds of Army mail clerks and assistant mail clerks is a proper charge. (AR 210-50, Ch. 12, 23 February 1944.)

► **Conservation:** Crew chiefs can save time and plane parts by avoiding unnecessary replacements. A crew chief over-

ceived a variety of answers which show this basic lesson has not been well taught or well learned. Remember, it is "name, rank and serial number" only.

► **Name, Rank and Number:** It is "name, rank and serial number" only. Inspectors questioning personnel as to what information may be given the enemy have re-

seas was noted replacing a rudder because it had two small bullet holes in it. Inspection showed that the interior was undamaged and that the rudder could be repaired by using some dope and fabric.

► **Overseas Baggage:** An officer going overseas never quits worrying about his personal baggage until he sees it stowed away in his theatre of operations quarters. He can greatly lessen his worries, however, by following the prescribed procedure.

Sec. II, WD Cir. 92, 1944, points out that serious congestion, delays and inconveniences have been experienced at ports of embarkation and staging areas through-

BE SEEING YOU



the forwarding of personal baggage to these installations, transportation charges collect. Authorized allowance of baggage should be forwarded through the nearest transportation officer under government bills of lading. If this is not feasible, baggage should be shipped with transportation charges prepaid.

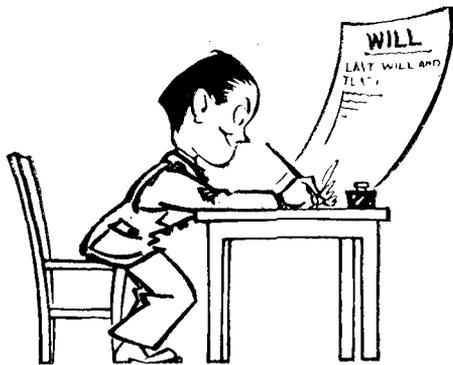
► **Facts and Figures:** How much space is authorized per man on board a troop train? What is the procedure followed by an air task force commander? How are supplies classified and distributed to units in the field during combat? These and hundreds of other questions are answered in the new edition of FM 101-10, "Staff Officers' Field Manual," a compilation of technical and logistical data and pertinent facts regarding organization. The book should prove handy for inspectors.

► **Will Making:** Every person in the military service should give prompt consideration to making a will, if he has not already prepared one. Legal assistance may be obtained from designated officers or from any civilian attorney.

It is highly desirable that all commanding officers urge military personnel to give immediate attention to this matter instead of waiting until arrival at a staging area or port of embarkation. However, a will to be legally effective, must be the free and voluntary act of the per-

Cartoons by Jim Rawls





son making it and under some circumstances the drawing of such a document is unnecessary or undesirable. Therefore, commanding officers will not order or direct any person under their command to make a will. (WD Cir. 97, 1944.)

► **Night-time Maintenance:** An overseas report on an aviation engineer unit contains a training tip that may be applied to many other AAF organizations. It is the importance of being familiar with the operation and servicing of equipment at night. The report states much equipment is serviced only at night, and sometimes the only light is a candle cupped in a can.

► **Tire Blow-outs:** Inspectors report airplane tires are not being given the careful checks due them and many a crew may be "riding for a fall" in a landing. Particular emphasis should be placed on slippage of tires on rims (TO 04-1-11, 8 June 1943.), peeling and cracking of rubber, twisted valves, and oil spillage (TO 04-10-21 December 1943.)

► **Beneficiary Changes:** "Are there any men in the squadron who have been married recently?"

A field inspector, who makes a practice of asking this question first whenever inspecting service records, always get an affirmative answer. Examination



of the beneficiaries' records, however, reveals that in 75 percent of all cases the new wife has not yet been made the soldier's beneficiary. In some instances, the soldier desires that his mother or father remain the beneficiary, but these cases are rare.

► **Responsibility:** The commander preparing replacements for overseas shipment is responsible for insuring that they are mentally and physically qualified for such duty as required by Par. 10, POR.

► **New Numbering System:** With the publication of AAF Reg. 5-4, 14 March 1944, the Army Air Forces took a big step toward speeding up the indoctrination of personnel in regard to publications. Under the new regulation the system outlined in AAF Reg. O-1 will be adopted as the standard procedure for numbering administrative publications. This system will be used by all air forces, commands, posts, stations and airbases in the issuance of regulations, memoranda, instructions or other such publications.

When the transformation of number-

ing systems is completed, AAF personnel, transferred from one command to another or from one station to another, will know where to look, for instance, for a local directive on personnel. It will be in the "35 series." Formerly, an air force might have placed personnel matters in a "75 series" while an airbase was using a different number in filing the same type of publications.

► **Needless Casualties:** A medical officer inspecting hospitals overseas was surprised to find many non-battle casualties - patients who had been burned by gas fires or explosions. One soldier had spilled gasoline on his clothes in refueling an airplane. Later, he struck a match on his pants to light a cigarette. He was hospitalized with first degree burns. ☆

## HERE ARE THE ANSWERS

**Q. How are Service Records of personnel scheduled for overseas shipment indorsed?**

**A.** If the soldier is joining a known shipment for overseas destination, the Service Record will be indorsed to the shipment number and not to the commanding officer of a port of embarkation or the commanding officer of some staging station under the jurisdiction of the port commander. If the soldier is ordered to a replacement pool in a port of embarkation, the Service Record will be indorsed to the commanding officer of the indicated replacement pool. If the soldier is ordered to an overseas replacement depot, the Service Record will be indorsed to the commanding officer thereof, and the special orders effecting such transfer will contain a reference to any project number or other special identifying instructions which caused the soldier's transfer. (AAF Ltr 35-39, 31 December 1943, Subject: "Indorsements on Service Records." Information in this directive supersedes that given in the March, 1944, issue of AIR FORCE.)

**Q. May an officer be granted leave of absence upon release from active duty?**

**A.** Leave of absence may be granted officers relieved from active duty who are not to be separated from the service. Leave may also be granted officers who are to be separated from the service by resignation, if under honorable conditions, or by honorable discharge (as distinguished from discharge (see AR 605-10 and AR 605-230.)) In no case will leave be granted to extend beyond the effective date of the officer's relief from active duty. (Par. 10, AR 605-115, as amended by Ch. 6, 5 February 1944.)

**Q. Will an entry pertaining to time to be made good under the 107th Article of War be made on Page 7 of the Service Record of an enlisted man who was inducted into the service?**

**A.** Yes. If such an entry is not made, the Service Record does not reflect a true picture of service. For example, if a soldier desired to remain in service

after the present emergency plus six months and no entry was made in the Service Record of time to be made good under the 107th Article of War, this time would not be deducted in computing longevity.

**Q. May reimbursement be received for taxicab fares incurred while traveling on a per diem status?**

**A.** Expenses incident to taxicab rides between places of abode or business and stations, wharves or other common carrier terminals, except air terminals, are reimbursable. (Ch. 5, AR 35-4820, 11 February 1944.)



**Q. Is the abbreviation "AAF" proper in official correspondence?**

**A.** In all cases where verbal or written reference is made to the Army Air Forces, the abbreviation "AAF" will be used in place of "Army Air Forces," unless prohibited by Army regulations. (AAF Memo. 80-8, 16 December 1943.)

**Q. What limited service officers and warrant officers are considered qualified for overseas service?**

**A.** Those whose defects are static in nature and not subject to the development of complications. (WD Cir. 102, 1944.)

**Q. Is a certificate required in the remarks section of the payroll in those cases where additional pay for flying is claimed by enlisted persons?**

**A.** Yes. Change 7, AR 345-155, 8 February 1944, states that a certificate will be entered on the pay rolls of enlisted persons where additional pay for flying duty is claimed.

By Lieut. Ralph N. Phillips

9TH AIR FORCE

Lieutenant Phillips wrote the accompanying article from notes taken during fifty operational missions over western Europe in the hope that new navigators would gain from it some idea of what to expect if they should be assigned to duty in England. Lieutenant Phillips was graduated from navigation school at Mather Field, Calif., in October, 1942.

To a 9th Air Force B-26 navigator, England resembles nothing so much as a patchwork crazy-quilt. There are none of the straight, well-defined roads and fences to which one becomes accustomed in the States, no space between the towns, no high tension lines to follow; only a hopeless conglomeration of winding roads, vari-colored fields and hills, an occasional railroad and five-mile visibility due to smoke haze. When visibility reaches ten miles, the group weather officer declares that a meteorological phenomenon exists. You do pilotage from 12,000 feet over territory where a mile off course means a strong dose of flak.

In trying to follow course on a British map with a scale of 1:500,000 in which one inch equals eight miles, I soon realized that one major change in my training would be learning to read and do pilotage from British maps. They show wooded areas quite accurately, both in location and external shape, and thus provide excellent check points. Small towns are shown as a small black square, and railroad stops are designated by a small black dash, which is all right except for the fact that there are so many railroad stops that have the same population as a small town, and every one looks exactly the same from the air.

On the British larger scale maps, one inch equals four miles and the scale is 1:250,000. This map shows churches, houses and pubs but with a 240 mph ground speed an inch goes by every minute. If you lose a pencil and bend down to pick it up, you may be lost.

This happened to me on the trip in and because of it, one of my rules became: "When over unfamiliar terrain, don't move your finger from the map, or that last check point will disappear." Probably the best check points on British maps, in the order of their importance, are large towns, railroads, woods, lakes and road intersections. Railroad tunnels

also are noticeable and from 12,000 feet, prominent hills stand out.

Another great difference between U. S. and British maps is the projection from which they are made. U. S. Sectional and Regionals are Lambert conformal projections, with distance measured from mid-latitude in nautical miles. British maps are modified polyconic projections with a constant scale measured in statute miles. This I found to be an asset after I learned to work with statute miles instead of knots, but this change-over took time.

After reporting to our new CO, I was sent, along with the other replacements and original members of the group, to a school where for a week we received intensive instructions in map reading, aircraft identification, bail-out and ditching

**Navigators of our 9th Air Force mediums have many new lessons to learn before they're ready for bombing runs over Europe.**

procedure, and PW lectures, the last of which I classified as first on my things-I-don't-want-to-go-through list.

We later went back to our group and started our training for medium altitude. The practice missions we flew were called "doughnuts" and were simulated raids, with a climb on course, coast out, coast in, initial point, bomb run and target.

These "doughnuts" brought up two more changes from the type of pilotage to which I had been accustomed. The first was the necessity of making out flight plans in advance, with certain check points listed and ETAs shown. This method must be used because there isn't enough time to test check points and get ground speeds and ETAs for the next one. These flight plans are made from available metro winds and are just as accurate as the winds are. The necessity for the second change was shown me in a rather drastic way. We had an eighteen-ship formation up on a practice flight one afternoon about to cross the English coast on the way inland and five minutes behind our flight plan. We were merrily on our way to the theoretical IP when six black puffs of smoke suddenly appeared at our left, accurate for altitude and about

200 yards away. Eighteen Marauders broke into violent individual evasive action, and for the first time, I'll have to admit, it was pretty good. Colors of the day went up so fast they resembled a pyrotechnic exhibition. Back on the ground, I learned that for every XC, group operations must file a "J" form with Flying Control, giving times, places and altitude of crossing the English coast in and out. In training we were allowed a minute's deviation from this time. I firmly believe that the flak was purely a warning, because I have seen examples of British accuracy with their AA. The importance of timing on an operational mission cannot be over-stressed, because attacks and rendezvous are planned to the second; never by minutes.

My group went operational on July 16, 1943, and I found that despite my additional training, I still had plenty to learn. Great Britain is full of balloon barrages, gunnery ranges and restricted areas that we have to go around, for security and safety, and for awhile it was difficult to plan our climb so as to miss these areas and still have room to reach altitude.

THE climb phase usually is easily accomplished, until the formation runs into some unpredictable weather and has to break up to get above the overcast. Immediately after emerging on top after climbing at 1,000 feet per minute at 170 indicated, to get through in the least possible time, the pilot will yell, "Where are we, and where's the formation?" If the navigator is well supplied with luck, he can see the formation reforming and join it, but he must be prepared to give the pilot a heading to the rendezvous which is within thirty seconds of the time given on the field order which comes from bomber command.

If the weather has cooperated with the weather officer and the climb is uneventful, arriving on time for bomber rendezvous becomes the primary objective of the lead navigator. If you can imagine four boxes of eighteen B-26s, all arriving at a certain point within one minute of each other, then each box falling into its predetermined position in the formation without the well-known monkey wrench in the works, you will appreciate the imperative order from bomber command when it says, "be on time."

When the formation has to rendezvous

# EMS IN ENGLAND

only with fighters, the same maxim holds true. At times, the same group of fighter escort is used as close cover for the separate formations of Marauders going in at intervals of, say, fifteen minutes. Fighters must utilize every second to save gas, so you can understand the situation that arises when the second formation of B-26s is a minute and a half late. Fighters won't wait, and I remember one of many abortives caused by tardiness. Our (36-ship) formation was headed for the fighter rendezvous when the lead navigator saw he was going to be three minutes early. He turned and flew away from the rendezvous for five minutes. By the time we had again reached the appointed place, the fighters were gone and we had to return to base.

On another mission, the navigator had two minutes to kill, so he had the pilot do a 360-degree turn, not realizing that the time required for a single needle width 360-degree turn by a normal formation of B-26s is five minutes.

Being on course, especially when over enemy territory, is of major importance. The courses in and out are routed by bomber command to clear the known flak areas. Recently, one of our boxes was off course to the right and turned directly over Dieppe—a strong enemy flak position—and, as a result, some of the ships returned and were out for repairs.

Evasive action is usually taken at landfall, and I've been on raids when it was necessary to continue evasive action the whole time over enemy territory. If they can't get your course, speed and altitude, they can't hit you. Being exactly on course over the target sometimes will mean a good level bomb run, or a run lavishly interspersed with self-preserving evasive action which may be necessary until the last moment before the run. The navigator must be prepared for this and make allowances both in time and position and still come out even. One navigator in my squadron found his pilot doing violent evasive action over a 10/10 undercast and had to resort to D/R to get to the IP and on the bomb run.

If you happen to be flying as navigator in the Number 4 ship, you will probably be deputy box leader and, as such, you must be capable at all times of taking over and leading the box on formation

in emergencies. This requires that the deputy navigator know as much about the target, flak, rendezvous and the flight plan as the lead navigator. Abortives give the navigator another worry, and he must be ready and able to give at any time the heading either to his home air-drome or to the nearest emergency field, depending upon how urgent the case may be.

For every mission there are given two or more emergency fields, the locations of which the navigator should know by sight.

Another duty of the navigator is to get the bombardier lined up on the target.

east part of this town." When you look on the map, there's no town but perhaps just a small number of houses. The best method of location is by determining the target's relationship to a town, railroad, road or woods, or a combination of any two or three of them. Frequently, at target study, the navigator and bombardier will find that if they leave one point and head directly for another recognizable point, they will be on course for the target, and then all there is to do is spot the target and get it in the bomb-sight.

After the bomb run the primary point to remember is to steer clear of flak areas and coastal towns such as Calais, Boulogne and Dieppe. Once it seemed that Boulogne held a magnetic fascination for one of our groups and whenever we saw flak over the town, we would automatically say "there goes the —th." The Germans have had lots of practice on the mediums.

The navigators who aren't box or deputy leaders can assist the pilot by telling him about what time the formation will turn and the next heading.

The descent and return to base isn't especially hazardous until you find that your field is closed in and they have routed you to a diversion field. Then the boys start wondering why they didn't wear all their heavy clothes, because it's plenty chilly sleeping on the floor in a strange barracks.

There is no remedy for weather over the British Isles and the part of the Continent you fly over in this theatre. Frequently the weather officer would predict no clouds, or at



Illustrated by Capt. Raymond Creekmore

Cooperation between the bombardier in the nose and the navigator, wherever he is, over the interphone has been a great help, due to the more or less unlimited range of vision the bombardier has. The target itself plays a part in the ease or difficulty of picking it up. Marshalling yards are cinches, with the town as a lead, and the point where the railroad tracks widen into a bulge is easily spotted. Air-dromes are almost as easily located because of their necessary level area, but their relationship to towns, railroads, roads, woods and canals is also helpful to the navigator. Military installations and gun emplacements are a different story. You are lucky if S-2 gives you so much as "the target is located in the northwest corner of this patch of woods" or "the heart of the target is in the south-

most, from 2/10 to 4/10 over the mainland, but when we arrived there, the cloud cover would be 6/10 to 8/10. This is very disconcerting to a lead navigator, but the switch over to D/R and the flight plan is still available, so the formation goes on in, the bombardier and the navigator both fervently hoping for a break in the clouds over the target. On one occasion we started in for a military installation but the haze was so thick that, when looking into the sun, no check points could be distinguished. We made our run on the target, but we didn't see it until too late. So we made a big 180-degree turn and started in again. There was no flak, so we kept trying. We finally turned for home after the third run and found that another box from our own group had made five passes at its target. ☆



# FLYING SAFETY

Suggestions from the Office of Flying Safety, Headquarters, Army Air Forces, in the interest of accident reduction.

*These items are for educational purposes and are not to be construed as directives.*

## STOP THOSE MAINTENANCE OVERSIGHTS!

Often the difference between a first-rate mechanic, who wears a tech sergeant's stripes, and just another Joe rests in the attention paid to the small details of a plane's maintenance. In other words, the first rater begins where the average mechanic leaves off.

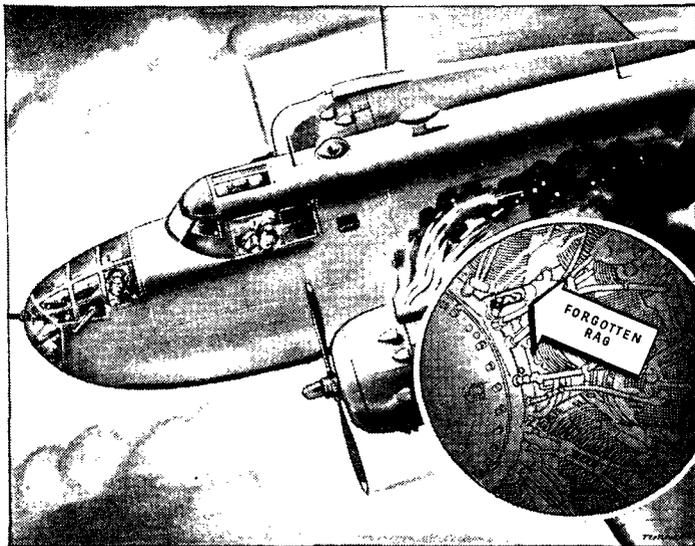
A mechanic's routine is covered by tech orders, regulations and other official publications, but in the last analysis the mechanic must assume responsibility for his plane's condition. A tech order alone can merely say that a nut must be tightened. It can't wield the wrench.

AAF planes, by and large, receive the care they deserve. But with thousands of planes in operation, it is not surprising that there have been oversights. It is the duty of every mechanic, crew chief, inspector and engineering officer to reduce such incidents to microscopic proportions.

The Office of Flying Safety recently made a study of these oversights. Though few in number, when judged by overall operations, these incidents deserve the consideration of every maintenance man. Such things can happen to any plane.

Maintenance oversights fit into a broad general pattern, with the same failures popping up repeatedly. They may be

Carelessness with rags can bring down the largest airplane.



grouped into these three large categories:

- (1) Foreign matter and objects in the power plant, including the fuel and oil lines.
- (2) Loose or severed connections, defective installations and missing parts.
- (3) Foreign objects fouling the controls.

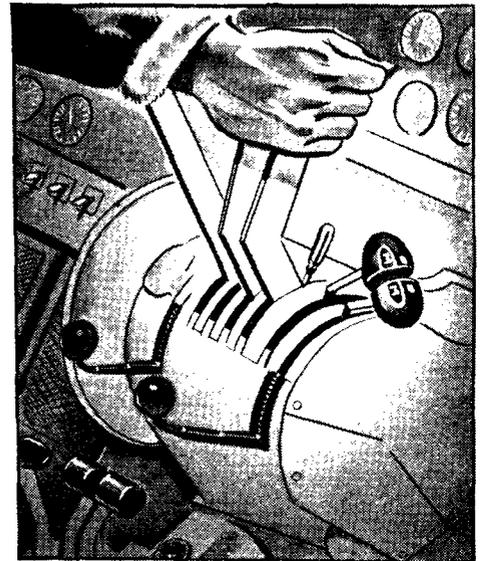
No plane, large or small, is immune to hazards of this kind. A tiny L-1A, for instance, had an engine failure because a washer and screw had fallen inside the magneto housing, left open during maintenance. A heavy bomber recently required a trip to the hangar for removal of a rag from the prop dome.

Foreign matter in the power system usually consists of bits of rags, cardboard, masking tape or plugs—material used to close open lines and vents during maintenance. Sludge in the oil sump and tools carelessly left about also have caused engine failures.

No mechanic should rest easy until he knows personally that every plug he inserted in a line has been removed. These plugs can be dynamite. For example, inspection of a wrecked B-24 revealed wooden plugs in both a fuel line and an oil line.

The simplest way in the world to jam the controls of a plane is to use the ship as a temporary storage spot. Recently, the cable controls of a P-51 were fouled by a canvas tool apron, which apparently had been stored in the tail "temporarily."

A tiny three-quarter inch screw, which had been left in the pilot's compartment of a B-25, caused a taxiing accident when it jammed the brake handle. It's likely that a mechanic laid the screw down while looking for some other item, planning to "pick it up later."



Beware of foreign objects thoughtlessly left in the cockpit. They can jam the controls.

In a hospital, before a surgical incision is sewn, a nurse accounts for each instrument, clamp and piece of gauze to insure that nothing has been left in the opening. Certainly a \$250,000 airplane, with ten lives instead of one at stake, is entitled to equal care before a job is buttoned up.

Rags must be watched carefully around an airplane. Aside from the hazard created by leaving them behind when a job is finished, their careless use during a maintenance or repair operation can cause plenty of trouble. They may tear, leaving shreds behind that later block the fuel or oil system, or they may be misused as in the case of the B-24 which had an engine failure caused by a rag in the oil tank. A mechanic had used the rag, instead of replacing the cap, when he was interrupted while putting oil in the tank.

When an airplane is checked for loose connections or a nut is tightened or a cap seated, it always should be remembered that a plane vibrates and that a connection which is tight today might not be tight tomorrow.

A loose connection in the fuel system can be particularly dangerous because of the possibility of fire. One engine of a B-17 burned when the exhaust ignited

gas dripping from a poor connection at the carburetor.

A similar bit of carelessness destroyed a wing and engine of a UC-78 during a ground test. In this case the fuel hose had pulled free because the hose had not been clamped beyond a nipple on the pump extension. The crew chief subsequently explained that he had missed the faulty installation during a visual inspection because it was out of sight.

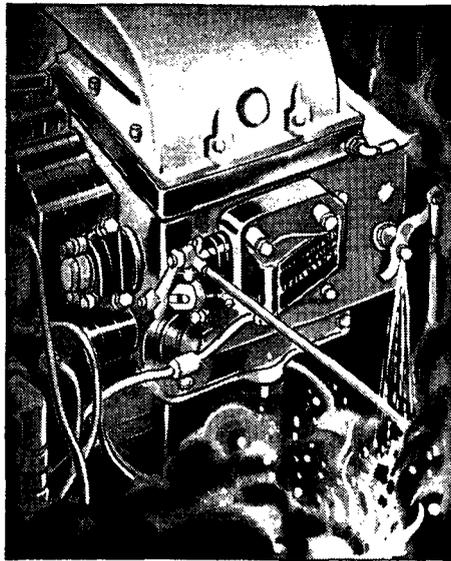
The chief's explanation calls to mind the fact that the reverse of the problem also confronts every maintenance man. While a conscientious mechanic is checking out-of-the-way installations he might, in concentrating on these items, have a tendency to overlook things right under his nose.

In one of his mysteries, Edgar Allan Poe described how an object was successfully hidden by placing it in the most obvious spot, where it was certain to be overlooked. An unwary mechanic may be caught in the same trap.

One of the advantages of Production Line Maintenance, with specialists checking over all planes at a base, is that these outsiders will find things that a plane's regular maintenance crew will overlook because of familiarity. A mechanic's only protection against this type of oversight is never to take *anything* for granted.

Frequently a missing part or a loose connection can be traced to the absence of safety wires. An A-20 burned out an engine in flight when the oil sump plug, which hadn't been safetied, fell out.

A mechanic never should leave any job requiring the replacement of safety wires



If gasoline is permitted to escape from a loose connection, fire is sure to result.

until the wires have actually been installed. If he plans to take care of that detail later, some day he's pretty certain to forget.

There is a period in almost every maintenance job which is a fertile breeder of oversights. That's the time when a crew is relieved by another shift. Unless each man going off duty explains to his relief the exact status of the work being performed, there is a chance of a slip-up.

Here's a story which illustrates the importance of unending vigil to keep an airplane tight and shipshape. It might be titled "The \$125,000 Cap Nut," because the story starts with this small accessory.

The cap nut, which held the hydraulic line compression fitting to the outboard brake on the wheel of a B-17, worked loose. This permitted the fitting to fall out of place and protrude from the wheel.

When the wheel was retracted on take-off, the fitting was smashed against the side of the nacelle well. Hydraulic fluid dripped out. The pilot had no brakes upon landing and cracked up the plane. The repairs cost \$125,000.

In addition to the monetary loss, this one loose nut relieved pressure on the Axis which a little care and a few turns of a wrench could have kept applied.—Col. George C. Price, Chief, Office of Flying Safety.

### CLEARANCE MADE SIMPLER

The problem of clearances facing AAF pilots without clearing authority—and that means most pilots—is considerably simplified in AAF Regulation 15-23, dated 6 March 1944.

The new regulation enables a pilot to:

- (1) Obtain a change in flight plan while in flight.
- (2) Receive Army sanction of a change from contact flight rules (CFR) to instrument flight rules (IFR) as authorized by Airway Traffic Control without additional messages.
- (3) Clear from bases lacking clearance facilities without setting down at the nearest base with such facilities.

Responsibility for administering these new clearance procedures rests with Army Flight Control. (Continued on Next Page)

## P. & I. SAYS:



(The Prevention and Investigation Division, OFS, is composed of veteran flyers. These reports include comments by these veterans on recent accidents. Read and heed.)

MEMPHIS — A P-47 ran out of gas and the pilot was forced to make a landing at an auxiliary field too small to accommodate his ship. The plane struck a small ditch, then fell back damaging the tail section. The pilot previously had noticed his plane was consuming an abnormal amount of gas, but he adhered to his original flight plan anyway.

P & I COMMENT: The Remedial Action Board, 4th Ferrying Command, noting that the pilot recently had returned from combat, recommended that he be given additional instruction in the problems of domestic flight. This presents an

interesting thought and a challenge to this officer and other flyers returning from overseas theatres. Due to war needs, many of these men in their earlier training had little opportunity to master the tricks of flight in the States, such factors as navigation, airways, instrument procedures, AAF Regulations and the like. On their new assignments in this country, they now have the chance to learn the details of the flying profession which will fit them for a place in aviation after the war.

SYRACUSE — A pilot flying a P-39 equipped with a belly tank experienced generator trouble and did not have enough juice to extend his gear. He tried manually, but after twenty minutes of cranking he could no longer turn the crank. He slowed the ship down as much as possible and brought it in on its belly. The pilot got out OK, but the plane burned.

P & I COMMENT: The error standing out like a sore thumb in this accident is that the pilot did not drop the belly tank. In the first place, it is extremely difficult to crank the gear down on this ship at speeds greater than 130

mph. It also is difficult to maintain control at this slow speed when the tank is attached. Secondly, in almost every wheels-up landing where belly tanks have been attached, fire has resulted. Of nine belly landings, seven P-39s burned when they came in with belly tanks attached. Two without tanks did not burn.

NEW YORK — On a gunnery mission off the Atlantic coast, a fighter pilot made two successful passes at a tow target. While going around the curve of pursuit he lost sight of the target. Lowering his right wing in an attempt to find it, he discovered he was heading directly into the sleeve.

He tried to skid under the target but his propeller and right wing crashed into the cable.

P & I COMMENT: This plane made a successful landing at its base but damage to its prop and wing cost many man hours and loss of a valuable plane to training. Fighter pilots have been told again and again that if sight of the target is lost at any time, the attack must be broken off immediately. ☆

Under the old regulations, a pilot desiring to change his flight plan had either to land at his indicated destination or to circle the field and wait for the base operations officer to approve the change.

Now, all he is required to do is request the change from the nearest range station. The range station requires the following information for forwarding to the Flight Control center:

Identity of the plane, provisions of original flight plan and whether it calls for instrument or contact flight, and hours and minutes of fuel remaining.

If the change is OKed the range station within a few minutes will transmit an approval message prefaced by "Army Flight Control approves . . ."

To change from CFR to IFR, the procedure is the same as in the past. A pilot merely contacts Airway Traffic Control via a range station and asks for assignment of altitude.

The difference is that the request now is coordinated with Army Flight Control, which places the necessary Army approval on any authorized change. This coordination makes it possible for Flight Control to give any advice on conditions deemed pertinent.

Messages approving such changes will start with "Airway Traffic Control approves . . ."

In clearing from a base without clearance facilities, a pilot now needs merely to call the nearest Flight Control center long distance collect and get his plan approved.

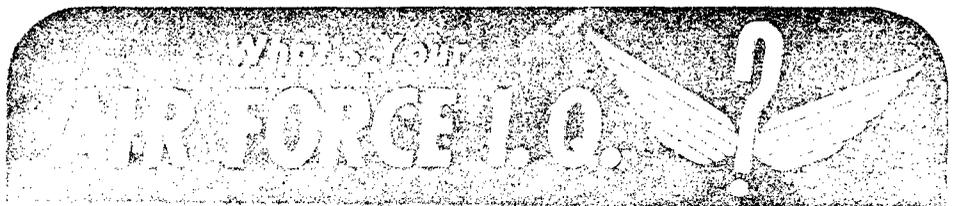
If communication is impossible, it is not necessary for a pilot to fly to the nearest base with clearing facilities to file his plan as required in the past. He may proceed under CFR to the vicinity of a nearby range station and file his plan with Flight Control by radio.

Certain classifications of veteran AAF pilots have the authority to clear themselves with the Army. In this group are command pilots, senior pilots, senior service pilots and holders of current green instrument cards (AAF Form 8A).

When these veterans, flying CFR, file a routine notification of change of destination, the range station responds, "Army Flight Control has nothing for you," unless Flight Control has information to offer.

#### PERSONAL RESPONSIBILITY

A visiting RSO found morale especially high in a reconnaissance group stationed at Abilene, Tex. A general assembly of all personnel each morning was credited in large measure for this condition. At the meeting, orders of the day, news of the organization and comments on progress were presented, giving each man the feeling that he was an essential part of the program. ☆



Grab a mental brace and have a try at this month's AIR FORCE Quiz. Under the customary scoring system, chalk up five points for each correct answer. A score of 90 or above is excellent; 80 to 90, not bad at all; 65 to 80, only fair; below 65, well. . . .

1. You would most likely find an agonic line
  - a. In the fuselage of bomber-type aircraft
  - b. On a bombsight
  - c. On the instrument panel of fighter aircraft
  - d. On a weather map
2. The average rate of fall per second with open chute at 20,000 feet is approximately
  - a. 27 feet
  - b. 64 feet
  - c. 11 feet
  - d. 45 feet
3. The Andaman Islands are in the
  - a. Pacific Ocean
  - b. South China Sea
  - c. Bay of Bengal
  - d. Sea of Japan
4. The ceiling is considered to be unlimited when the base of the clouds is approximately how many feet above the point of observation on the ground?
  - a. 1,250
  - b. 9,750
  - c. 4,500
  - d. 15,225
5. The equivalent AAF rank to Commodore in the Navy is
  - a. Lieutenant Colonel
  - b. Major General
  - c. Colonel
  - d. Brigadier General
6. Headquarters of the 9th Air Force is presently located in
  - a. Australia
  - b. England
  - c. India
  - d. Middle East
7. To receive the rating of Senior Pilot, you must have five years of service as a rated pilot and how many hours of accredited flying time?
  - a. 500
  - b. 2,000
  - c. 1,000
  - d. 1,500
8. The A-24 is a version of the Navy's
  - a. Helldiver
  - b. Corsair
  - c. Vengeance
  - d. Dauntless
9. The Jap aircraft popularly referred to as a Sally is a
  - a. Single-engine fighter
  - b. Four-engine bomber
  - c. Twin-engine bomber
  - d. Twin-engine fighter
10. The Air Medal holds precedence over the Purple Heart
  - a. True
  - b. False
11. A kilometer is how many feet in length?
  - a. 3,280
  - b. 5,280
  - c. 4,300
  - d. 2,650
12. Which plane is inappropriate in the following grouping?
  - a. C-46
  - b. C-54
  - c. C-47
  - d. C-53
13. Our first aerial attack on the Japanese mainland took place on
  - a. August 7, 1942
  - b. April 18, 1942
  - c. June 7, 1942
  - d. February 15, 1942
14. Singapore is located
  - a. In Thailand
  - b. On the Malay Peninsula
  - c. On the Chinese mainland
  - d. In Burma
15. Benetnasch is
  - a. An important German airdrome near Berlin
  - b. One of the stars in the Dipper
  - c. The name of a new German fighter plane
  - d. A Russian soup
16. The distance in statute miles from Henderson Field in the Solomons to Davao in the Philippines is about
  - a. 600
  - b. 3,600
  - c. 1,600
  - d. 2,600
17. Key Field is located nearest to
  - a. Key West, Fla.
  - b. Meridian, Miss.
  - c. Oklahoma City, Okla.
  - d. Fort Worth, Texas
18. The RAF Sterling is a
  - a. Four-engine transport
  - b. Single-engine fighter
  - c. Twin-engine fighter
  - d. Four-engine bomber
19. The Deputy Supreme Commander of the Allied Expeditionary Forces is
  - a. Air Chief Marshal Sir Trafford Leigh-Mallory
  - b. General Dwight Eisenhower
  - c. Air Chief Marshal Sir Arthur Tedder
  - d. Lieut. Gen. Carl Spaatz
20. This explosion is the result of what type of bomb?
 

Answers on Page 64



A Review of Technical Developments in the Army Air Forces

## On the Target WITH OBLIQUE APPROACH SKETCHES

THE Allied Air Forces in the Southwest Pacific had an important problem to solve in preparing for the first missions against Hollandia, a section of New Guinea that is one of the least mapped and scantily charted areas in the world. In this rare instance, reconnaissance planes had been unable to obtain satisfactory photographs due to weather conditions over the target area. To overcome this handicap by repeated trips meant the danger of tipping off the enemy.

Yet when the flyers were briefed for their first mission over the new target, they were shown a reproduction of the terrain as it would look from the exact angle and height at which they would approach. The problem had been solved by oblique approach sketches, a new technique perfected by Capt. Harry

E. Fraser of the Central Interpretation Unit of the Allied Air Forces in the Southwest Pacific.

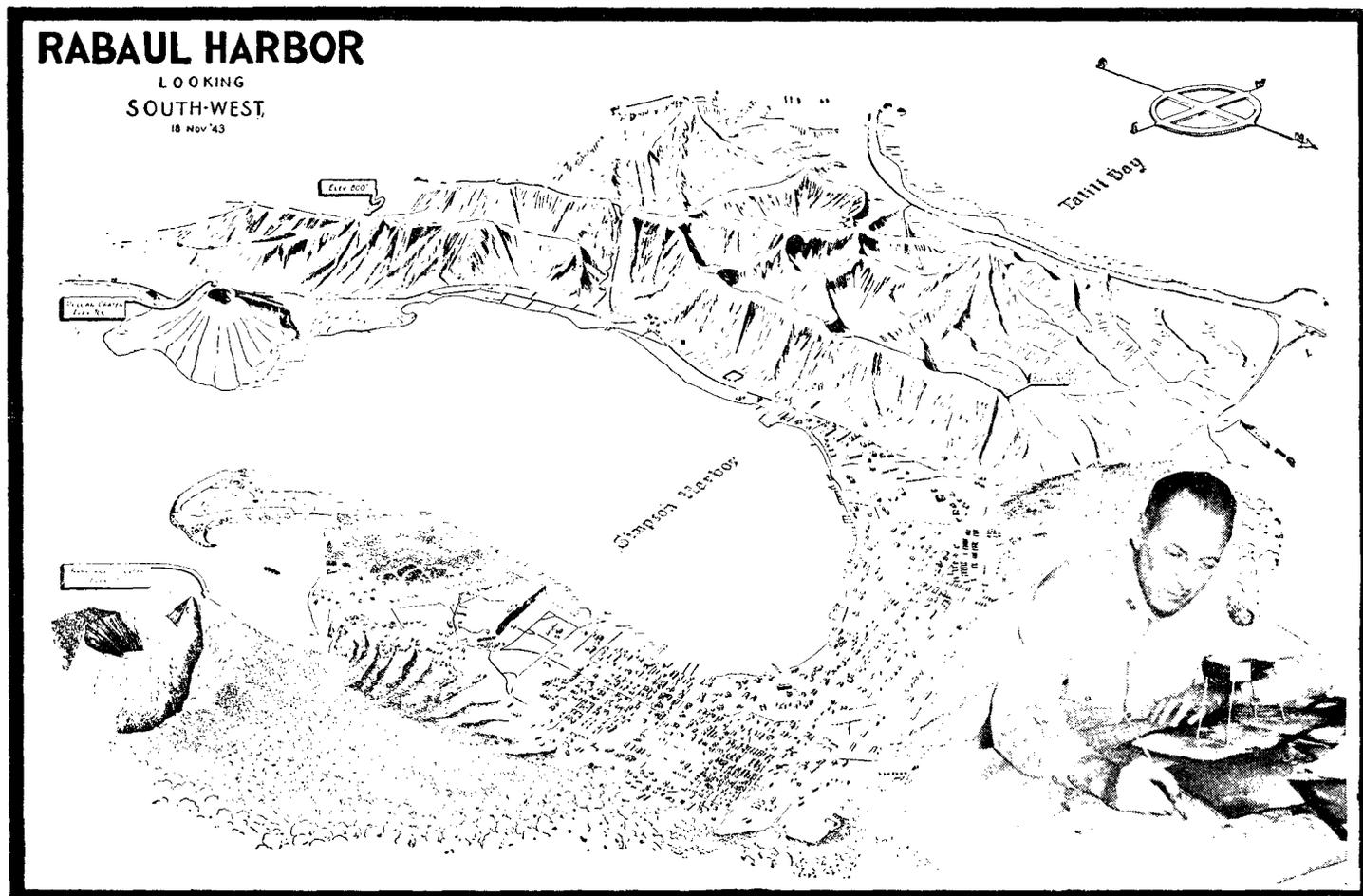
This method does not take the place of photographs since the oblique sketches are essentially a supplement to photography, and it uses pictures to the fullest extent. In the case of Hollandia there were numerous photographs which had been taken at various times, but none was very sharp or clear. Nor could any be fitted in a useable mosaic. Bad weather over Cyclopes Mountain, alongside the target, generally obscured the terrain. By using admiralty charts, however, Captain Fraser was able to piece together the information he needed to clarify the photographs and furnish the details which went into his sketches.

Captain Fraser, an expert photo-interpreter as well as a map-maker, was told at what height and angle the attack was planned and he made the sketches with this in mind. Before finishing the job he did two sketches from two different angles of attack and subsequent missions over the target proved the accuracy of his methods. It had been impossible to get good obliques from the desired angles and his sketches continued to be used. From vertical photographs brought back by bombers, he was able to recheck the originals.

The main purpose of the oblique approach sketch is to show terrain detail that has not been mapped or thoroughly photographed. Another advantage lies in the fact that a photograph is a true reproduction of everything within focus and range. Sometimes a picture can be too much of a good thing and it takes an expert interpreter to pick out the salient points from the mass of detail, while the sketch can be controlled and only the essential material included.

Certain features and key points can be exaggerated and un-

Capt. Harry E. Fraser, who developed the oblique approach sketch, is shown working on his drawing of Rabaul which is reproduced below. This technique provides flyers with a picture of targets from the exact angle and altitude of approach, and supplements recon photos.



# TECHNIQUE

(Continued)

important areas dropped out. Personnel untrained in reading maps and photographs thus can make quick and positive identification when coming in over a target.

All possible information is used in making these sketches, including maps, admiralty charts, stereo-vertical photos and

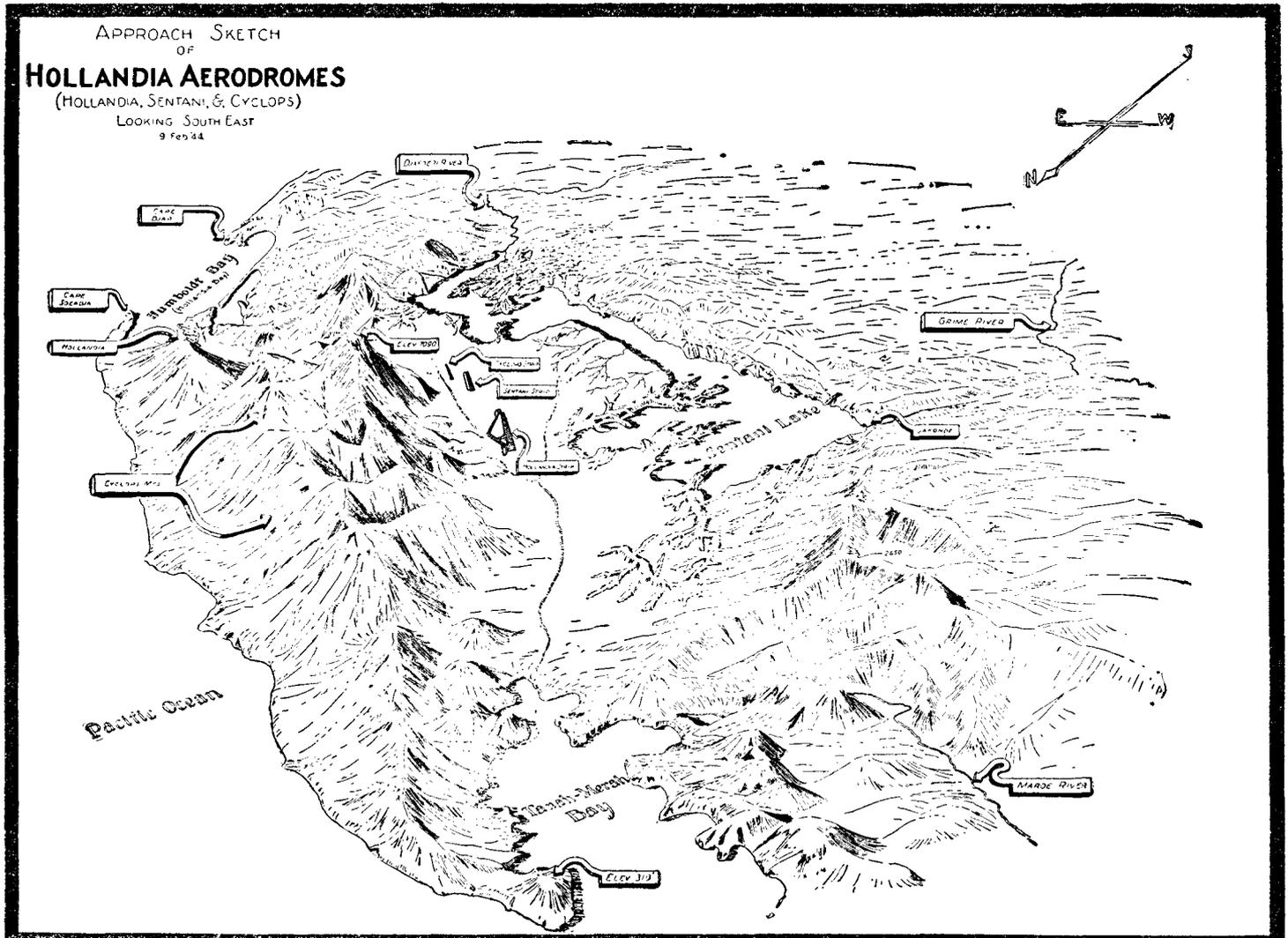
trimetregon mapping runs. Through a stereoscope, Captain Fraser studies these details and sets them down to scale on the sketch with a grid. Other experts are then called in to make certain he is correct in his study, thus insuring correct interpretation when the sketches are later sent to the groups and squadrons.

While serving as a photo interpreter in New Guinea, Captain Fraser noticed there was a variation in interpretations intelligence officers gave the maps and pictures in briefing. This suggested to him the need for a graphic method of presenting objectives. He flew missions to check on what the



After studying aerial photographs such as the three above and combining this information with that available on admiralty charts, Captain Fraser was able to produce the oblique approach sketch of

Hollandia shown below. When weather conditions prevented the taking of satisfactory photographs over the area, the oblique approach sketches solved the problem in preparation for concentrated bombing attacks.



flyers wanted, and he discovered that they sometimes did not use maps because of their complication or because the airmen were too busy—or simply did not understand them. By using oblique sketches when photographs are not available these faults are eliminated.

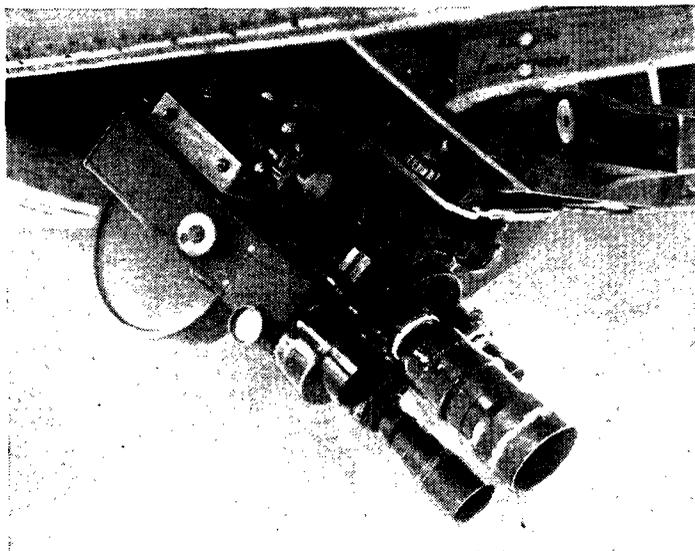
With the aid of expert interpretation and the extensive use of photographs, Captain Fraser can make a sketch on a 35-inch strip of paper which shows eight linear miles of coast from a height of 10,000 feet with bearing NNW and to a depth of twelve miles, all to scale. He can make sketches to any other specifications that may be required.

A sketch of the Rabaul area done early in attacks against that important target, shows the locale from an angle and height at which it had been impossible to photograph due to heavy anti-aircraft installations and weather conditions.

— **Capt. L. P. Bachmann, Air Force Overseas Staff.**

## Double Camera Mount For B-24s

The door camera mount for B-24s, shown in the accompanying photograph, can be fitted into the rear hatch of a Liberator, permitting photographs to be made with two cameras instead of one. The smaller camera, a GSAP, using 16 mm film, is mounted along the finder of the larger camera. Film from the smaller one may be processed quickly and used for



intelligence and combat work. The larger camera, a 71 Q Bell and Howell, shoots 35 mm film which is sent back to the States for historic records and combat study. The mount was arranged by Capt. Theodore Z. Rickman of the 13th Combat Camera Unit. — **Air Force Staff Correspondent in the South Pacific.**

## New Airborne Equipment Solves AAF Cargo Loading Problem

By borrowing a couple of ideas from familiar civilian sources and redesigning them for AAF use, the equipment laboratory of the Materiel Command Engineering Division has devised two handy pieces of airborne equipment that have solved the AAF cargo-loading problem. They are a kit which gives a standard Army truck a high lift body, elevated by a scissors mechanism, and a fork truck, an improvement of the mechanical stevedore used around docks and warehouses.

According to Capt. H. R. Burks, special vehicle projects officer, any landing strip in the world with this equipment can be turned into an air dock. "Every type of AAF cargo plane can be loaded and unloaded, from the C-47 with a door four and a half feet from ground level, to the C-54 with its door nine feet up."

The kit which converts a standard Army 2½-ton, six-by-six

truck for high lift duty weighs 1,600 pounds and is designed to be shipped by air to advanced bases where Army trucks of this type are usually present. With the kit, they can be converted by a normal crew in less than a day. The high lift truck works like the familiar city coal truck, the body of which is lifted by scissor members, an adaptation of the Jack-in-the-box principle.

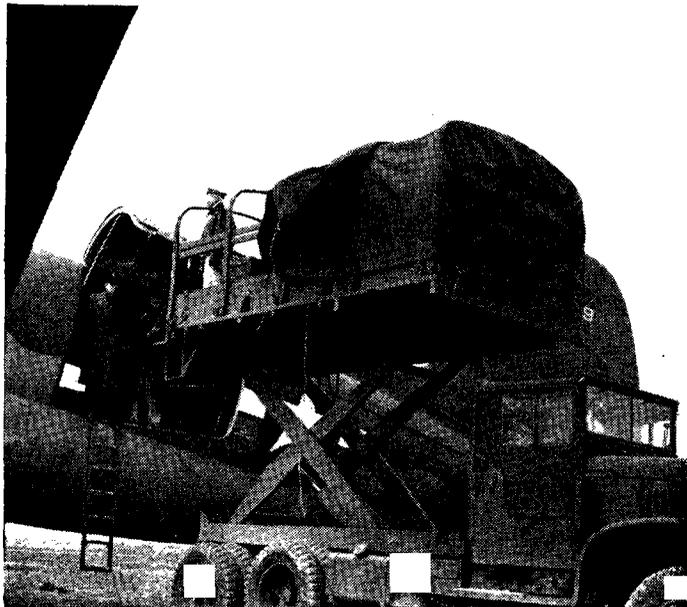
The contents of the high lift truck kit, as it is received by AAF mechanics, consist of a sub-frame with scissors-type lifting members, twin hydraulic hoists, pump and valve, power take-off and operating lever, pump drive shaft with universal joints, valve operating lever and connecting rod, body attaching brackets special cargo-loading tail-gate, which serves as a ramp, and telescoping floodlights with wiring.

The high lift truck can operate in every type of difficult terrain. If one airport is closed out because of soupy weather, the truck can move thirty or forty miles for use at another field which is open. Its loading space, 12-by-7 feet, permits it to carry a full load for some planes in one trip. It is rated 5,000 pounds with a 100 percent overload factor. The ramp tail-gate eliminates precise backing of the truck to the plane door. The driver merely backs the truck within two feet of the plane and then swings the ramp tail-gate on to the plane floor. The two flood lights which fit on the rear corners of the high lift body give illumination for night loading.

The fork truck cargo-loader is a four-wheel tug with pneumatic tires and a front-mounted fork-lift mechanism which is hydraulically operated. The fork is adjustable from ground level to an elevation of twelve feet and is designed to scoop up objects resting on pallet frames or packed in shipping boxes. The fork-lift mechanism can be tilted fore and aft to steady the load when traveling from supply dump to cargo plane. This loading device weighs three tons and is designed to be knocked down into three pieces to facilitate shipment by air. The heaviest of these three pieces weighs 2,000 pounds. Like its companion piece, the high lift truck, it carries two flood lights for night operation.

The fork truck is able to lift freight directly off the ground and can be used to supplement the high lift truck. It will function over reasonably rugged terrain and will handle a rated 3,500-pound load. The fork truck is normally operated by one man. Information for requisitioning this equipment may be obtained from Ground Equipment Branch, Supply Division, Air Service Command, Paterson Field, Ohio. — **Lieut. Andrew T. Rolfe, Equipment Laboratory, Engineering Division, Materiel Command, Wright Field.**

Supplies are loaded aboard an air freighter from a high lift truck.



# 'PER ARDUA AD ASTRA'



Prepared by the RAF Delegation,  
Washington, D. C.



**The record of Britain's  
flyers is an appropriate  
reflection of the motto of  
the Royal Air Force—  
'Through Hardship to the  
Stars.'**

**D**EVELOPMENT of Britain's Royal Air Force from a relatively puny but immensely game outfit at the war's outset into the vast armada which today is teamed for victory with the huge U. S. Army Air Forces is apt exemplification of its motto "Through hardship to the stars."

Now the night-time scourge of Germany while the AAF in England rests for the next day's raids, the RAF in 1939 was composed of a comparative handful of planes and the immortal "few" flyers to whom "never in the field of human conflict was so much owed by so many."

As World War I neared decision in 1918, the RAF dominated the skies in size, speed and power. But following the armistice it was allowed to dwindle in strength until by October, 1920, all but ten percent of its personnel in service at the war's end had been demobilized.

One man above all must be given credit for saving what remained of the RAF and for laying the foundation upon which a great future was to be built. That man was the then Air Marshal Hugh Trenchard, now Marshal of the Royal Air

Force Viscount Trenchard. His fervent collaborator in Parliament was Winston Churchill.

It was not until the failure of the Geneva disarmament convention in 1935 that the expansion of the RAF began in earnest. Events on the continent of Europe and in Africa—notably the Italian aggression in Abyssinia—spurred production, technical advances and personnel increases.

But when Britain entered World War II in September 1939, its air power was markedly inferior to that of Germany. In every type of aircraft except coastal reconnaissance planes, in which approximate parity existed, Britain was badly outnumbered.

To the Nazis' 2,500 bombers, the British had about 700. Germany had some 1,200 troop carriers. England had none. The Luftwaffe's 1,500 fighter planes equalled the combined strength of Britain and France. And in the winter of 1939-40, the Germans were said to be building at least seven Heinkels for every British Wellington being produced.

Still, at summer's end in 1940, after

less than a year of war which had cost him nothing and won him almost everything, Hitler found that all that stood in Europe between him and the realization of his impious hopes was Britain and the Royal Air Force. Perhaps it is better to say, what was left of the Royal Air Force.

Until April, 1940, air activity by either side was limited. The RAF bomber command made sporadic attacks on the German fleet and carried out extensive "white raids" over Germany, penetrating as deep as Berlin but dropping only propaganda leaflets.

Patrol planes protected British coastal shipping and searched the North Sea and the eastern Atlantic for enemy surface craft and submarines. RAF units dispatched to France at the war's outbreak skirmished with enemy fighters as they reconnoitered western Germany. At home, hit and run raids by the enemy kept defense units on their toes.

But when Norway was invaded April 9, the full, though feeble force of the RAF swung into action. Against terrific odds, Hudsons and Blenheims, operating from British bases, attacked occupied airfields and gave all possible support to the Allied army sent to Norway's assistance. But without proper bases in Norway, neither bombers nor fighters could stem the German masses.

Again on May 10 when the Low Countries—Belgium, Luxemburg and the Netherlands—were invaded, the RAF

Haggard faces of Stirling bomber crew members reflect strain of a night raid on Berlin as they relax while being interrogated by intelligence officer. The British flyers have repaid the Germans a thousand-fold for the bombings of London and other English cities in 1940-41.





valiantly tried to halt the Nazi mechanized advance. Units based in France bombed and strafed enemy ground forces while Hurricanes engaged and destroyed relays of German bombers. But a blitzkrieg supported by the flying hordes Goering had at his command was not to be stopped by the strength the RAF could muster at that time.

Then in the last week of May came Dunkerque. At heavy cost in equipment and personnel, RAF bombers and fighters held off the enemy while the Royal Navy evacuated ninety percent of the more than 300,000 trapped British and French troops. The outlook never was darker. Sorely depleted in power, the RAF faced its fight for Britain's life. The fighter command prepared to combat the all-out air effort Hitler inevitably would make as a prelude to invasion. The bomber command patched its planes and made ready to attack Nazi "invasion ports" across the Channel, and the coastal command continued its campaign against the U-boat menace which had been increased many fold by the Nazis' acquisition of bases from northern Norway to southern France.

**B**UT the indomitable spirit of the RAF could not be crushed and the Battle of Britain was won. Within two months the slender fighter force destroyed 2,225 Nazi planes to its own loss of 616, while, day and night, RAF bombers pounded French ports where the enemy had assembled barges capable of transporting an estimated 1,000,000 men. The German hope of an easy invasion was abandoned.

Unsuccessful in their daylight attacks during the Battle of Britain, the Nazis reversed their method and in the early months of 1941 relentlessly night-bombed cities, towns and countryside over the entire length and breadth of England.

Learning night fighting tactics the hard way, the Defiant, Beaufighter and Havoc pilots stalked Jerry with increasing success and finally assumed the upper hand. Night raids lessened and, in May, finally ceased. Again German air power had been repulsed by an RAF inferior in number but not in courage or ability.

During those months when Germany was attempting to lay all Britain in ruins, the full strength of the RAF, scant at best, never was available for the defense of the homeland. For many of its crack units were fighting the Axis in Africa, the Middle East and the Mediterranean.

Meanwhile, however, Britain's air power was growing. The aircraft industry, geared to mass production, was turning out planes at an unprecedented rate, while an ever-increasing stream of P-39s, P-40s, A-20s and A-29s and badly needed materials was flowing from the United States. And as further help from across the Atlantic, a gallant band of American pilots—the first Eagle Squadron—was already in the first line of the RAF fighter command, writing its record indelibly in the history of air war.

As Britain drew ever closer to air parity with Germany, the fighter and coastal commands, whose work had been chiefly defensive in character, switched to the offensive. Fighter sweeps and fighter-escorted bomber missions were launched against Nazi-occupied France. The coastal patrol, with new equipment and technique, seriously disrupted Admiral Doenitz' submarine blockade which had been designed to prevent United States supplies from reaching their destination.

In 1942, the U. S. Army Air Forces combined operations with the RAF and materially relieved the pressure on the British flyers. Joining in the support of the British 8th Army in the Libyan desert, AAF bombers and fighters struck Rommel's stubborn columns with regularity and attacked shipping in the Mediterranean, making the German supply

problem increasingly difficult. As the U. S. 8th Air Force began operations in England in August, raids on key points in Germany and Nazi-occupied France were stepped up, and the German U-boat offensive was restricted at its source by the Americans' magnificent precision attacks on submarine construction and repair facilities.

In a letter of congratulation to the RAF upon attainment April 1, 1943, of its silver jubilee of establishment as a separate armed service of the Crown, General Henry H. Arnold, Commanding General of the USAAF, declared:

"On many fronts, the U. S. Army Air



Forces look to increasing cooperation with the Royal Air Force so that wing-tip to wing-tip we may fly destruction to our common enemies."

Today, General Arnold's prediction has been completely fulfilled. A colossus of air power—the combined might of the RAF and AAF—is carrying the fight to the enemy in theatres throughout the world and softening him for destruction.

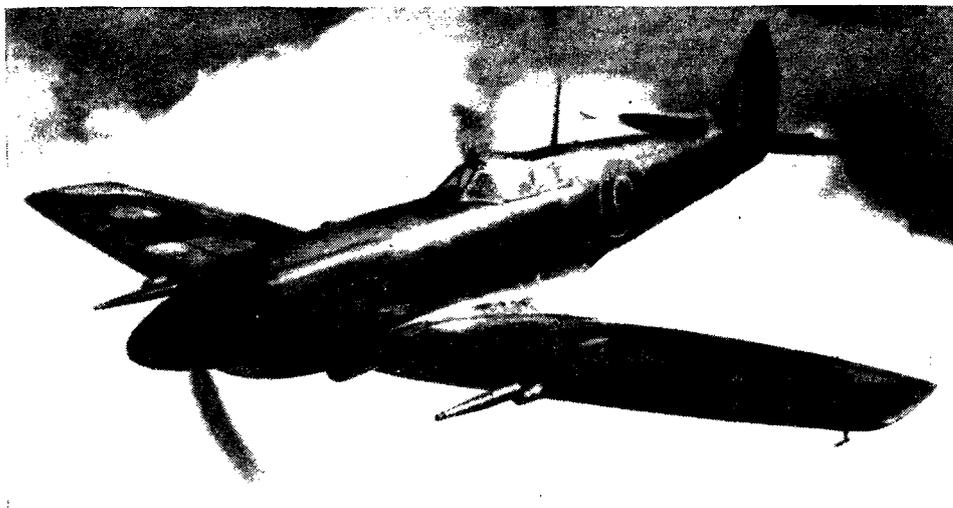
The RAF-AAF teamwork, which earlier proved its worth in driving the Axis from Africa and in the invasion of Sicily and Italy, has reached its peak of efficiency in the European Theatre of Operations. Flying from bases in the British Isles, Allied flyers are smashing Germany's industrial structure to bits.

In a recent report to Parliament, Prime Minister Churchill said:

"The Anglo-American air attacks on

On an RAF airfield in France in the dark days of May, 1941, fighter pilots rush to their planes to repel Nazi raiders. A few days later, the badly outnumbered British airmen held off the enemy while 270,000 troops, trapped on the beaches of Dunkerque, were evacuated.





The Spitfire Mark XII, latest in a long and famous line of fighters, is shown in flight.

Germany must be regarded as our chief offensive effort at the present time. The whole of this air offensive constitutes the foundation on which our plans for overseas invasion stand in the scales."

In announcing the formation of the Allied Expeditionary Air Force, composed of the RAF's 2nd Tactical Air Force and the U. S. 9th Air Force, Sir Archibald Sinclair, British Air Minister, left no doubt that his government believed the combination would be powerful enough to cripple the enemy defenses and drive the Luftwaffe from the skies when the invasion opened. Its job is to provide necessary air cover and support for the Allied armies which storm Hitler's "Festung Europa."

Such is the power of the Anglo-American air might assembled against Germany from the west that the enemy has been compelled to tie down four-fifths of his fighter plane strength for the protection of the Fatherland. This despite the fact that those same fighters would be of inestimable value to the enemy in his struggles on both his eastern and southern fronts.

And what of the future? To quote Mr. Churchill again: "As a result of enormous transportations across the Atlantic, the United States Bomber Force in this island now begins to surpass our own and will soon be substantially greater, I rejoice to say. The efforts of the two forces fit well together, and according to all past standards, each effort is in itself prodigious . . . The spring and summer will see a vast increase in the force of the attack directed upon all military objectives in Germany and German-occupied countries . . . The degree of attack will reach far beyond the dimensions of anything yet employed or indeed imagined."

The story of the AAF and RAF is one of cooperative effort, not only in flying wing-tip to wing-tip, but in a pooling of resources and technical skill. It is a story of British pilots and crews reaping proud victory in American-built aircraft; of

American air power based on a solid foundation of RAF knowledge and experience, and of the merging of production, as exemplified by the Mustang, now a peerless fighter. Built in America and powered by an American-designed and built engine, it showed, in the hands of RAF pilots, tremendous potentialities and accomplishments as a long range, medium-low altitude fighter. Now, equipped with a British Rolls-Royce engine built under license by an American firm, it is being flown by AAF pilots with outstanding success as a long range, high altitude fighter.

The RAF today can look back with a sense of pride and satisfaction to a record of glorious achievements and look with confidence and high hearts to the future. It has proved conclusively the quality of

British aircraft and the ability and courage of Britain's manhood.

But the long, hard battle has not been without cost. Excluding Dominion and Allied squadrons working with the RAF, 38,300 British pilots and aircrew personnel have been killed, 10,000 are missing, and 10,000 aircraft have been lost.

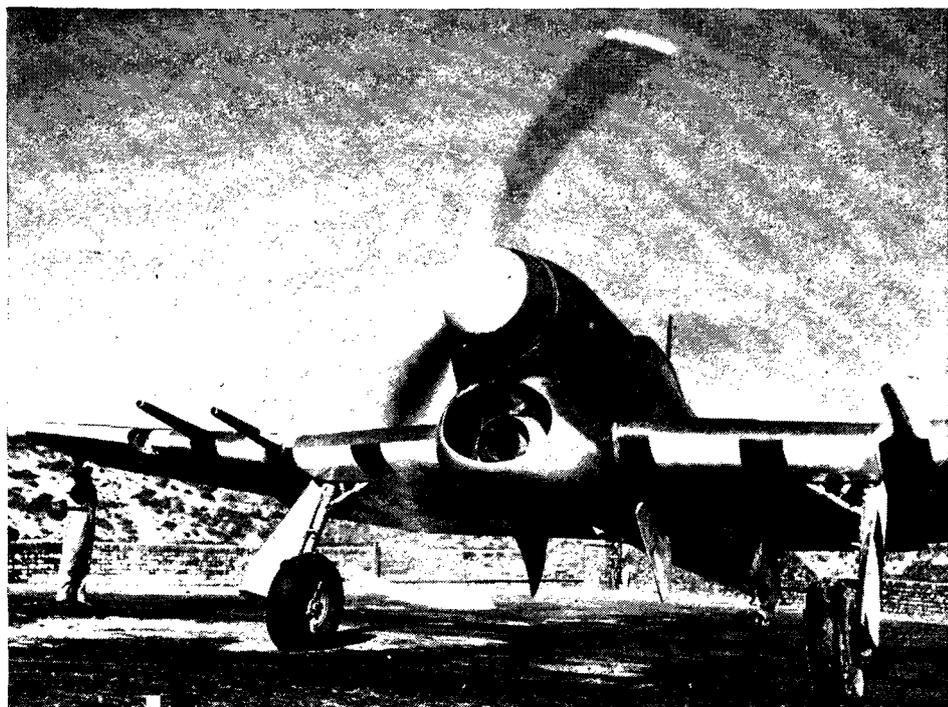
Great though the price, the heritage of the RAF is a glorious one. Through its epic victory in the Battle of Britain it saved the world for humanity and freedom and laid the foundation upon which our ultimate victory rests. More than any other service it has saved the lives of untold numbers of our fighting men and given the world a living exemplification of the tenets of Viscount Trenchard, the father of the RAF, in his recent interview by American correspondents:

"I am one of those who believe that the air has saved, and will save, untold lives. The firepower of modern weapons on the ground, combined with nature's barriers, is tremendous. The firepower of weapons in the last World War was shown, surely, in the appalling casualty lists, and I feel that without air power today in this war these casualties might entail the sacrifice of the flower of your nation and ours."

"But with air power used properly, as it is being used, and with the air battles won first, as the Germans did in Europe to begin with, and as we do now . . . we shatter the opposing armies or navies with a tenth—with a twentieth of the casualties . . .

"If the air battles are won first, the saving of life, in my opinion, is enormous." ☆

An RAF Typhoon revs up for a trip over Holland. One of the world's fastest aircraft, the Typhoon made its debut several months ago. It boasts high maneuverability and diving speed.



# ROLL OF HONOR

A MONTHLY RECORD OF DECORATIONS AWARDED  
TO PERSONNEL OF THE ARMY AIR FORCES

## MEDAL OF HONOR

Baker, Addison E., Lt. Col.  
Hughes, Lloyd H., Lt.  
Wilkins, Raymond H., Maj.

## DISTINGUISHED SERVICE CROSS

Anderson, William N., Maj.  
Blissard, Grover C., Lt.  
Cameron, William R., Maj.  
Culpepper, Claude A., Capt.  
Duncan, Glenn E., Lt. Col.  
Latham, John L., Jr., Capt.  
Levi, Nelson, Lt.  
Ludwig, Vance P., Lt.  
\*McCall, Ben J., Lt.  
Martin, John C., Lt.  
Middlebrook, Garrett E., Capt.  
Momyer, William W., Col.  
Myers, Joseph, Capt.  
Neff, Melvin E., Lt.  
Papa, Frank M., Jr., S/Sgt.  
Pickard, John G., Maj.  
Roche, John R., Capt.  
Simon, William C., Sgt.  
\*Stipe, Leon D., Sgt.  
Vance, Paul W., Lt.  
Yeager, William H., Jr., Maj.

## DISTINGUISHED SERVICE MEDAL

Cannon, John K., Maj. Gen.  
Hardy, John S., Col.  
Haynes, Caleb V., Brig. Gen.  
Hunter, Frank O'D., Maj. Gen.  
Kenney, George C., Lt. Gen.  
Ramey, Roger M., Brig. Gen.  
Smart, Jacob E., Col.  
Street, St. Clair, Maj. Gen.  
Whitehead, Ennis C., Maj. Gen.  
Wolfe, Kenneth B., Brig. Gen.

## LEGION OF MERIT

Adler, Elmer E., Brig. Gen.  
Barr, Percy M., Col.  
Blessley, Roland C. W., Col.  
Carter, Lloyd, M/Sgt.  
Dahl, Leo P., Col.  
Dolezal, Frank, M/Sgt.  
Drotschagen, George G., S/Sgt.  
English, Leroy S., Capt.  
Folmer, Fabian S., M/Sgt.  
Geck, Hugo, M/Sgt.  
Graves, Frank N., Lt. Col.  
Hanton, Joseph R., M/Sgt.  
Hart, John F., Col.  
Johnston, Carl L., M/Sgt.  
Lee, John M., S/Sgt.  
Lindhe, Erik W., W/O  
Looser, John A., M/Sgt.  
Lynd, William E., Maj. Gen.  
Miller, Yavil L., M/Sgt.  
Morris, Edward M., Brig. Gen.  
Niergarth, Omar, Col.  
Nugent, Richard E., Brig. Gen.  
Rajda, Thaddeus, T/Sgt.  
Ramey, Howard K., Brig. Gen.  
Rasmussen, Julius D., S/Sgt.  
Reil, Philip, Col.  
\*Wagner, Walter J., Lt. Col.  
Whitacre, William B., Col.  
Williamson, Adrian, Col.  
\*Wright, Harold B., Col.

## SILVER STAR

Adair, Philip R., Lt.  
Aval, Gustav B., Lt.  
Aspergren, Cleo J., Maj.  
Bailey, Edward E., Lt.  
Barrett, William T., S/Sgt.  
Barthelme, Karl T., Lt. Col.  
Baseler, Robert L., Lt. Col.  
Baumgardner, Dexter K., Capt.  
Bechtel, Kenneth E., S/Sgt.  
Behring, Fred W., S/Sgt.  
Berlette, Leland G., Lt.  
Berry, Frederick D., Jr., Lt.  
Blair, Samuel V., Capt.  
Boucher, Robert N., Lt.  
Brody, Barney, Lt.  
Brown, Charley W., Lt.  
Buell, William D., T/Sgt.  
Burns, Robert W., Lt. Col.  
Burnstad, Basil B., Lt.  
Busch, Dewey D., Capt.  
\*Calkins, Ralph, Capt.  
Callaan, Keith S., Lt.  
Carrillo, Michael, S/Sgt.

Chase, Allan C., Lt.  
Churchill, Henry W., Lt.  
Christensen, Harold O., Sgt.  
Clapper, John W., Capt.  
Clem, Durwood O., S/Sgt.  
Clendenning, Raymond A., Sgt.  
Collins, William R., T/Sgt.  
Constantin, Jules J., Jr., Lt.  
Coretto, Frank A., S/Sgt.  
Corwin, Charles J., S/Sgt.  
Cowie, Robert P., Lt.  
Cwiek, Stanley F., S/Sgt.  
Czarnacki, Edward J., Lt.  
Darnell, Cecil, Lt. Col.  
David, William B., Col.  
Demont, Russell D., Capt.  
De Vore, James L., S/Sgt.  
Doolittle, Glenn A., Capt.  
Downs, James A., Lt. Col.  
Durmeyer, Lloyd D., Lt.  
Dymniski, Henry J., Capt.  
Eaton, Burton E., S/Sgt.  
Elliott, George E., Lt.  
Elliott, Robert F., Maj.  
Falletta, Charlie, Capt.  
Fanning, Grover E., Lt.  
Faulkner, Cecil L., Lt. Col.  
Faust, Virgil D., Sgt.  
Fennell, Max R., Maj.  
Filip, Eugene C., Lt.  
Fortwengler, William G., S/Sgt.  
Free, Willie F., S/Sgt.  
Frydell, Adolph P., S/Sgt.  
Gibson, Grover D., Lt.  
Gibson, John H., Lt. Col.  
Gillespie, Calvin E., Lt.  
Gooden, Clarence W., Lt.  
Graves, Ben L., Lt.  
Greenhouse, Stanley, Lt.  
Griffith, William W., Lt.  
Gross, William Milton, Col.  
Grosvenor, William, Jr., Capt.  
Guest, Roger T., S/Sgt.  
Hager, James S., Lt.  
Haney, William F., Maj.  
Hardy, George M., Jr., S/Sgt.  
Harmon, Thomas D., Lt.  
Harned, Leroy A., T/Sgt.  
Hart, William D., Lt.  
Henderson, Robert T., S/Sgt.  
Henrich, Richard C., Lt.  
Hicks, Edward J., Lt.  
Hicks, Mack B., S/Sgt.  
Hocutt, Ealon S., Lt. (& 2 OLC)  
Hohmann, Franklin P., T/Sgt.  
Ince, James C., Capt.  
Irvin, Raymond M., S/Sgt.  
Isabelle, Hubert W., J., S/Sgt.  
Isler, Weldon, S/Sgt.  
Karasin, Bernard, S/Sgt.  
Kiry, Marion F., Capt.  
Kissack, John D., S/Sgt.  
Kitchell, James R., S/Sgt.  
Kocher, Edwin G., Lt.  
Koenig, Robert E., Lt.  
Korzynski, Michael R., S/Sgt.  
Kusman, Stanley J., Capt.  
Jackson, Charles A., Lt.  
Jackson, John R., Jr., Sgt.  
\*Jarmon, Altheus B., Lt.  
Jarrick, Thurman R., Jr., T/Sgt.  
Jett, Verl E., Lt.  
Johnson, Gerald R., Lt.  
Jones, Kenneth H., Lt.  
Jurey, Deica Delmar, Sgt.  
Labat, Douglas M., S/Sgt.  
Lamb, Robert A., Capt.  
Latham, Clarence B., Lt.  
Larkin, Joe M., Jr., Capt.  
Lawrence, Claude H., Lt.  
Lent, Francis J., Lt.  
Leonard, Charles J., Lt.

Leshner, Chalender L., Lt.  
Levitan, William A., Lt.  
Lewis, Charles H., Lt.  
Liles, Albert L., Maj.  
Lindbert, Allen, Maj.  
Linkous, William L., Lt.  
Locker, H. M., Lt.  
Lombardo, Pellegrino P., S/Sgt.  
Luton, Lowell C., Lt.  
McCarten, Robert D., Maj.  
McClelland, William F., S/Sgt.  
McGillicuddy, George E., T/Sgt.  
McGuire, George O., S/Sgt.  
McGuire, Thomas B., Jr., Capt. (& OLC)  
McKeon, Joseph T., Lt.  
McManus, Marvin E., S/Sgt.  
Mahan, Joseph J., S/Sgt.  
Manbeck, Lee P., Capt.  
Mankin, Jack C., Capt.  
Marquardt, Dean D., Lt.  
Mellinger, Elvin, Jr., Lt.  
Mercer, William D., T/Sgt.  
Merrill, Charles T., Capt.  
Meyers, Leroy C., Lt.  
Michaelis, Ralph L., Col.  
Mintacci, Jerome A., Lt.  
Moore, John T., Maj.  
Neal, Geoffrey E., Lt.  
Nehila, William J., Lt.  
Nelson, Theodore J., Lt.  
Nowell, Harlow L., S/Sgt.  
O'Donnell, Max H., S/Sgt.  
O'Donnell, Emmett, Jr., Col.  
Oletree, Robert C., Lt.  
Ohland, Vernon W., S/Sgt.  
Owen, James E., S/Sgt.  
Page, Henry L., S/Sgt.  
Parent, Hoyt E., T/Sgt.  
Parsell, Elmer, Capt.  
Pelander, Jack H., Maj.  
Perry, Quincy R., S/Sgt.  
Peyton, John Bernard, Lt.  
Pilgrim, Gene R., S/Sgt.  
Powers, Joe H., Jr., Lt.  
Prochki, Joseph J., S/Sgt.  
Protzman, Andrew G., T/Sgt.  
\*Ramirez, Julian M., S/Sgt.  
Rhins, Jordan B., Lt.  
Rohr, Louis W., Lt. Col.  
Roughton, Edgar L., Lt.  
Rowland, Robert R., Lt. Col.  
Rush, George A., Maj.  
Rydeen, Phillip H., T/Sgt.  
Savino, Thomas, Lt.  
Schaezel, George E., Lt. Col.  
Schilling, David C., Lt. Col.  
Schmidt, Ralph L., Lt. Col. (& OLC)  
Schneider, William J., T/Sgt.  
Schwartz, George R., Jr., Capt.  
Shaw, Roy M., Lt.  
Sheldon, Robert L., 1st Sgt.  
Shepherd, Robert W., Lt.  
Singer, Thomas C., S/Sgt.  
Slaughter, William A., Lt.  
Stahl, Roy D., Jr., Lt.  
Stanphill, Belton D., T/Sgt.  
Stellman, Leslie, T/Sgt.  
Stevens, Milton A., T/Sgt.  
Strickland, Joseph N., Capt.  
Svec, Millard, S/Sgt.  
Taylor, Charles K., Jr., Capt.  
Thompson, John J., T/Sgt.  
Thompson, Thomas W., Lt.  
Thyng, Harrison Reed, Maj. (& OLC)  
Topoll, George G., Lt. (& OLC)  
Travis, Robert F., Brig. Gen.  
Turner, Howard M., Col.  
Vasatka, Theodore T., Sgt.  
Waldron, George D., Sgt.

Wells, Ernest J., Capt.  
Wells, Marshall C., Lt.  
Wikke, Logan D., S/Sgt.  
Wilson, Barnett C., Lt.  
Wilson, Russell A., Col.  
Woodward, Robert L., Lt.  
Yakinovicz, Frank G., T/Sgt.

## 2nd OAK LEAF CLUSTER TO SILVER STAR

Kinney, William E., Maj.  
\*Kinney, Meyer, M/Sgt.  
Neumann, Leslie W., Lt.  
Perkins, Everett F., S/Sgt.

## OAK LEAF CLUSTER TO SILVER STAR

Blakeslee, Donald J. M., Lt. Col.  
Bong, Richard L., Capt.  
Capocelato, Robert J., S/Sgt.  
Caputo, John C., S/Sgt.  
Caviness, Sanford L., Cpl.  
Cool, Paul E., Capt.  
De Russey, John H., Lt. Col.  
Ferrante, Leo H., Sgt.  
Fishencord, Harold C., S/Sgt.  
Fitzgerald, Harold, T/Sgt.  
Fletcher, Arthur A., Jr., Capt.  
Forte, Norman L., Jr., Sgt.  
Gates, James F., S/Sgt.  
Gerer, Donald L., Lt.  
Ghrum, Elmer F., Lt.  
Hall, Donald P., Lt. Col.  
Hall, Earl O., Capt.  
Hansen, Glen R., T/Sgt.  
Hawthorne, Henry J., Maj.  
Heyman, Alfred A., Lt.  
Holsley, Raymond E., Lt.  
Humrichouse, William, Lt.  
Isles, Harry T., Pvt.  
Jauhainen, Donald, Cpl.  
MacDonald, Henry G., Capt.  
McClure, Robert E., Cpl.  
McGe, Donald C., Lt.  
Miller, Elwood E., T/Sgt.  
Moore, Malcolm A., Lt. Col.  
Myers, Henry V., Lt.  
Noller, Robert R., S/Sgt.  
Nollmeyer, Edward M., Capt.  
Prentice, George W., Maj.  
Schiffer, William H., S/Sgt.  
Swan, Robert P., Cpl.  
Sweedar, George, Sgt.  
Takala, William A., Pfc.  
Travis, Euel A., Lt.  
Wallace, Richard M., Cpl.  
White, Edward T., Pvt.  
Wilmarth, Clarence M., Lt.  
Wrenn, Joseph E., Cpl.  
Zeamer, Jay, Jr., Maj.

## DISTINGUISHED FLYING CROSS

Ackley, Gordon E., S/Sgt.  
Aholia, Carl R., T/Sgt.  
Albert, Robert C., S/Sgt.

Alfredson, Carl A., S/Sgt.  
Allemann, Charles R., Sgt.  
Allen, George P., S/Sgt.  
Allen, Nick A., Sgt.  
Altman, John T., T/Sgt.  
Aitshuler, Dave, T/Sgt.  
Amand, Edward J., S/Sgt.

(& OLC)  
Anderson, Andrew L., F/O (& OLC)  
Anderson, Everett P., Lt.  
Angevine, Louie M., S/Sgt.  
Arriza, Louie D., S/Sgt.  
Aspali, Angelo P., S/Sgt.  
Austin, Robert N., Lt. (& OLC)  
Avery, Richard H., F/O  
Ayers, Eber G., S/Sgt.  
Bailey, Albert A., S/Sgt.  
Baird, Robert L., T/Sgt.

(& OLC)  
Ballard, Clayton E., S/Sgt.  
Banasau, Ernest C., S/Sgt.  
Barcus, John R., S/Sgt.  
Bargmann, Allen G. E., Lt.  
Barnett, Edward, Lt.  
Barnett, Joseph C., S/Sgt.  
Bartlett, Edward R., S/Sgt.  
\*Bartlett, Thomas R., Lt.  
Beauregard, Francis, S/Sgt. (& OLC)

Beck, Howard K., Lt.  
Becker, Robert H., S/Sgt.  
Bedwell, Philip G., S/Sgt.  
Beightol, Willis E., Lt. Col.  
Bennett, Charles E., T/Sgt.  
Benson, Neville C., S/Sgt.  
Berkamp, Alfred B., T/Sgt.  
Bernard, Albert F., Lt.  
Bernhardt, Edward, Sgt.  
Best, Raymond R., Sgt.  
Bings, Charles R., S/Sgt.  
Biely, Bedford B., Lt.  
Billings, Sheridan B., T/Sgt.  
Bilyeu, Hal E., Lt.  
Binder, Glenn W., Lt.  
Bird, Robert R., Lt. (& OLC)  
Bliss, Vincent H., S/Sgt.  
Block, Harold, T/Sgt.  
Bloom, Irving C., Lt. (& OLC)  
Bock, James, Lt. (& OLC)  
Boes, Glen H., Lt.  
Bozalac, Fred B., S/Sgt.  
Bonorden, Ellis L., S/Sgt.  
Booth, Thomas C., S/Sgt.  
Boulanger, Clement C. L., S/Sgt.  
Bour, William J., S/Sgt.  
Bowdon, Edward F., S/Sgt.  
Brackendorf, Melvin C., Lt. (& OLC)

Brady, William F., Jr., S/Sgt.  
Brady, Roy E., Lt. (& OLC)  
Brayovich, Stanley, T/Sgt.  
Breedlove, Paul L., Jr., S/Sgt.  
Breslin, Edwin R., S/Sgt.  
Branahan, Leonard H., S/Sgt.  
Bridges, Charles T., S/Sgt.  
Brisbi, Lloyd W., T/Sgt.  
Britt, Richard W., Lt.  
Brown, Johnnie, T/Sgt. (& OLC)  
Brown, Joseph, S/Sgt.  
Brown, Stuart G., S/Sgt.  
Brunt, Daniel M., S/Sgt.  
Bunker, Walter L., Capt.  
Burton, Russell E., T/Sgt. (& OLC)

Byers, Richard G., T/Sgt.  
Calcut, Floyd C., Sgt.  
Callahan, Hayes B., S/Sgt.  
Cambell, Thomas C., Lt.  
Cavey, Max C., S/Sgt.  
Cavit, Charles D., Lt.  
Ceulvers, George F., Capt.  
Chadwick, Jefferson S., Lt. (& OLC)  
Chamberlain, Donald M., S/Sgt.  
Cilli, Nicholas G., Lt.  
Clark, Robert J., S/Sgt.  
Clarkston, John H., T/Sgt.  
Cleveland, John H., T/Sgt. (& OLC)

\*Cliff, Howard C., S/Sgt.  
Cochrane, Alexander M., S/Sgt.  
Colderson, Owen J., S/Sgt.  
Cantrelle, Paul A., S/Sgt.  
Caroon, Kenneth C., Sgt.  
Carroll, John H., T/Sgt.  
Carroll, William F., S/Sgt.  
Carter, Eldon L., S/Sgt.  
Cason, Alfred D., S/Sgt. (& OLC)  
Cole, Melvin J., T/Sgt.  
Coleman, Robert E., S/Sgt. (& OLC)  
Collison, Nelson R., F/O  
Collison, James M., Lt.  
Comey, Richard J., Lt.  
Confer, Charlie H., S/Sgt.  
Connolly, John E., T/Sgt.  
Cooper, Harold E., T/Sgt.  
Corn, Joseph, Lt.  
Coutant, William A., Sgt.  
Corrigan, James B., S/Sgt.  
Cosby, Walter E., S/Sgt.  
Cox, Ernest J., S/Sgt.  
Craddock, Daniel A., T/Sgt.

## By Way of Explanation

The names of AAF personnel to whom awards have been made are now listed in the ROLL OF HONOR only after they have appeared in General Orders. Transmission of this information to Headquarters, Army Air Forces, frequently involves a delay of several months between the time an award is made and its availability for publication in this department.

The number of names that can be listed in any one issue is controlled by the limited space available, and a considerable backlog of unpublished names has accrued. It is intended, in due course, that all awards to AAF personnel shall be listed here. If your name, or the name of your friend or relative, does not appear immediately following notification of the award, please consider the above facts before addressing inquiries to the AIR FORCE Editorial Office.

All ranks and grades given in ROLL OF HONOR listings are those held by the recipient of the award at the time it was made.

\* Posthumous

# Roll of Honor

A MONTHLY RECORD OF DECORATIONS AWARDED  
TO PERSONNEL OF THE ARMY AIR FORCES

(Continued from Preceding Page)

Crampton, Harry W., T/Sgt. (& OLC)  
Crawford, James M., S/Sgt.  
Creighton, James E., T/Sgt. (& OLC)  
Crimmins, John D., T/Sgt.  
Crippen, Richard M., S/Sgt.  
Crowley, William M., S/Sgt.  
Cupina, Joseph T., S/Sgt.  
Cupp, Norman L., S/Sgt.  
Curry, William T., S/Sgt. (& OLC)  
Cybulski, Walter, T/Sgt.  
Dabney, William C., Jr., Lt.  
Dafoe, Harold E., S/Sgt.  
Dahl, Donald R., Lt.  
Dailley, Max E., Lt.  
Daily, Wendell L., Lt.  
Davies, Robert N., S/Sgt. (& OLC)  
Davidson, Paul E., S/Sgt.  
Davis, Robert C., S/Sgt.  
Davis, Roy E., Jr., S/Sgt.  
Dawley, Elmer W., S/Sgt. (& OLC)  
Dehaets, Emiel F., S/Sgt. (& OLC)  
Decamp, Marcus A., T/Sgt.  
Decker, Donald R., Lt.  
Delatour, John B., Lt.  
Demato, Anthony, S/Sgt.  
Denbin, William, S/Sgt.  
Dick, Wagner W., F/O  
Dickinson, Fred A., S/Sgt.  
Dickman, Herman T., S/Sgt.  
Di Casol, Don N., Lt.  
Diecidue, Ignatius J., S/Sgt.  
Dietrich, Norris F., S/Sgt.  
Dobson, Edward M., Lt.  
Doester, Alexis, Lt.  
Doka, Michael, S/Sgt.  
Doll, Francis W., Sgt.  
Donoh, Melvin D., S/Sgt.  
Douglass, Leonard J., S/Sgt.  
Drakoulas, Homer, Lt.  
Duchene, Donald R., S/Sgt. (& OLC)  
Ducote, Clarence J., S/Sgt.  
Duffy, Edward A., S/Sgt.  
Dukate, Albert L., Jr., Lt.  
Dunckel, William W., S/Sgt.  
Durante, Frank V., S/Sgt.  
Earnhart, Charles L., Lt.  
Eckert, Otto, S/Sgt.  
Edelen, Earl T., Sgt. (& OLC)  
Edmiston, Grover A., S/Sgt.  
Edwards, John R., S/Sgt. (& OLC)  
Edwards, Robert L., Lt.  
Egan, William J., Jr., Lt.  
Egleston, William E., S/Sgt.  
Egler, Ralph W., Lt.  
Elliott, Robert C., S/Sgt.  
Emlore, Marvin R., S/Sgt.  
Emaus, Donald J., S/Sgt.  
Empkie, Carlson W., Lt.  
Enghardt, Jack B., Lt.  
English, Henry B., Sgt. (& OLC)  
Epting, Jacob B., Capt.  
Everhart, George C., Lt.  
Fager, Callistus E., Lt.  
Falletta, Charlie, Capt.  
Farrar, James J., Jr., T/Sgt.  
Farrell, George B., T/Sgt.  
Faulkner, James H., Lt.  
Fay, William J., S/Sgt. (& OLC)  
Felber, Robert E., Lt.  
Felix, Jose R., Lt.  
Fenner, Richard D., Jr., Sgt.  
Ferguson, Clay W., Capt.  
Ferkauff, Oscar, S/Sgt.  
Ferrington, Alfred S., S/Sgt.  
Fisher, Sheldon, Lt.  
Finerman, Joseph E., Lt. (& OLC)  
Fisher, Harold A., Lt.  
Fisher, Richard L., S/Sgt.  
Fitzgerald, Mack, T/Sgt.  
Fitzpatrick, Clark S., S/Sgt.  
Fitzsimmons, William V., Lt.  
Flaherty, Joseph E., Lt.  
Ford, Howard T., T/Sgt.  
Foster, Clifton C., Lt.  
Fowble, Edward L., Lt.  
Fox, James A., Lt.  
Foy, James J., T/Sgt. (& OLC)  
Franceur, Lucien P., S/Sgt.  
Franks, Jesse D., Lt.  
Frasto, Guernand J., S/Sgt.  
\*Francoro, Carmine J., Lt.  
Frost, Earl, S/Sgt.  
Futcher, Richard F., S/Sgt. (& OLC)  
Fulton, George A., S/Sgt.  
Fulz, Laron M., S/Sgt.  
Furoell, Paul M., S/Sgt.  
Gaherhart, James, S/Sgt.  
Gaffney, William J., S/Sgt.  
Gallas, Henry A., S/Sgt.  
Gambrell, Eugene M., S/Sgt. (& OLC)  
Gamelin, Henry A., S/Sgt.  
Gates, William J., S/Sgt.  
Geers, Charles P., Sgt. (& OLC)  
Gekas, John N., Lt.  
Gentry, Rowland, Capt.  
Gerka, Louis R., S/Sgt. (& OLC)  
Gholson, Grover D., Lt.  
Gibbs, Jerrold A., S/Sgt.  
Gilbert, Oliver C., S/Sgt.  
Gilbert, Thomas D., S/Sgt.  
Gill, James W., Lt.  
Gilliat, William R., Lt.  
Giorchino, Edward B., Lt.  
Givens, John A., S/Sgt. (& OLC)  
Gleason, Raymond L., S/Sgt. (& OLC)  
Glitzer, Paul H., T/Sgt.  
Godwin, Harold T., S/Sgt.  
Goldberg, Jerome J., Lt. (& OLC)  
Goletz, Walter A., T/Sgt. (& OLC)  
Goodison, James E., Jr., S/Sgt.  
Goodman, Earl E., T/Sgt.  
Goodnow, Edward W., Lt.  
Goodnow, Walter N., T/Sgt.  
Goulsby, James R., Lt.  
Gough, Eugene E., T/Sgt. (& OLC)

Gouin, Yves J., Cpl.  
Gover, James S., Lt.  
Gravlin, Zelwood A., S/Sgt.  
Greecki, Anthony A., S/Sgt.  
Greeley, Bruce P., T/Sgt.  
Green, George L., S/Sgt.  
Gregg, Harry W., Lt.  
Gregg, Hugh E., S/Sgt.  
Gregory, Whitney L., Jr., Lt.  
Grett, Gerald L., S/Sgt.  
Griffin, Edward C., S/Sgt.  
Griffin, Robert A., S/Sgt.  
Grimes, George G., Lt.  
Grinn, Bennett G., Lt.  
Grosse, Albert F., S/Sgt.  
Grow, Robert E., T/Sgt.  
Guani, John, Sgt. (& OLC)  
Guillerman, John L., Lt.  
Gutknecht, Wilbur S., T/Sgt.  
Haddock, Lawrence, Lt.  
Hale, James B., T/Sgt.  
Hall, William L., Lt.  
Halnon, James M., Lt.  
Hamel, Edgar O., T/Sgt.  
Hamilton, Kenneth D., Lt.  
Hamilton, Robert H., S/Sgt.  
Hamlyn, Raymond E., Lt.  
Hammond, George E., Lt.  
Hammond, Roy D., T/Sgt.  
Hammons, James W., Lt.  
Hansen, Kermit P., Lt.  
Harbison, Elwood W., S/Sgt.  
Hartick, Walter D., S/Sgt.  
Harmon, Millard F., Lt. Gen.  
Harris, Robert A., Lt.  
Hartney, George E., S/Sgt.  
Haubrich, Sylvester E., S/Sgt.  
Hause, Maurice E., Lt.  
Hedden, Edgar V., Lt.  
Haworth, Carl O., Lt.  
Hayes, Henry G., S/Sgt.  
Hayes, John J., T/Sgt.  
Hayes, Russell D., S/Sgt.  
Healy, Brendon D., S/Sgt.  
Heckert, Murray G., S/Sgt.  
Heisner, Ray A., S/Sgt.  
Helin, Theodore, Lt.  
Heller, Clayton E., S/Sgt.  
Henderson, Elvin H., S/Sgt.  
Hensle, Herman H., Lt.  
Herbert, Kenneth G., Capt.  
Hermonowski, John J., Lt.  
Heyer, Edwin H., Lt.  
Hickey, Ronald L., S/Sgt.  
Hinch, Ralph V., Lt. (& OLC)  
Hinchman, Howard R., Lt.  
Hinely, Jesse H., T/Sgt.  
Hirsch, Winfred E., Lt.  
Hobbs, Charles L., Lt. (& OLC)  
Hobson, Robert L., S/Sgt.  
Hoffman, Charles A., Lt.  
Hoffman, Virgil L., T/Sgt.  
Holbrook, Charles T., Lt.  
Hollen, Arnold H., S/Sgt.  
Holland, John E., T/Sgt.  
Hollingsworth, Edwin C., Lt.  
Holroyd, George K., T/Sgt.  
Holt, Guy E., Jr., Lt.  
Holwegger, Christopher N., S/Sgt.  
Houston, James S., Lt.  
Iosco, Joseph, S/Sgt. (& OLC)  
Irwin, John F., T/Sgt.  
Jackson, Dewey O., T/Sgt.  
Jackson, Harlan C., Lt.  
Jacobs, Frank C., S/Sgt.  
Jarvis, Harry L., Jr., Capt. (& OLC)  
Jett, Verl E., Lt.  
Johnson, Arthur H., Lt.  
Johnson, Arthur L., S/Sgt.  
Johnson, Vernie F., S/Sgt.  
Johnson, Kenneth F., Lt.  
Johnston, Paul E., S/Sgt.  
Johnston, Robert H., T/Sgt. (& OLC)  
Jones, Donald K., F/O  
Jones, Fred H., Lt.  
Jones, Jack S., Capt. (& OLC)  
Jones, Ralph E., Jr., Capt.  
Jones, Stanley V. N., Lt.  
Jordan, Rufus E., Lt.  
Jose, Elmer H., Lt.  
Joswick, Jerry J., T/Sgt.  
Joyce, Thomas B., Lt. (& OLC)  
Juddkins, Francois J., Lt.  
Just, Robert, Sgt.  
Kaiser, James M., Lt.  
Kaiser, Louis, S/Sgt. (& OLC)  
Kallal, Lawrence B., S/Sgt.  
Kalomalos, Peter, S/Sgt.

Kaminski, John E., S/Sgt.  
Katz, Theodore, Lt.  
Kaylor, George H., Sgt.  
Keelling, Clyde E., S/Sgt.  
Keeper, William E., Lt.  
Kees, Frank D., T/Sgt.  
Keefe, James G., S/Sgt.  
Kellar, Douglas H., Capt.  
Kelleher, Harry A., Sgt. (& OLC)  
Keller, Daniel J., S/Sgt.  
Keller, Roscoe L., S/Sgt.  
Kelly, George H., S/Sgt.  
Kendall, Michael G., Lt.  
Kensit, Arthur C., S/Sgt.  
Kernan, Robert M., Lt. (& OLC)  
Kerns, Albert G., Jr., S/Sgt.  
Kessler, Robert S/Sgt.  
Ketterling, Dell W., T/Sgt.  
Key, James R., Jr., S/Sgt.  
Kiefer, Norman C., T/Sgt.  
Kil, Joseph F., Lt.  
Kimentas, Charles, T/Sgt.  
King, Arnold T., Lt.  
Kingman, Walter L., Lt.  
Kinnane, John W., Jr., Sgt.  
Kiple, James E., S/Sgt.  
Klenk, Julius M., Lt.  
Klimpel, Arnold E., Sgt.  
Klinghoffer, Leon, Lt.  
Klose, Benjamin B., Lt.  
Knight, Seymour G., Lt.  
Knudson, Cecil C., Capt.  
Knutsen, Ernest F., S/Sgt. (& OLC)  
Kobler, James K., T/Sgt.  
Koch, Ross L., S/Sgt.  
Koen, Clifford E., Jr., S/Sgt.  
Koford, James P., S/Sgt.  
Koford, James P., S/Sgt.  
Konecny, Harry G., T/Sgt.  
Kotil, Elwood E., S/Sgt.  
Kozak, Isaac, Lt.  
\*Kozvik, Walter J., S/Sgt.  
Kramer, Roger J., S/Sgt.  
Krampe, Leonard J., S/Sgt.  
Krause, Harry C., T/Sgt.  
Kretzer, Harold, T/Sgt.  
Krugel, Stanley S., T/Sgt.  
Kuhlmann, Gerald H., Lt.  
\*Kunze, Owen L., Lt.  
Kuruki, Ben, S/Sgt.  
Kurtz, Charles H., Lt.  
Kyer, Gilbert H., Lt.  
Laidlaw, Clarence A., S/Sgt.  
Lambert, Floyd E., Lt.  
Lancashire, Lawrence H., Lt.  
Landry, Joseph A., Lt.  
Lang, Jack A., T/Sgt.  
Lavin, Edward H., Sgt.  
Lanning, Jack B., Lt.  
Larsen, Richard E., S/Sgt.  
Larsen, Victor H., Lt.  
Larson, Carl H., Lt.  
Larzelere, Wickham E., T/Sgt.  
Lason, Henry A., Jr., Lt.  
Lavin, Richard W., Capt.  
Lawrence, Rollo C., Jr., Capt.  
Learned, Harold G., Jr., Lt.  
Lee, Bert, Jr., Sgt.  
Lee, David V., S/Sgt.  
Lefingwell, Claude V., Lt.  
Leibhauser, Robert J., Lt.  
Leibowitz, Aaron P., S/Sgt.  
Leising, Frank E., T/Sgt.  
Leisure, Earl T., T/Sgt.  
Lejeune, Edward G., T/Sgt.  
Leming, James O., S/Sgt. (& OLC)  
Lenke, Adelbert J., Lt.  
Lenke, Herbert M., Sgt.  
Lents, Murphy K., Lt.  
Lentz, John H., Lt.  
Leon, Howard E., S/Sgt. (& OLC)  
Leonard, Frank M., S/Sgt.  
Leonard, William F., T/Sgt.  
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Levy, Theodore, S/Sgt.  
\*Lewis, Harold E., Capt.  
Lewis, Herman W., Lt.  
Lewis, Paul C., T/Sgt.  
Lewis, Rex E., Lt.  
Leyva, Victor, S/Sgt.  
Liljergen, Dale H., Sgt.  
Liljback, John E., S/Sgt.  
Lind, Wilfred N., Lt.  
Lindman, Burdette V., S/Sgt.  
Lindgren, John H., S/Sgt.  
Lindsey, Virgil B., Lt.  
Lipps, Richard, S/Sgt.  
Lipten, David, Lt.  
Lis, Edward A., T/Sgt.  
Liscomb, Russell A., Lt.  
Littleton, Joe, Lt.  
Locky, Robert T., S/Sgt.  
Lofgren, Maurice A., Lt.  
Long, George W., Capt.  
Long, Joseph D., T/Sgt.  
Long, Robert E., Jr., S/Sgt.  
Longoria, Robert, S/Sgt.  
Looke, Robert E., Sgt.  
Looker, Rollin C., S/Sgt.  
Lovell, John Wade, Lt.  
Lown, William D., Lt.  
Loyd, Henry C., T/Sgt.  
Luellio, Benjamin J., S/Sgt.  
Lutjan, Lydell R., S/Sgt.  
Lycan, Richard G., Capt.

MacDonald, Allan M., Lt.  
McAtee, James C., S/Sgt.  
McAtee, Patrick H., S/Sgt.  
McAuliff, Harold C., Lt.  
McBride, Ralph J., Maj.  
McCabe, Ernest G., S/Sgt.  
McCandless, George, Jr., Lt.  
McCauley, Charles P., S/Sgt.  
McClain, James H., Lt.  
McClellan, Wilbur A., T/Sgt.  
McFarland, Torrence H., Lt.  
McGee, Donald C., Lt.  
McGrain, Thomas W., Lt.  
McGrath, Thomas J., S/Sgt. (& OLC)  
McGuire, Edward T., Lt.  
McLaren, Hugh R., S/Sgt.  
McLendon, Donald C., S/Sgt.  
McLeod, Merton J., S/Sgt.  
McMackin, Charles G., S/Sgt.  
McMenamin, Victor A., S/Sgt.  
McNair, Robert W., T/Sgt.  
McNamara, Louis J., S/Sgt. (& OLC)  
McNeil, William H., Lt.  
McNickle, Marvin L., Maj.  
McSweeney, Edward F., S/Sgt. (& OLC)  
\*McWhorter, Richard W., Lt.  
\*McWilliams, Major H., Lt.  
Mackey, Walter E., Lt.  
Mackley, John R., Sgt.  
Maddock, Jack E., Cpl.  
Magarano, Henry, S/Sgt.  
Makin, George J., Lt.  
Malone, Hugh J., S/Sgt.  
Malone, Maurice C., T/Sgt.  
Maloy, Charles L., Jr., T/Sgt.  
Mann, Harold J., Lt. (& OLC)  
Manquon, Joseph F., T/Sgt.  
Marchese, Francis T., S/Sgt.  
Markham, Claron E., S/Sgt.  
Marsh, Arthur J., S/Sgt.  
Marshall, John E., S/Sgt.  
Martin, Donald A., S/Sgt. (& OLC)  
Martin, George T., Lt.  
Mason, Gerald D., T/Sgt.  
Masterson, John J., S/Sgt.  
Matson, Kenneth H., S/Sgt.  
Matthews, Milton F., S/Sgt.  
Mattingly, Joseph B., Lt.  
Maucher, Robert A., Capt.  
May, John H., Lt.  
Mead, Robert F., T/Sgt. (& OLC)  
Mechanic, Bernard, T/Sgt.  
Medeiros, Louis C., S/Sgt.  
Mendelsohn, Marvin R., Lt.  
Mendonca, Richard D., N. Lt.  
Merrill, Clinton D., T/Sgt.  
Merrick, James L., T/Sgt.  
Merrigan, John, S/Sgt.  
Metsa, Tauno I., T/Sgt.  
Meyer, Harold B., S/Sgt.  
Meyers, Charles R., Jr., Lt.  
Meyers, Kermit E., Capt.  
Michaels, Willard L., Lt.  
Migliaccio, Anthony F., T/Sgt.  
Milioto, Carmelo J., T/Sgt.  
Miller, Andrew J., S/Sgt.  
Miller, Ernest A., Lt.  
Miller, Floyd B., Maj.  
Milligan, Robert Gold, Lt.  
Milliner, Joseph E., F/O  
Minyard, William T., S/Sgt.  
Mitchell, Edward R., Lt.  
Monson, Keith C., S/Sgt.  
Montemurro, Francis V., Lt.  
Mosco, Charles E., Lt.  
Moore, Harold B., Lt.  
Moore, John M., Lt. (& OLC)  
Moore, Lynn R., Capt.  
Morefield, Luther W., Jr., Lt.  
Morgan, James R., Lt.  
Morgan, Maurice C., Capt.  
Morse, Robert A., S/Sgt.  
Morris, Kermit R., S/Sgt. (& OLC)  
Morris, Mark A., S/Sgt.  
Morris, Wesley D., Lt.  
Morrison, Marvis C., Lt.  
Morton, William G., T/Sgt.  
Mosco, Marvin, Lt.  
Moss, Benjamin M., Lt.  
Mostow, Jechiel, Sgt.  
Mount, William J., Lt.  
Moutier, John L., Jr., Lt.  
Muldoon, Bernard R., Lt.  
Munroe, George B., Lt.  
Munroe, Robert W., Lt.  
Murphy, Charles M., Lt. (& OLC)  
Murphy, Gerald E., S/Sgt.  
Murphy, Lawrence E., S/Sgt.  
Murphy, Phillip O., S/Sgt.  
Murphy, William G., Jr., Lt.  
Murphy, William J., Jr., T/Sgt.  
Murray, Harold R., S/Sgt. (& OLC)  
Murray, Robert C., Lt.  
Myres, Max M., F/O  
Nading, William D., Lt.  
Nappi, John S/Sgt.  
Nagle, Robert D., Jr., Lt.  
Neelam, William E., Lt.  
Nelson, Clarence W., T/Sgt.  
Nelson, Milton, Lt.  
Nelson, William J., S/Sgt.  
Newman, Herbert J., Lt.  
Newmes, Robert G., S/Sgt.  
Newport, Walter M., S/Sgt.  
Newton, George L., Lt.

Nichols, Cyril E., Capt.  
Nicholson, Louis M., Lt.  
Nicholson, Paul A., T/Sgt.  
Noian, James F., Lt.  
Noller, Robert R., S/Sgt.  
Norman, Arthur R., S/Sgt.  
Norwood, Feaster A., Lt.  
Nosal, John A., S/Sgt.  
Nossum, E. J., Lt.  
Nunlist, Paul F., Lt.  
Nyblade, Walter E., Lt.  
Oberste, Marcellus L., S/Sgt.  
Ogara, Elmer T., Sgt.  
O'Grady, John E., F/O  
O'Helemy, Paul L., S/Sgt.  
Olsen, Odin C., F/O  
O'Leary, Thomas, Capt.  
Olson, Adolph, S/Sgt.  
Olson, Clarence R., S/Sgt.  
Olson, Richard H., S/Sgt.  
Olson, Robert D., Lt.  
Olson, Stanley F., Lt.  
O'Mara, Eugene J., S/Sgt.  
O'Neal, James B., Lt.  
O'Regan, John, Sgt.  
O'Regan, Robert J., II, Lt.  
Ormsbee, Albert M., S/Sgt.  
Osborn, Thomas M., S/Sgt.  
Osbourne, Glenn C., Lt.  
Osburn, Donald J., S/Sgt.  
Oser, Albert H., S/Sgt.  
O'Sullivan, Donald R., Capt.  
Pace, James E., S/Sgt.  
Pacirock, Marion S., T/Sgt.  
Paine, Charles J., Lt.  
Paliga, Frank, S/Sgt.  
Paolillo, Michael A., T/Sgt.  
Papish, Philip G., Lt.  
Parrish, Kenneth W., T/Sgt.  
Parker, Ear R., T/Sgt. (& OLC)  
Parker, George H., S/Sgt.  
Parker, William H., Capt.  
Parshall, Joseph W., Lt.  
Parsons, Joe E., T/Sgt.  
Pascoe, Theodore I., Lt.  
Passaicqua, Peter C., S/Sgt.  
Pala, James E., Capt.  
Paul, Daniel W., S/Sgt.  
Paulin, Leopold J., S/Sgt.  
Paulsen, Earl J., T/Sgt.  
Paulsen, Richard B., Lt.  
Pearson, Edgar J., S/Sgt.  
Pearson, James E., Capt.  
Pendleton, Richard H., Jr., Lt.  
Perry, Horace E., S/Sgt.  
Petri, Norbert E., S/Sgt.  
Petrie, Louis M., T/Sgt.  
Pett, David, Capt.  
Phillips, Charles H., S/Sgt.  
Phillips, Glenn W., S/Sgt.  
Phillips, Philip J., Jr., Lt.  
Picard, Leo J., S/Sgt.  
Piccolo, Anthony J., Lt.  
Pierce, Donald G., S/Sgt.  
Pierce, Richard W., T/Sgt.  
Pinnott, Donald A., S/Sgt.  
Piper, Ernest B., T/Sgt.  
Pitak, B. C., S/Sgt. (& OLC)  
Podotak, Stanislaw J., Lt.  
Poillon, Charles B., Capt.  
Poirier, Meddie N., S/Sgt.  
Polaschek, David A., Lt.  
Polisky, Harold L., Lt.  
Ponce, Victor J., Lt.  
Poppe, John F., Lt.  
Popham, William L., T/Sgt. (& OLC)  
Porter, Enoch M., Jr., Lt.  
Porter, James L., Capt.  
Porter, Jarius H., Jr., T/Sgt.  
Potts, Joseph S., S/Sgt.  
Powell, Hugh S., S/Sgt.  
Powell, Herman Thomas, Lt.  
Powers, John J., T/Sgt. (& OLC)  
Prather, William H., F/O  
Price, Hillard S., Lt.  
Price, Robert J., Lt.  
Price, Robert V., Lt.  
Pribble, Fred A., T/Sgt.  
Pruett, Ernest C., Lt.  
\*Pryor, John E., Jr., T/Sgt.  
Purcell, Thomas Q., S/Sgt.  
Purley, Joseph N., Jr., Lt. (& OLC)  
Quinlan, Charles P., T/Sgt.  
Rabb, Gerald E., T/Sgt. (& OLC)  
Ramsey, Ivan W., S/Sgt.  
Rans, Robert, S/Sgt.  
\*Rantucci, Frank F., T/Sgt.  
Rantucci, Eugene V., Capt.  
Raschnick, Leonard L., T/Sgt.  
Rath, Leland J., Lt. (& OLC)  
Rauba, Anthony J., S/Sgt.  
Ray, James Andrew, Lt.  
Reasoner, Robert J., S/Sgt.  
Rees, Guy, Jr., S/Sgt.  
Reenan, Edward B., T/Sgt.  
Reid, James H., Lt.  
Reiter, Jack, Lt.  
Reitz, Lawrence E., T/Sgt.  
Rethman, Vincent C., Lt.  
Reuther, Daniel, Jr., S/Sgt.  
Reynolds, William J., Lt. (& OLC)  
Rhodes, Rexford, S/Sgt.  
Rice, Peter J., T/Sgt.  
Richards, Dean B., Lt.  
Richards, John E., Lt.  
Richey, B. O., T/Sgt.  
Richtotte, Henry, Sgt.  
Rielly, John R., S/Sgt. (& OLC)  
Riggs, Benjamin F., Lt.  
Riley, John E., T/Sgt.  
Riley, Robert Kenneth, Sgt.  
Riley, Thomas R., Sgt.  
Rimka, Clarence R., Capt.  
Rispoli, Anthony, Lt.  
Ritener, Arthur B., S/Sgt.  
Rivers, Richard T., Lt.  
Roberts, Charles L., Sgt.  
Roberts, Newell D., Capt.  
Robertson, Dallas R., S/Sgt.  
Robertson, Edward W., T/Sgt.  
Robins, Ralph M., S/Sgt. (& OLC)  
Robinson, Adelfert M., S/Sgt.  
Robinson, Harry R., S/Sgt.  
Robinson, James D., S/Sgt.

(Continued on Page 64)

**BERLIN**



# CAPITAL TARGETS

Nazi-European capitals—vital centers of enemy production, storage and communications—have felt the full force of aerial blows struck by the Army Air Forces.

While attacks on Berlin and Rome were increasing in intensity, air assaults were launched upon capitals of Axis satellites in the Balkans.

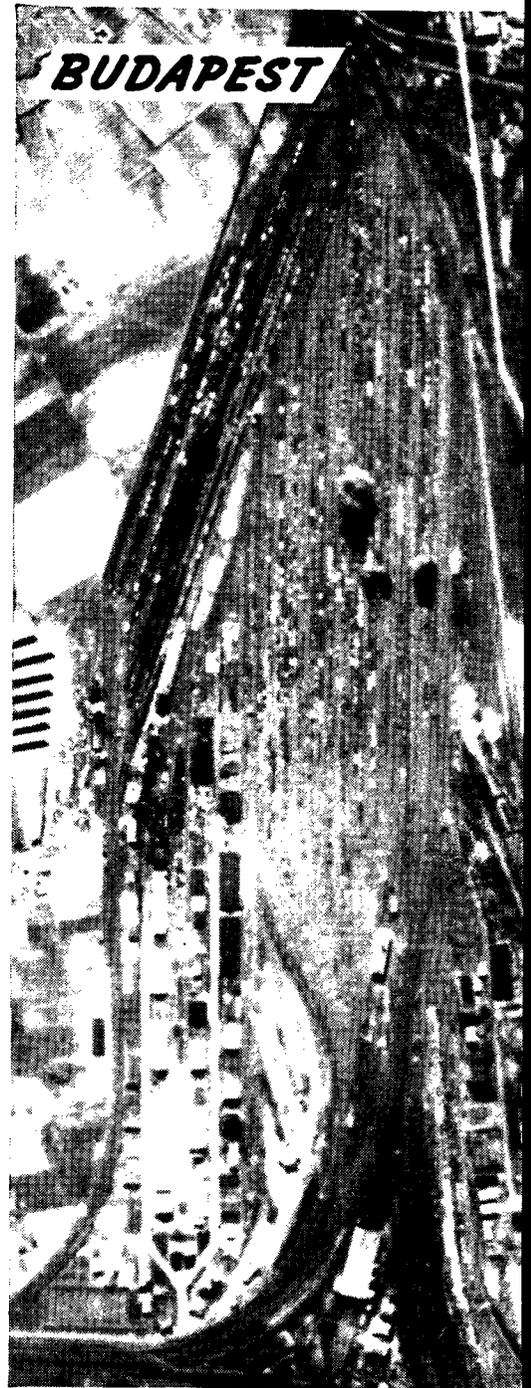
Pictured are four targets blasted by AAF precision attacks. In the Berlin photo, clouds of smoke are rising from the Erkner ball-bearing plant while another cluster of bombs is on its way to continue the destruction.

Over Rome is seen a B-26 which is dropping its bomb load on the Tiburtina railroad yards. Vatican City is shown in the lower right corner of the photograph.

First bomb bursts in the center of rolling stock at a freight terminal record a bulls-eye for AAF bombers in their initial attack on the Hungarian capital of Budapest. Adjacent oil refineries and the Tokol airdrome also were severely damaged.

Dense smoke is seen billowing high in the sky over Bucharest as fires started by bombs destroy locomotive round-houses, rolling stock and storage areas in the Rumanian capital. ☆

**BUDAPEST**

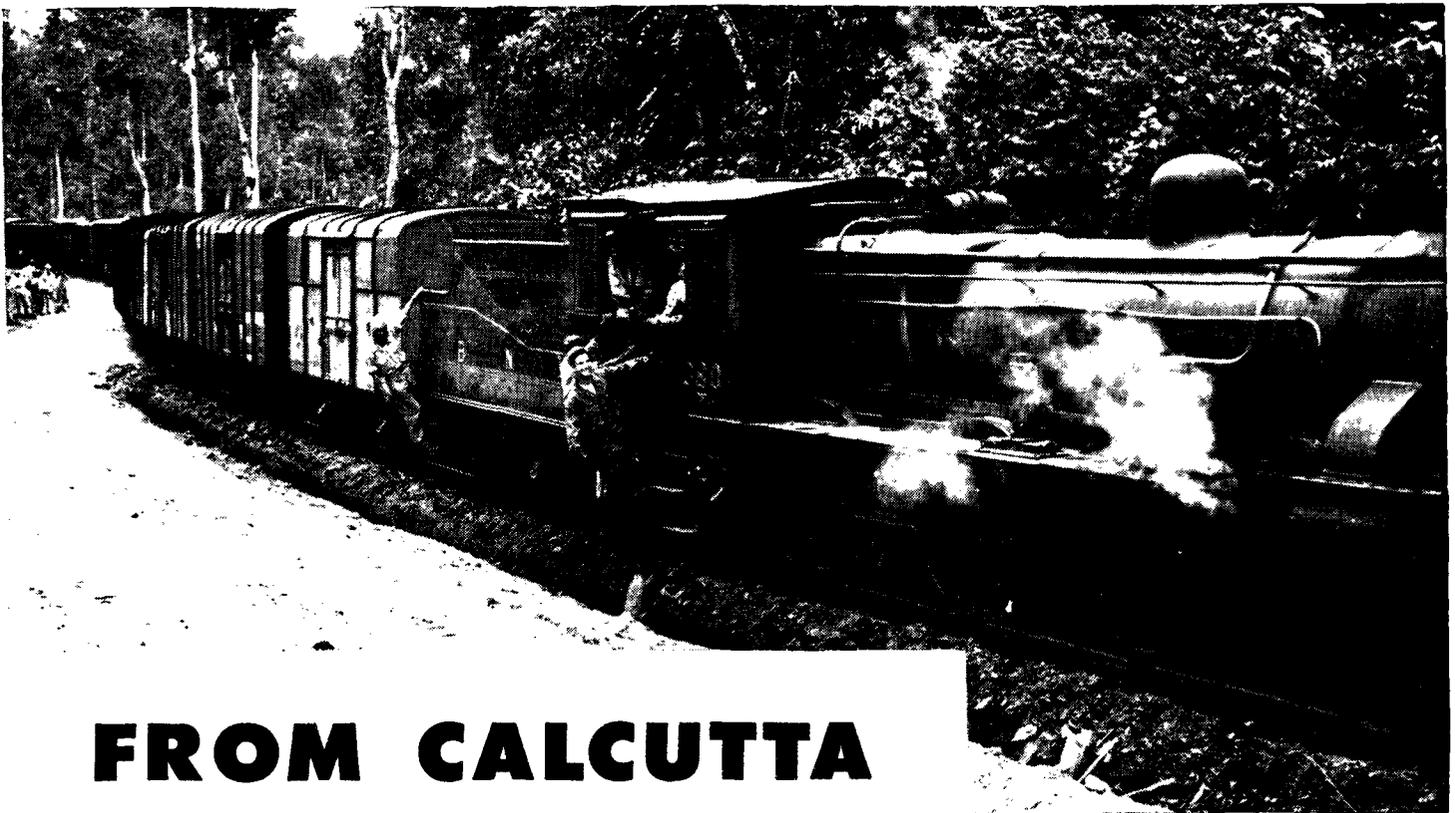


**BUCHAREST**



**ROME**





The United States Army has taken over the meter gauge Bengal and Assam railroad in India to transport materials of warfare.

# FROM CALCUTTA TO THE HUMP

By Capt. Charles A. Mitchell  
India-China Wing, ATC

and Capt. Robert V. Guelich  
AIR FORCE Overseas Staff

GROUND personnel of the AAF and ASF, struggling for the last two years to keep China's only supply line open, knew that much of the success of an Allied offensive into northern Burma would depend upon their ability to keep supplies flowing over India's frail transportation system. No longer could the Orient's one-mile-an-hour ox-cart pace be tolerated as the time approached for General Stilwell's forces to launch their ground and air offensive with the British into northern Burma.

American rail experts took over management of the vital Assam-Bengal railroad; expeditors scurried about the docks, escorted river barges and freight cars; construction engineers strengthened cranes while others simplified trans-shipment procedures where rail gauges changed. Broken down and inefficient equipment was supplemented with new materiel. This task of bolstering a worn-out transportation system with few materials and slow-moving, unskilled natives for manpower while battling the climate of the humid, flooded monsoon country was tedious and exasperating but not impossible.

From the States, supplies pour into

ships, and sail halfway around the world to be unloaded onto the heads of the frail coolies of India. Ports are jammed with United Nations cargo ships. Cranes—so few that ships have to wait in line for them—drop their lifting platforms into the holds as Indian foremen shout, "Astay, Astay," (Take it easy, careful) at the dhoti-draped Bengali or Punjabi who operate them.

From the hold of a ship in Calcutta comes a 6 x 6-foot crated truck, an aircraft engine, crated wing panels and fuselages, cases of canned food, clothing and hundreds of other military supplies destined for the British, Americans and Chinese. Frequently the equipment, such as a 2,000-gallon gasoline trailer, is too heavy for the crane. Then, the ship's boom goes to work, or a floating crane ties up alongside the ship to do the job.

Flat-wagons (railway flat cars), trucks of all kinds, "country boats" (high-stern river barges) and coolie heads carry the cargo away. Urgently needed supplies such as aircraft spares, high priority freight and mail are rushed to an air-drome for the 4½-hour air trip to Assam. Planes sometimes are cleared from one

field at the rate of one every five minutes. Remaining supplies are loaded in trucks or laboriously carried, one box at a time, atop coolie heads to the "go-downs" (warehouses) until more transportation is available. Such labor saving devices as wheelbarrows, power trucks or small hand-pulled freight wagons are rarities. Moreover, the coolie's arms are weak; it usually takes two men to lift a box that one can carry on his head.

To move a crated engine, twenty coolies are needed, and only when the head man synchronizes them with the ancient chant of "Hey, saw . . . hey, saw . . ." are they able to budge the box.

SINCE they do not understand English, the sergeant who supervises the gangs has to know Hindustani, Urdu or one of several dozen other dialects. His words may carry a Brooklyn or Brookline accent, but if he yells loud enough with plenty of gestures, working nine times harder than the Indians, he'll keep the supplies cleared away from the unloading dock so another ship can move into the slip and unload its cargo.

While officers and GIs cuss and sweat on the docks, the "country boats," rationed like all other forms of transportation to ASC and ASF by the British, drift away and hoist their small sails to start their trip of more than three weeks up the Hooghly and Brahmaputra rivers to the "ghats" (landings) in Assam. If

## Transportation difficulties are the rule, not the exception, in the CBI theatre, and those encountered on the road to Assam are among the toughest.

the tide is running out, they pull up to shore until it turns. If there is no wind, the boatmen walk fore and aft with long oars to propel the barge slowly upriver. During the dry season, silt and sand bars sometimes delay shipments for weeks.

Trucks leaving the dock areas for the supply depots move at the same slow pace, for they must traverse the narrow streets that are jammed with carts pulled by plodding bullocks and water buffaloes. Gears grind and whine as each truck creeps along at a snail's pace, stopping when an Indian woman complacently ambles across the street with a basket of dung on her head, crawling forward again behind a cart piled high with rice or dripping bags of molasses being pushed by four ragged, straining natives. There are no other streets, no by-passes; our supplies move at the same pace the Orientals move. Sometimes it takes three to four hours to drive through such masses of humanity.

Arriving at the "go-down" area, problems begin anew. Most of the warehouse space is spotted in abandoned jute mills. Entrances must be enlarged, walls reinforced, lighting systems installed, bins built, natives hired and trained. Truck assembly areas frequently are clogged because shipments can't be scheduled properly; an empty yard today may be overflowing five days later, even though natives and GIs work continuously to assemble the vehicles. One jeep assembly line would blast all theories of production line efficiency, yet the corporals, sergeants and unskilled natives keep putting the jeeps together and driving them away.

The vehicles aren't driven very far, however, for there is no passable road from Calcutta to Assam. All vehicles must be transported by rail, at least half-way to their destination in Assam.

Railroads are unlike any in the States. They originally were constructed to transport tea and rice when schedules were not of much importance and traffic was light. Most freight was packaged in boxes and sacks that could be carried on the heads of natives. There was no need for cranes or gasoline pumping stations.

With the deluge of large quantities of heavy military equipment for the support of our air and ground forces, the rail system bent almost to the breaking point. Rails, with one spike to a tie, spread under the heavy loads and derailments occurred frequently. Warehouse space at transfer points soon was crammed to overflowing for all of our supplies had to go to the end of the last branch line. The problem was similar to that of reversing the flow of a river, forcing all

the water at the mouth back through one tributary system. The small channels of the subsidiary soon overflow. But there was only one rail line to Assam so the supplies of war materials had to be forced through it as fast as possible.

As soon as enough flat-wagons are allocated to form a military train, they are loaded with vehicles, supplies and personnel and started out of Calcutta—sandwiched between civilian freight and passenger trains. Because the rail line is heavily over-loaded, progress is unbelievably slow. From one to three days are required to make the first leg of the trip to a whistle-stop where some freight is transferred to narrow gauge cars.

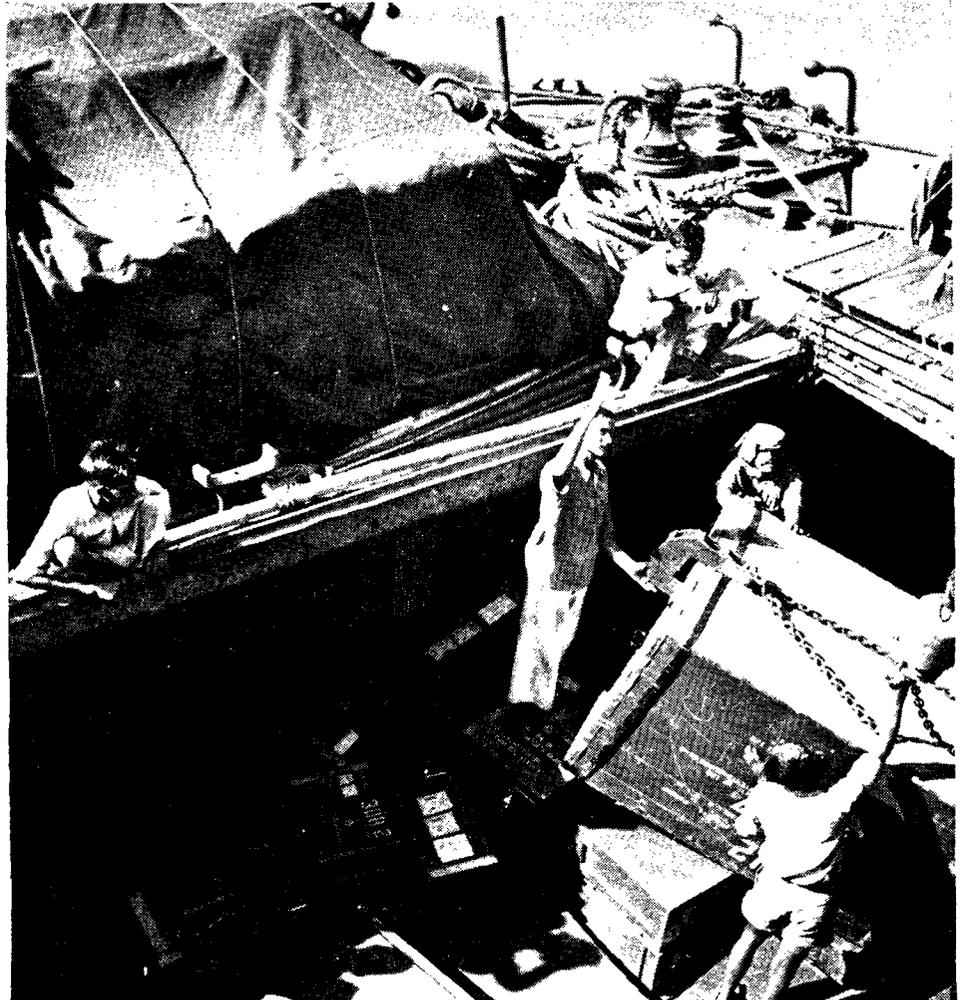
Transshipment takes time, but there is no alternative. Gasoline drums are slung from the shoulders of four coolies when it must be moved uphill; otherwise the drums are rolled. Heavy equipment is moved by an electric hoist, one of the few

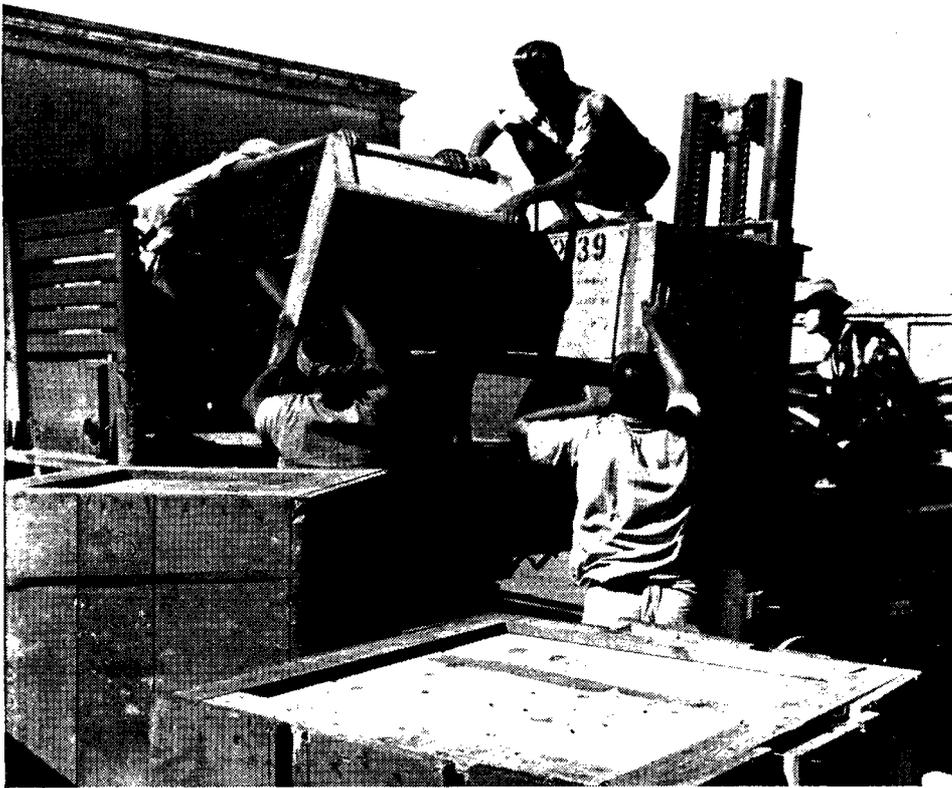
to be found along rail lines. Bulk gasoline is pumped from broad gauge to narrow gauge cars. Frequently, there are not enough narrow gauge cars available to permit transfer of all equipment, and much of it is diverted into go-downs and storage areas. Large AAF trailers can be shipped only on extra long flat wagons, and since there are very few such wagons, the trailers often have to wait many days for the special cars to be returned to this transshipment center.

FORTUNATELY, a second transfer point between the two railroads is useable. It is here that most vehicles, personnel and remaining supplies are transferred. Vehicles drive directly from the broad gauge flat wagons onto the narrow gauge wagons—provided there are empties on the siding. However, some trucks have to have their left rear dual wheels and left fenders removed to avoid sideswiping other trains.

Some trains leaving this center are routed down a branch line to the river where personnel and freight are loaded on a steamer, thereby reducing the load that has to be carried by the railroad and saving one ferry crossing. *(Continued on Next Page)*

These AAF supplies are nearing the end of their journey from the United States, one of the long routes which supply our forces around the world. Here native Indian laborers assist in unloading boxes from a river barge near an air depot from which they will be issued to fighting units.





One enlisted man and an American made fork truck load Air Force supplies at a warehouse in India. Indian laborers help with the crates which will be loaded on trucks and taken to transports.

Farther up the main line, vehicles are unloaded, re-assembled, ferried across the river and driven out on a passable road that leads to our bases in Assam. This last lap to the tea plantation country takes but a few days, depending on the weather and, during the monsoons, on the number of road wash-outs.

Heavier freight on the main line continues to a railroad ferry where the loaded flat wagon must be laboriously

shuttled across the river. Here, personnel and freight from the river steamers are reloaded on the train to begin their last leg of the tedious journey to upper Assam.

When supplies and equipment reach Assam's bases, they are distributed promptly to dispersed ASC and ASF warehouses. Some are sent immediately to engineers and troops extending the Ledo road. Some are parachuted to advance patrols in Burma, to our air-sup-

plied flight strips and to ATC crews "walking back" from bail-outs over the Hump. Other supplies are loaded promptly into the Commandos and Liberators of ATC's India-China Wing that 24 hours a day fly the shuttle route over the Himalayas from India to China.

In China, transportation is almost as difficult, except that gasoline and oil and repair parts are more scarce; roads are almost impassable and railroads are restricted to about twenty miles an hour.

A copy of ATC's freight manifests for one day would show more than 200 different types of materiel being sent to the 14th Air Force and to ground troops under General Stilwell. These items have been brought to Assam from the States by the normal water and land route in three to six months or longer, and by air express in as little as four days.

Transportation difficulties are the rule not the exception in this war theatre. Even after receiving its supplies in upper Assam, one ASC unit takes three and a half days to get supplies to an airfield only forty minutes distant by air; its trucks must drive over monsoon-washed roads, be loaded onto rail wagons, ferried across a river, carried farther by rail and finally unloaded to drive the last stretch on their own wheels.

Tea factories serve as headquarters, as warehouses and barracks; tea-pickers carry and load freight in the China-bound planes; dust in the winter and mud in the summer hamper operations. Yet supplies are flowing to our troops in ever-increasing amounts by plane, river barge, rail, coolie and sometimes by ox cart. Life for our supply men is far from glamorous, yet they, as much as the men at the front, are the soldiers who are fighting the Japs in the CBI theatre. ☆

Lack of rock for roadbeds is a problem since most of the rocks available are sandstone which is ground into fine powder under the

heavy traffic. Native Indian laborers, working on the Ledo Road, search a stream bed for harder stones which are picked up by truck.



# ON THE LINE

A MONTHLY MAINTENANCE ROUNDUP PREPARED IN COLLABORATION WITH THE AIR SERVICE COMMAND AND THE TECHNICAL INSPECTION DIVISION, OFFICE OF THE AIR INSPECTOR

## A GOOD PILOT HELPS . . .

"We pray for a good pilot more than anything else," says Tech. Sgt. Michael C. Leon, crew chief of a B-26 with 66 missions to its credit. "The reason is that with a good pilot we have much less work to do."

This expresses the virtually unanimous belief among mechanics, engineering officers and pilots, too, of this 12th Air Force B-26 group, that the pilot plays a primary role in the maintenance of his airplane.

Members of this group should know. A veteran of fifteen months of combat duty, many of its Marauders have flown 60 or 70 missions, with over 500 flying hours.

Tech. Sgt. James E. McCarthy, crew chief of a 70-mission B-26, says: "There's no question that a good pilot aids in maintenance. He knows immediately when something goes wrong and how to correct it. Besides, he usually knows how serious it is. You won't find a good pilot coming back early from a mission with minor trouble."

Not only does a good pilot help by locating serious trouble, but he also causes less wear on the plane to begin with. One of the chief ways a good pilot will keep his plane flying a few extra hours is in the right use of trim tabs.

"No two planes fly quite the same

way," observes Tech. Sgt. Earl H. Holtorf, crew chief for a B-26 that in 67 missions had but two early returns for mechanical troubles and had never had an engine change when it went down, a flak victim. "One will drop its right wing a little. The next will drag its tail. A good pilot knows the exact way to trim his plane to correct for these little tricks and get maximum performance. If a plane is trimmed perfectly it's going to take less power to keep up with the formation. Less power—less wear on the engines."

The pilot's use of power settings is another important factor in prolonging—or shortening the life of a plane. "A good pilot won't have to change his throttle settings often," states Tech. Sgt. John W. Johnston. "But a poor pilot will be pushing his throttles up and back, up and back all the time—trying to speed up and then slow down. That sort of thing will wear out an engine quicker than anything I know."

The difference that "know how" in the use of the throttles will make is reported by one crew chief who claims that there will be a difference in gas consumption of sometimes 100 gallons for the same distance by various pilots. In each case, the more experienced pilot brings back more gas in his tanks.

Inexperienced flyers occasionally bring planes in for mechanical troubles which

don't exist, due to their failure to understand fully the use of instruments. This means headaches for the ground crews, who must look for nonexistent troubles—and it mars a plane's mission record.

"A good pilot can tell his crew chief what the trouble is when something goes wrong," comments Capt. Richard F. Fenton, squadron engineering officer. "Then the mechanics can go right to work without wasting time experimenting. This puts the plane back into the air hours sooner."

Different speeds and altitudes require different rpm settings for the props. The wrong rpm at the right place will play hob with the engine and put circles under the crew chief's eyes.

The operation of the plane on the ground is important also. "Simple factors such as the way you taxi a plane, and knowing the best fuel mixture to use in idling or running up the engines will add a lot to a plane's life," adds Capt. Ray M. Lien, another squadron engineering officer. "And a pilot who uses brakes the right way is a real help to the ground crew."

The right use of brakes plus good landings is shown in the case of a Marauder with 66 missions and over 500 flying hours. It still sits on its original, factory-issued tires.

"It means that the pilot made a lot of good landings," the crew chief figures.

First Lieut. Harold B. Bloch flew forty combat missions with no early returns due to mechanical troubles. Most of the missions were in a B-26 which after 170 hours of flying time and nine months' combat duty still had its original right engine.

"There's no doubt whatsoever that a pilot who tries can add 50 to 100 hours to the life of his plane," claims Lieutenant Bloch.

Since the average mission the B-26s fly is close to four hours, that extra 50 to 100 hours adds up to one or two dozen additional headaches for the Axis.—Staff Sgt. Robert A. Wade, 12th Air Force.

## COMPETITION DOES IT IN INDIA . . .

Without the wealth of facilities for maintenance and repair and with fewer spare parts than mechs back in the States, engineering and maintenance crewmen of a station of the India-China Wing, Air Transport Command, are hanging up new operational records for their airplanes.

The fast-moving war in the Pacific, which finds the AAF leap-frogging from island to island as new advance bases are established or captured, calls for adroitness and skill on the part of the ground crews. On Makin in the Gilbert Islands, a 7th Air Force crew with a mobile unit makes ready a newly-arrived fighter for its first mission against the Japs.



# ON THE LINE (Continued)

Take the case of No. 822—now this station's flagship. During February this C-47 flew a total of 360 hours and 10 minutes for an average operational day of 12 hours and 25 minutes.

Considering that domestic U. S. airlines shoot for ten hours per operational plane per day, the station claims an India-China Wing and GI operational record on the basis of No. 822's per day mark with only field equipment.

Staff Sgt. Howard E. Tietze was the ranking crew chief aboard No. 822 during her record-making February runs; his assistants were Cpls. Clarence Armstrong and Richard Griffin. In civilian life they were factory production foreman, service station attendant and molder, respectively.

Sergeant Tietze reports that the highest number of hours put on his plane during any 24-hour period during February was 18 hours, 25 minutes. The only time lost through mechanical difficulties was a four-hour delay at a central Indian base when a generator had to be changed.

The engines were droning just as smoothly as they were when the plane was first delivered as Sergeant Tietze taxied the big plane into the hangar for the regulation engine change.

No. 822 won out in a contest initiated between the crew chiefs on all ships by Capt. Charles Orne, engineering officer at the station. He promised the three chiefs special prizes—ranging from beer to cigars—if their plane flew the most hours during the month; also that a flag would be painted on the side, just below the pilot's window. A pennant, which contains an ATC insigne plus the station numerals, now appears on the side of No. 822.

The results of the first month of such competition among the crew chiefs were very pleasing to engineering and operations sections. For the entire month, the station's planes—all of them—operated for an average of 10 hours and 25 minutes per plane. Col. K. C. McGregor, commanding officer of the Western Sector, ICW-ATC, had set a ten-hour goal for all sector planes. Col. James W. Gurr, commanding officer of the station, declared: "The fact that three planes during this period broke the highest record ever made by any other plane is significant. It shows that a real effort is being made by all crews and ground maintenance personnel to perform the mission assigned to us in the most efficient manner possible."

Second in the February race was a C-47 crewed by Staff Sgt. Russell E. Estes, Sgt. Morris O. Cardin and Cpl. Warren J.

Kimmel. Staff Sgt. James E. Small, Cpl. Quinton E. Martin and Pfc. William R. Ferguson won third place honors.

## NEWS ON TECHNICAL PUBLICATIONS USED IN AAF . . .

*TO Distribution Changed*—Revised TO 00-25-3, dated 1 February 1944, outlines the new method of distributing TOs and SLs. The new plan saves time and money and permits each activity to designate the number of technical publications needed. Under the former method, an arbitrary figure of distribution was set up by headquarters, Air Service Command. Mechanics, who use and keep TO files up to date will find that the new system produces the right TO at the right time.

With the aid of the base technical inspector, who is responsible for local distribution, activities now fill out and mail ASC form 3070 to MT6, Headquarters, Air Service Command. Activities now are encouraged to order only those TOs pertaining to their own work responsibilities, but in quantities sufficient to meet the needs of using personnel.

Time is saved since publications are now distributed as soon as received from printer, and field activities get needed information faster.

*Accelerate Circulation and Technical Books*—A measure for the authorization and control of technical libraries and textbooks is provided by AAF Reg. 50-9. The new method speeds up obtaining these books, with an AAF specialized depot maintaining adequate stocks of titles on the approved lists. Time is saved since previously separate lots of books were ordered from publishers.

An approved list of 600 titles was carried formerly; this list now has been expanded to 1,000. Magazines are also available; the approved lists are contained in TO 00-25-14. However, magazines are shipped direct from vendor, rather than the specialized depot warehouse. Another function of the centralized depot is to receive obsolete or excess books in possession of any AAF continental activity to be redistributed to other activities.

*UR Digest Appears*—Purpose of the UR Digest is to provide field activities with a twice-a-month consolidated report of all unsatisfactory reports received during the two weeks preceding publication, and to inform of action on difficulties. The information provided covers equipment affected, number of failures reported, cause of failures and corrective action, either completed or in process.

The big advantage of the system is that the digest furnishes a medium for

sending information on unsatisfactory conditions to all activities, rather than limiting the answer to a problem (which may be of a general nature) to the activity submitting the UR.

The digest is published as TO 00-25-25. Each supplemental issue is identified by a suffix letter in alphabetical sequence: 00-25-25A, 00-25-25B and so on.

## P-38 HAS 135 MISSIONS WITH BUT TWO EARLY RETURNS . . .

The other day my 15th Air Force field phone jingled and Capt. Elfege F. Austad, engineering officer of this fighter group said, "We have a crew chief who has set some kind of a record on P-38 maintenance. A mechanic, named Oyer, at the Black Falcon squadron has only two early returns in over 100 missions."

So I chiseled a jeep from the group adjutant and drove down to the line to see Oyer. As I drove up to the plane, I could see they were pulling some kind of inspection. Mechanics were swarming all over it. So I asked a sergeant what was happening. He replied, "This is the 100-hour inspection." And then nonchalantly he added it was the 700th hour.

Seven hundred is a lot of combat hours. In this group, there are only two planes that have ever had 700 hours, and this plane, "Old Faithful," had 705 hours and 20 minutes in air full of flak and enemy fighters.

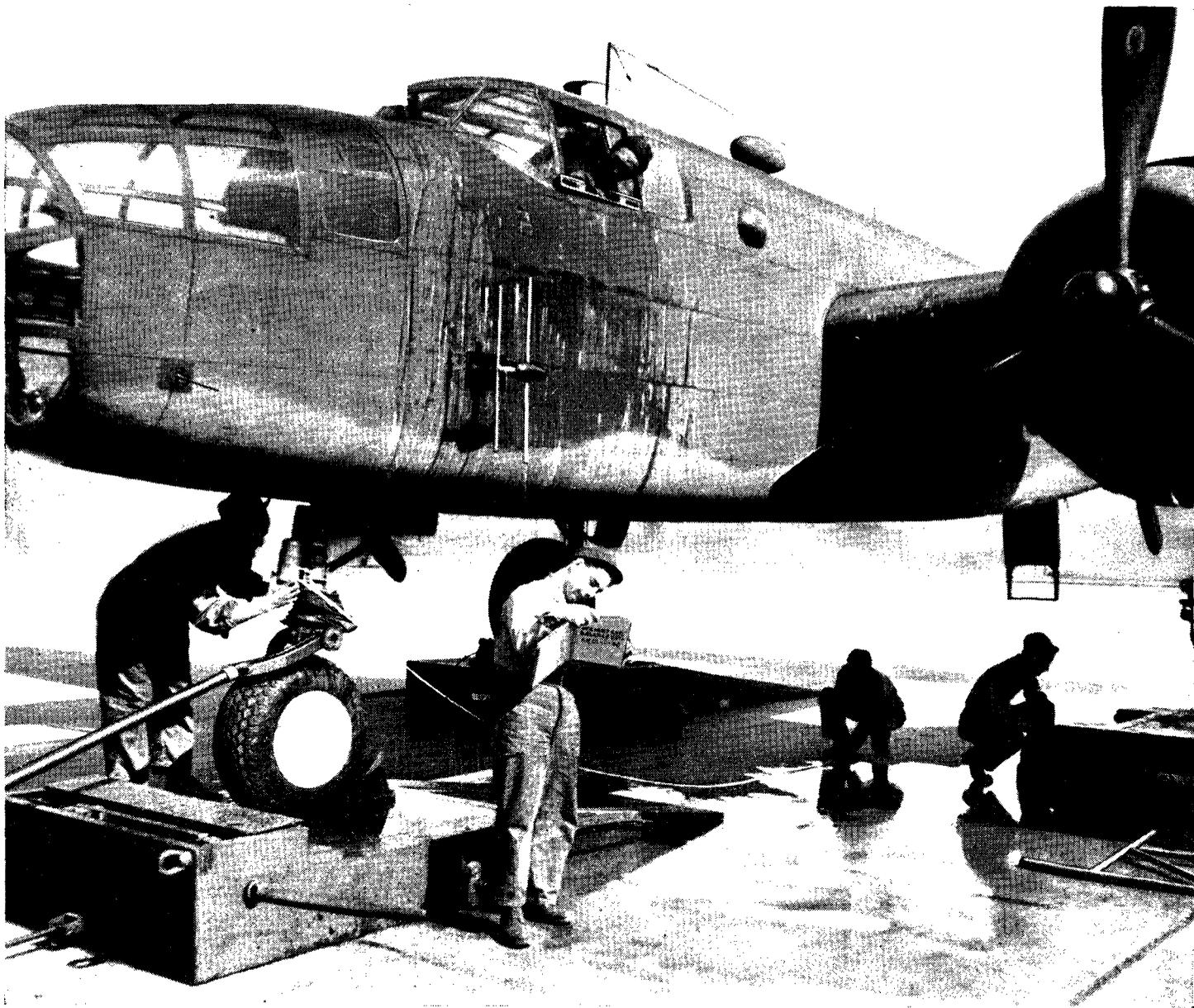
I asked for Oyer and he stepped from the gang of mechanics.

Tech. Sgt. Kenneth M. Oyer, Hutchinson, Kan., is a modest, quiet boy. But he likes to talk about P-38s. He has been a crew chief on a P-38 since the first one came to this group back in 1941.

While his pilot, Lieut. Roger Stemen, Quincy, Mich., flew his P-38 in the first mass movement of fighters across the Atlantic, Sergeant Oyer went across in an AAF transport plane in June, 1942. After a short stay in England he came to North Africa with the invasion forces. Since then, this first P-38 was lost in combat and "Old Faithful" was received February 7, 1943.

Oyer and his assistant, Sgt. Chester G. Green, Attica, Ind., don't like names painted on their planes. Their first pilot, Lieutenant Stemen, said he didn't want any names and, since he had such good luck, they decided names just weren't lucky for them. Yet, they refer to their plane as "Old Faithful."

But the record the P-38 set in the group was not 705 hours and 20 minutes nor the 135 missions over enemy territory. The record is that the plane has had



**T**HE type of scales used to weigh this B-25 called for exercising the utmost care to avoid jarring and damaging nose-wheel landing gear assembly and the scale's mechanism. To proceed with weighing in a merry boner-laden manner means grave inaccuracies when loading time comes around. The men posing the mistakes in this picture are going to bring about a dislocated center of gravity in the plane—and lopsided loading and improper balance in flight are almost inevitable results.

Nearly all boners in this month's picture are covered by AN 01-1-40, "Handbook of Weight and Balance Data,"

and violations are exceedingly dangerous. When improper loading results from such errors the operating characteristics of the airplane are adversely affected. Abnormal stresses on the airplane's structure can have drastic results.

Posing this picture in the interest of better weighing practices **ON THE LINE** are (left to right) Pfc. Earl F. Hill, Sr., and Harold K. Bright, Pvs. Estill Lomelino and Rudolph L. Krug, Jr., and, in the cockpit, Pfc. Clifford H. Walker, all of the 478th Air Base Squadron, Patterson Field, Ohio. These men point out the seven boners in the picture which are listed on Page 64. Can you find any more?

only two early returns from mechanical difficulty in all that time.

Sometimes the work was a little tough, especially the July days in North Africa. When the sun was so hot it was impossible to touch the plane or engine, Oyer and Green changed engines at night and in the early morning. Then, there was the time in the Middle East when they had to change innercoolers on the desert in the middle of a sandstorm. They worked night and day during the invasions of Sicily and Italy when "Old Faithful" was

flying more than a mission a day strafing and fighter-bombing.

All in all the plane has come through 135 missions, 90 escorting heavy and medium bombers and 45 strafing and fighter-bombing. Only once was she shot up badly. On a strafing mission to Sardinia she came back full of flak holes.

Master Sgt. Emil Reist, group aircraft inspector for the past twelve years, pronounces "Old Faithful" as still "a first-class combat plane." He should know for in his 22 years with the AAF he has

held the jobs of crew chief, flight chief and line chief, and has worked on P-38s since the Army first received them.

The three swastikas painted on the nose represent three enemy aircraft shot down in one day over Bizerte by Lieut. George Bancroft of East Winsor Hill, Conn.

"Old Faithful" is scheduled for retirement soon for she is a little out of date now. But her record will remain as a mark for the envy of all crew chiefs in this group.—Lieut. Albert M. Hall, 15th Air Force. ☆

## SKY QUIRKS

(Continued from Page 31)

mined by the altitude of the inversion layers and the extreme differences in temperature in these layers. This atmospheric quirk has caused explorers to be as much as 300 miles off in their plotting of newly discovered land and to bludgeon each other for placing land where it wasn't.

About a century ago, Charles Wilkes, a British naval officer, placed Cape Carr in longitude 133 degrees east. This location was attacked by Sir Douglas Mawson, who proved he had sailed right over where Cape Carr was supposed to be. Later, Mawson made the same mistake himself. In 1929-30 he mapped the coast of a newly discovered arctic region from a seaplane. The next year, he sailed for 300 miles over his own charted "land." Superior mirage explains both mistakes.

Bob Bartlett, the famous arctic and antarctic skipper, once while sailing east of Greenland saw Iceland raised by mirages at a distance of 300 miles.

In direct contrast to the looming effect of the "superior" mirage, there is the stooping or sinking effect of the "in-

ferior" mirage, which occurs when rays from the base of an object are curved down more rapidly than those from the top, giving apparent vertical contraction or a seeming squatness.

When the density of air above the ground does not decrease normally, because of a rapid fall in temperature, objects usually seen above the horizon sink below it. This effect is frequently caused by cold air moving over open water. In the desert the temperature range of various air levels is much greater than that in the north. Hence the curvature causing the mirage is much sharper, and mirages can involve much shorter distances.

ON the desert or in hot weather a mirage may simply be an illusion caused by shimmering heat waves which seem like water. When driving on a hot day we have all seen such a haze on the road ahead of us.

Other "visions" are due to refraction of actual objects, such as lakes, houses or ships, by air layers of different density. They can be either inverted or right side up. Proof that these are not figments of the imagination is afforded by two facts:

(1) they can be seen by more than one

person at the same time and (2) mirages have been photographed.

"Sky maps" can be of great use to the alert pilot or navigator. In the arctic, a uniform overcast with clouds at a very high level reflects the surrounding terrain. Where level ice is found uniformly covered with snow, the sky map on the clouds above will show a uniform white, or "ice blink." Broken surfaces, such as pressure regions, pack ice and drifted snow areas, will be indicated by a mottled appearance of the lower surfaces of the cloud. Blue or green ice is indicated by greyish patches on the sky map. Open water, timber and snow-free terrain show up as black areas in the cloud reflection.

The ancient Polynesians, who were magnificent navigators, have handed down a sky map lore which can still be of great use to flyers and castaways on a life raft. A small cloud in a clear sky is likely to be a sign of an atoll, the sand of which reflects more heat than the surrounding water. The lagoon of the atoll will be reflected on the underside of the cloud. Lagoons and other shallow waters will be reflected in the sky itself, even when there are no clouds. ☆

# Portland Women Volunteers Assist in Convalescent Training

SOLDIERS at the Portland (Ore.) Army Air Base are receiving valuable extra-curricular instruction in their spare time these days from volunteer members of the women's club who have undertaken two major projects on the post: speech correction for men with cleft palates and other speech impediments, and the operation of a hobby workshop near the station hospital for convalescing patients.

Stutterers, stammerers and others suffering from various speech defects can now receive half an hour of training three times a week from a woman volunteer who is a qualified speech pathologist. This speech rehabilitation follows clinically approved methods. Recordings are made before speech correction is started and at prescribed intervals throughout the training. Included in the instruction is training in muscular control of the speech mechanism, auditory stimulation, proper breath control and other corrective exercises.

Routine dental treatment at the base brought to light the men who needed such treatment. Where possible, dental appliances were supplied but, although these can take the place of lost tissue, they do not assure restoration of normal speech. Medical officers claim that only

the utmost patience and hard work of a skilled voice teacher can help a patient achieve speech normality.

The hobby workshop, one of the first to be sponsored by an AAF women's club under the women's volunteer branch of the Personal Affairs Division, is operated in cooperation with the AAF's convalescent training program. Patients are given a chance to try their skills at jigsaw and hammer, at watercolors, leather-work, plastics or ceramics. Moreover, every hour they spend in the workshop is logged in their official CTP record.

The project was begun by Mrs. Dale D. Fisher, wife of Colonel Fisher, base commanding officer. She recruited officers' wives on the post who were qualified arts and craft teachers to supervise and instruct at the workshop. So far, the patient-students have turned out many models of camouflage construction built in conformity with Army camouflage standards. They are to be used for training purposes in AAF schools. Model planes also have been made for use in recognition schools.

If materials can be obtained, the instructors hope to encourage students to create original models of new designs for air-

craft, automobiles and other machines.

On the lighter side, imaginative patients have produced such articles as wood-carved boxes, historic ship models, fancy lockets and decanters. Wives, mothers and sweethearts of these hospitalized men are on the receiving end of many handsome, handmade gifts turned out in the workshop.

Scrap leather becomes billfolds, key and cigarette cases, hand-tooled belts and covered boxes. Gimp ends up in bracelets and dog-tag chains. Enamel paint designs transform salvage bottles, decanters and spice sets into valuable gifts. Salvage plexiglas is turned into attractive pins and lockets by the students.

Painting and sketching classes are popular with war posters and cartoons in top place. Enthusiasm is high also for original designs carved on linoleum blocks for block-printing on paper and textiles.

The work at the shop is relaxing and interesting, and soldier-patients find it a welcome respite from hospital routine. Convalescent training officers, finding in the instruction both worthwhile recreation and valuable therapy, hope to enlist the aid of women volunteers in similar projects elsewhere in the country. ☆

# THIS IS YOUR ENEMY

The Enemy's B-17



Jap Paper Bombs



Nazi Fighter Tactics



These items were found on a dead Jap pilot in the Southwest Pacific. They include neck pouches, cigarettes, prayer pieces, good luck charms, currency, pieces of silk and a pair of gauntlets.

**STILL MORE ROCKETS.** In addition to plane-launched rockets, the Germans are using a ground rocket against aircraft. Many of our bomber formations have been subjected to the shells which seem to be as large as the heaviest anti-aircraft projectile. Most of them have been fired in pairs, leaving black trails of smoke as they shoot up from the ground. At the top of their trajectory they give the appearance of flying horizontally for a short period, and generally explode at this point in great bursts of flame.

**THAT B-17 AGAIN.** A Nazi-manned B-17 cropped up again recently to give some of our bomber personnel a few anxious moments. The bomber, captured and reconditioned by the Germans after being forced down over enemy territory, tried to get "friendly" with some of its American cousins when the latter were returning from a raid on Brunswick.

The tail gunner of a bomber in the No. 3 place, high position in the combat wing, saw a B-17 approaching from six o'clock out of an overcast, slightly below the formation.

Our planes went into a cloud and became separated, and the gunners on the bomber from which the strange B-17 was sighted lost track of other planes in the formation. They did see, however, flashes, but not tracers, from the top turret and left waist guns of the stranger. It fired

for several seconds with its guns pointed at our planes.

As the enemy B-17 came out of the cloud, it stopped firing and came up on the AAF plane about 600 yards below. The tail gunner could see no lettering of any kind on the tail fin. One faded star without a circle was seen on the left wing, and the entire plane was painted a faded brown. The tail gunner warned the ball turret man about the plane. The strange B-17 fired again from its top turret at the U. S. Fortress, and our ball turret gunner returned the fire, observing several strikes on the enemy. The strange B-17 went on underneath and disappeared in a haze. It inflicted no damage.

**GIRLS NEEDED.** The Reich Labor Service of Young Women has ordered a number of girls to serve in the intelligence offices of the German Air Force. They are needed for clerical duties because of the expansion and strengthening of the German home-based air forces. The girls serve only in German territory and do not go to the front lines.

**MINES.** Some ingenious methods of killing Allied soldiers with mines have been used by the German army in Italy.

A spherical anti-personnel mine made of concrete represents one of the more recent developments. It is about ten inches in diameter and is loaded with shrapnel.

This mine can be planted with trip wires running out in several directions. By reducing the explosive charge in the mine, it can be used as a sort of grenade, the soldier rolling it down hill like a lethal bowling ball.

The Germans have been using many kinds of materials in their mines, some having bakelite igniters, others metal. Occasionally they are imbedded in tar. It is healthy practice to expect them anywhere and looking like anything.

Another booby trap is a smoke cannister which is tripped with the usual wire. It has no morale or casualty effect itself but in daylight hours it lets German gunners know that there is movement going on and they can start lobbing shells in the direction of the smoke.

**LIKE A WHAT?** An enemy notebook on tactics had this advice for Japanese soldiers: "When you attempt to attack, keep cool and surprise your enemy either from the flank or rear. At first proceed as you would approach a virgin, but in the end get away like a jack-rabbit."

**MAIL CALL.** Occasionally, the Japanese get a little cute in their bragging. In a recent broadcast, they told how they "shot down" 23 of our bombers over Rabaul. "We call the attacking enemy planes our mail," the announcer said. "We go up and shoot down at once eight machines, confusing the rest of the enemy flight. We patiently await the arrival of the second wave, which comes and loses another fifteen planes to us. Thus we account for forty percent of the attacking forces. This is how we deal regularly with our mail."

The broadcast was in German.

**HOW'S THAT AGAIN?** People who study languages often have trouble with Japanese because it is vague and variable, words that seem to mean one thing one time mean another the next time. There is *Hakko Ichiu*, for instance, which in most cases is defined as "Universal Brotherhood." The Japs use the expression a lot in their dispatches, and what they do with it is enough to make any linguist nervous.

In a broadcast beamed to the world at large, for instance, one fellow mentioned "the eternally noble ideal of Hakko

Ichiu—independence and sovereign status for each nation.”

A few days after this talk, a Domei editorial for home consumption went on, “. . . in the future, under the august virtue of His Imperial Majesty, ‘Hakko Ichiu’ will be realized; that is, the corners of the universe will be protected under the one roof of the Imperial Household.”

**EGON MAYER.** The death of a very hot pilot, Egon Mayer, was announced by Germany a few weeks ago. Mayer, who probably was shot down during one of our raids over Germany, was a lieutenant colonel and commander of the Richthofen Jagdgeschwader. Hitler had just awarded him the Oak Leaves with Swords.

On a propaganda broadcast before his death, he was put on the radio by the Germans and described as the only officer still in the Richthofen unit who was a member when it first went into action after it was reconstituted for this war.

At the time of his death he had claims of 102 combat victories, including 28 heavy bombers.

**TRICKS FROM BELOW.** Landmines against low-flying Allied aircraft have been used recently with some success by the Japs. Two P-51s, operating with ground forces, were damaged by violent mine explosions when they came in to strafe Jap positions. In another area, a mine placed near a couple of unserviceable barges almost got a reconnaissance plane which was flying at 500 feet. The pilot reported that the mine threw rocks and water as high as his plane was travelling.

**PAPER BOMB . . .** A grenade tossed occasionally from Japanese Dinahs at attacking planes is a rather odd device. It consists of a spherical container made of compressed paper with an open neck of compressed cardboard. Inside is a black, granular powder charge held in a silk bag, surrounded by HE pellets.

The black powder charge, fired by a pull igniter in the neck, bursts the container and scatters the HE pellets, at the same time igniting the short fuses on each. The pellets are made up of small metal cases containing high explosive charges. Since there is little metal in the grenade, danger from fragmentation is negligible. The pellets could cause fire or blast damage if they make contact with a plane.

**NEW PLANE.** A weird-looking plane, but apparently a good one, is being produced by German aircraft manufacturers these days. Our reconnaissance personnel in England have confirmed the reports of two Mosquito pilots who said they had seen and shot down a Heinkel glider tug which had five engines and two tails.

The aircraft is built almost entirely of standard Heinkel 111 parts and looks like two 111's jointed together in a Siamese-

twin operation. It consists of two HE-111 fuselages, one port and one starboard wing, joined together by a specially designed center-section on which are mounted three engines along the leading edge making a total of five engines in line. The wing span is approximately 115 feet and the fuselage length 55 feet, with 36 feet distance between the fuselages.

The plane could be used as a troop carrier with accommodations for from thirty to forty fully equipped troops, as a glider tug or as a bomber. It is a smart production job inasmuch as the Germans can make this new bomber with parts and designs already in full production.



**NICE FLAVOR.** The Japanese on Bougainville, running out of normal fuel, are burning their gas masks to cook their meals. One rubberized face piece and hose is enough to warm up two mess-kits of rice. Consequently, they have few gas masks and the air around there is something you wouldn't believe.

**ALWAYS THE HARD WAY.** Capt. William M. Waldman, a P-38 pilot recently returned from the Pacific, has this to say about Jap tactics:

“It is hard to find a Zero that is in a normal attitude of flight. When Zeros are sighted in the distance, they are either doing acrobatics or diving or zooming. I have seen a Zero on the tail of a P-38 doing a series of slow rolls while firing at the 38. Someone got the Zero.

“The Jap fighter pilot will attack other fighters from any and every angle. I have seen them climb straight up, hanging on their props, firing at a P-38. Others dive straight down on us or come in from the side or rear. They do not like head-on passes, especially if you are firing at them. . . .

“Most Jap fighter pilots, attacked alone, will go through what seems to be a set

series of evasive maneuvers they were probably taught in flying school. They don't seem to have the initiative to act for themselves when they are hard pressed.

“ . . . The Nips, when bombing us, would come over with twenty to thirty dive bombers or medium bombers, with an equal or even greater number of fighters and try their damndest to get to their target. Then, though we would shoot down sixty percent or even more, they would come back in the next day or so with the same number and the same thing would happen again.”

**THURSDAY FOLLOWS WEDNESDAY.** Two items from a Japanese diary found some weeks ago:

December 8, 1943: Our battalion commander gladly informed us that in an engagement northeast of Guadalcanal our Navy has sunk four enemy warships, seven cruisers, seventeen aircraft carriers and countless transports. The American Pacific Fleet Commander also was killed. At present the death rate of Australians is so high that they cannot afford to send any reinforcements in the future.

December 9, 1943: Again troubled by beri-beri.

**TACTICS.** Here are some of the typical methods used by the Nazi fighter planes in their attempts to break up our bomber formations over German cities.

Echelons of twin-engine fighters, in a javelin-up formation, attack from above and the rear of our bombers. The entire echelon slides past B-17s and B-24s, laying down a barrage type of fire. As many as five echelons may attack in waves.

A feinting approach may be used with two formations. The lower group will feint an attack, slide around the formation to gain altitude, while the upper group *really* attacks. The Germans accomplish this maneuver rapidly, often with planes painted silver or sky-blue, making perception difficult.

In coordinated approaches, formations fly parallel to the B-17s and 24s, and, while out of range, one element makes two 180-degree turns and then attacks from four to five or seven to eight o'clock, while the other element makes one 180-degree turn and attacks frontally, both hitting our bombers at the same time.

Twin-engine fighters, in line abreast above and to the rear, break into three elements, one sliding left, one sliding right and one firing straight ahead. ☆

PICTURE CREDITS

FOURTH COVER: AIR FORCE Staff Photographer, 26; Lockheed Aircraft Corp., 14-15-16; British Information Services, 50-52; Signal Corps, 57; U. S. Marine Corps, 62-63; APTAD. All other illustrations secured through Army Air Forces sources.

Requests for prints of photographs for publication and official use appearing in AIR FORCE should be directed to the AAF Photographic Library, Headquarters, Army Air Forces, Washington, D. C.

## AIR POWER IN THE SOUTHWEST PACIFIC

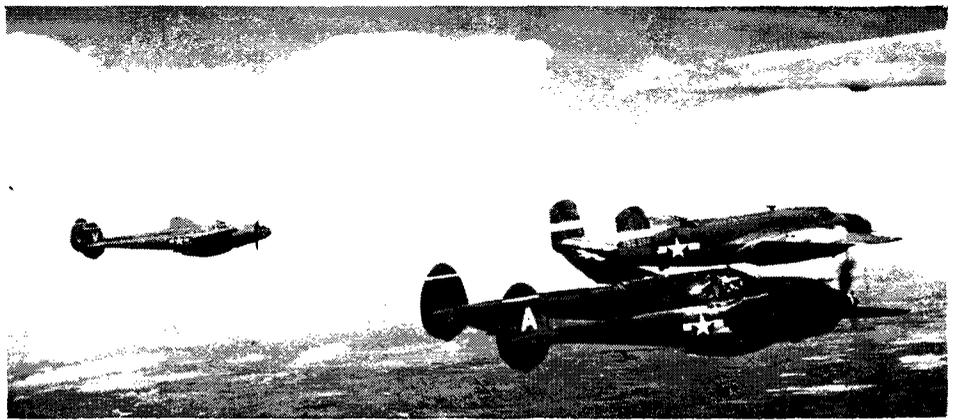
(Continued from Page 10)

Force had pulled the rear turret off the Liberator and stuck it in the nose. It was a fine idea. If we are not smart enough to figure something out first, we can still capitalize on someone else's good work and perhaps even improve a bit on it. At the time this modification was made the 7th Air Force was not as active as it is now and they set up a whole modification line for us in their great depot.

Before we stopped using the P-39s, we redesigned and rebuilt its wings in order to accommodate the new feed bags necessitated in our switching from .30 caliber guns to .50.

The P-47s presented a different problem. They did not have enough range for operations in this theatre where we go long distances to find the enemy and knock him out of the sky. The plane would serve its purpose admirably if we were defending our own airdromes. Fortunately we were not. We were carrying

The September 5 attack on the Nadzab strip marked the first extensive use of paratroops in the Pacific. Three hundred and two planes dropped 1,700 paratroops in seventy seconds behind a smokescreen laid by seven A-20s. C-47s are shown dropping men and supplies during the operations.



Fighter cover is an important element in General Kenney's plan of attack. Here P-38s flank a B-25 on their way to join in the November 2 surprise attack on Rabaul when 114,000 tons of shipping were sunk or damaged and 81 Jap airplanes were destroyed in the air and on the ground.

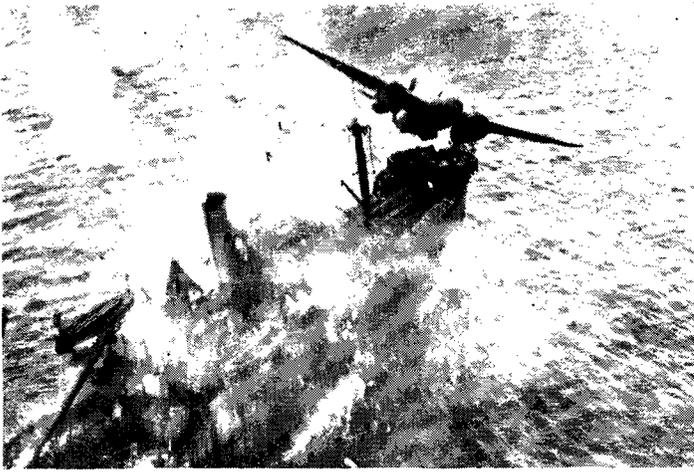
the fight to the Nip. That meant longer range for the plane, which in turn meant increased fuel capacity. Time was short. We had to shove the planes right in. The 5th Air Service Command was given only six weeks to fabricate belly tanks and an auxiliary feed system for a whole group of these planes. They ran into all manner of engineering problems but in the

stated time they fabricated a perfect belly tank that increased the range of the P-47 two-thirds. They fitted every plane in the group with these handmade tanks and then turned the manufacture of additional ones over to Australian manufacturers just as they had done in the past. It was not long before we decided that we needed even more range in the P-47. We looked about for another place to put more gas. Our engineers did it, although the amount of juggling done with the CG (center of gravity) would turn the hair of the average aeronautical engineer grey and make him throw up his hands in horror.

OUR only reply is that we would much rather not have to do any modifications. We have enough to do with planning and operations without adding engineering. But constantly changing conditions call for changes in tactics. Our modifications are to enable us to meet the changes in tactics. If the Nip moves his airfields out of range of our fighters, we either have to bomb him with unprotected bombers or increase the range of our fighters. Rather than lose our bombers we modify the fighters. That is why I encourage our personnel who have any ideas to go right ahead with them. It makes no difference what the man's rank or his previous experience. If he has an idea that sounds feasible he is told to go ahead and he is given every assistance in carrying it out. We have given ourselves lots of headaches, but we have also gotten some fine results, especially from the enlisted ground personnel.

One sergeant dropped me a note explaining that the gunners ran out of ammunition during a mission and were open to attack while reloading. He had an idea for a larger ammunition box and an improved feed. We built it and it is still being used. Another thought up a scheme that would permit a .50 caliber gun to fire at a rate of 1,500 rounds a minute. It sounded good to us. He was told to go ahead. Later we watched a





An A-20 puts the theory of masthead skip bombing in practice against a 3,000-ton Jap transport off the Muschu Islands, New Guinea. The



blast littered the ocean with debris and Japs, and the ship's register was found lodged in right engine of the A-20 as a result of the explosion.

demonstration. It worked. It burned out the gun barrel, but it worked. We didn't adopt his idea, but we learned a great deal from him, and from his work we got some other ideas that were most practical.

The next lesson we learned was how to help ground troops get the land on which we build airdromes and advance the bomber line, from which we help them go ahead to get some more land for more airdromes and keep the process going until we can lay some eggs in Tokyo.

The first step in this advancement of the bomber line is to gain and maintain air control as far into enemy territory as our longest range fighters can reach. Then we put an air blockade around the Jap positions or section of the coast which we want in order to stop him from getting supplies or reinforcements. The bombers then go to work and pulverize his defensive system, methodically taking out his artillery positions, stores, bivouac areas and so on. Finally comes the air cover escorting the amphibious expedition to the landing beach, a last-minute blasting and smoking of the enemy beach defenses and the maintenance of strafers and fighters overhead, on call from the surface forces until their beachhead is secured. If emergency supplies are needed we drop them by parachute.

The ground troops get a transport field ready as fast as possible so that we can supplement boat supply by cargo-carrying airplanes. When necessary, we evacuate the wounded and sick and bring reinforcements in a hurry. The transport field becomes a fighter field, the strafers and finally the heavies arrive and it is time to move forward again.

It is our ambition to put infantry ashore with rifles on their backs and to keep the rifles there as long as possible. Anything that will hinder our troops from landing is blasted until there is nothing left of it. To do that we throw everything we have at the objective. We use our heavy long range bombers as well as the short-legged airplanes at this time,

even though the target may be less than 200 miles away. When we are after a piece of ground we will use everything that flies in order to get it.

On the day that the assault comes we forget about objectives that are at extreme range. We concentrate on the target. We act as direct air support. And there again, everything we have is thrown in to aid the ground forces. As soon as the objective is won, we put engineers in to build an airstrip for the fighters to convoy the bombers in their long range targets.

**H**OWEVER, all of our assaults are not carried out in this manner, nor are all of our airfields won this way. We have taken land and carved out airfields right in the heart of Jap-occupied territory, and we have done it solely with air power. Marilinan was taken and developed as an advanced fighter base all by air. The occupation of the Nadzab area, which sealed Lae, was another example. We shall do it again, using other means, for variations in our methods are continuous. The Nip, we have found, is a sucker for any type of attack for a short while. Then he figures it out and is ready for it. Before he can work it out we change. That is why we have not been able to settle down to any prescribed course of action or basic plan of attack, such as is found in most other theatres. Perhaps the major reason for that is that we have no industrial targets—yet.

There is constant planning for any full scale attack. It starts at least three months ahead of time. We work the plans over and over until we think we have it. Then we turn it over to the boys and let them poke holes in the plan of attack. After which we replan the operation, working it over and over until it jells. Then the rehearsals start.

We believe in rehearsal in this theatre. No major operation is carried out until it has had intensive rehearsal. In fact, every small strike is a rehearsal for some-

thing bigger. Our rehearsals have more than paid off. We have found that it is not enough that the flight leaders or the squadron commanders know what they have to do. It is not enough that every squadron and group knows the exact plan. It still can misfire. They must actually do it to make certain that the thousands of things which are generally classified under the one word "timing" come off exactly as they should. Therefore, all big operations are rehearsed in full scale. And they are not dry runs.

The battle of the Bismarck Sea was not something that just happened. We didn't just see the convoy coming and go out and hit it. It was planned and rehearsed. We prepared. We even picked the spot for the engagement. A location where all of our units could engage the Nips with the maximum efficiency. We calculated that 1000 would be the time he would be there and we would engage him. We miscalculated. It was 0955.

Three days before the battle we rehearsed at full scale. We selected a half-submerged wreck that was exactly the same distance, although in another direction from our bases than the forthcoming engagement would be. Our units took off from their various fields at the same time they would take off three days later. We rendezvoused over the exact spot and, flying with the identical gas and bomb load, we duplicated our flying problem in every possible manner even to the formation and compass headings into the attack.

The Lae operation of September 5, 1943, in which we dropped 1,700 men in one minute and ten seconds thirty miles west of Lae at Nadzab, forced the Nip to give up a base which he had been building for over seventeen months. It meant the abandonment of his major plan to control New Guinea. And it demonstrated that intensive preparation in every phase — bombing, strafing, combined operations, dispersed landings, infiltration and paratroops—pays big dividends.

That operation, too, was rehearsed in

full scale; a practice ground similar to Nadzab was selected. All the units designated for the real operation participated in the rehearsal. The strafers opened the attack with live ammunition and bombs. Smoke screens were laid down. And even some of the paratroopers jumped during this simulated attack. It was not necessary for all of them to bail out. They knew their job—as they subsequently proved. We only jumped enough to make certain our formations and positions were perfect.

Every possible contingency was accounted for, even to fitting up special supply bombers to drop to the paratroopers on the ground any type material they might want, from extra shoes to all types of ammunition. However, there was one thing we could not rehearse—the weather.

The weather men did a superb job of forecasting for the Nadzab operation. But we could afford to take no chances. The night before the attack we had five B-17s up, charting every thunderhead and bit of weather over the terrain we would fly over on our way to the target. This was vital information for in this theatre the thunderheads are so high that it is not possible to fly over them. Nor can they be flown through for the turbulence is great enough to tear the wings off a P-17. The next day, to make doubly certain, the weather men did more than brief the pilots. They were up in the lead planes like traffic cops showing the formations the way through the weather.

The rest of the Lae operation is history.

Everything moved exactly as had been planned with the minimum of loss to us and the maximum to the enemy.

A variation in our manner of rehearsal was used before the attack against Cape Gloucester on December 26, 1943. This time we rehearsed against a secondary enemy target. Again we did it in full scale, using more force than was necessary for that particular target. It accomplished the dual purpose of blotting out the secondary target while getting our timing down perfectly. We had to have it perfect—we were rendezvousing at night.

**T**HIS show out here keeps me busy. I have to be constantly roaming all over the theatre as I am concerned with the planning of the Allied Air Force which at the moment consists of the American 5th Air Force, the RAAF, augmented by NEIAF (the Netherlands East Indies Air Force) units under the command of RAAF Air Vice Marshal W. Bostock. My deputy commander, Maj. Gen. Ennis C. Whitehead runs ADVON (the Advanced Echelon) and puts the plans laid down against the Jap into operation.

This theatre at the moment, insofar as air is concerned, is divided into two sections under my command. The New Guinea sector is under General Whitehead and consists principally of the 5th Air Force augmented by Australian groups.

In the northwestern area, the RAAF air commander is my deputy. The majority of his planes and personnel are

Australian with some 5th Air Force and Dutch units. Whereas this sector is quiet in comparison to New Guinea, it is of vital importance. The reconnaissance work is done not only for the defense of Australia but also for the future operations against the rich islands lying in that direction. This is witnessed by the bombing missions—probably the longest in the world—which our heavies are conducting against the Netherlands East Indies.

Up to April, 1943, we were operating on a fairly thin shoestring. About that time, however, production at home got going fast enough to give us some real help. It came just in time. Around the arc from Soerabaja, Java, to Rabaul the Nip had three times as many airplanes as we had. Why he didn't take us out I don't know. I remember telling General MacArthur that if the Jap didn't ruin me by that August, I would have enough strength to take air control away from him for keeps. But that if he were smart enough he would certainly keep us busy trying to survive.

During April, 1943, the Nip put on three raids of 75 to 100 planes each in four days. But he put them over three widely separated targets and didn't press them home. We lost half a dozen planes and a couple of boats. It cost the Jap over 100 fighters and bombers. He has never appeared again over Moresby in the daytime.

It is now too late and it is too late from now on, for since August 17, 1943, when we destroyed the Jap air power at Wewak, the tempo in this theatre has been stepping up. The capture of Lae and Salamaua in September was quickly followed by the seizure of the Markham-Ramu Valley as far as Dumpu and the capture of Finschhafen, Arawe, Gloucester and Sidor.

As the ground forces moved forward, so did our bombing line. Our air blockade broke the Nip at Rabaul on November 2, 1943, when in twelve minutes we hit 41 vessels in the harbor for a total of 114,000 tons of shipping, destroyed 68 airplanes in air combat and 13 more on the ground and set fire to the town itself, with its huge stores of supplies that the Jap had taken months to accumulate. In February of this year in three days we sank 25 ships which were trying to run supplies and troops into Kavieng and Rabaul. Toward the end of March, our bombs sent to the bottom every one of a seven-vessel convoy which was trying to run supplies and troops into Wewak.

The Nip is not eating so well these days along the north coast of New Guinea. We've got him down. We shall keep him down. Every time he lifts his head we will knock it down again. This is our air wherever we fly. And we are going to keep it that way. ☆

General Kenney is shown in conference with members of his staff. Seated with General Kenney is Brig. Gen. Donald Wilson, chief of staff. Standing (left to right) are Lieut. Col. R. T. Nichols, Jr., A-1; Lieut. Col. W. T. Hudnell, Jr., A-4; Col. R. E. Beebe, Jr., A-3; Col. B. B. Cain, A-2.





## A Report on Army Air Forces Training Devices

### ► *Recognition Baseball*

The RCAF has devised a Recognition Baseball Game with no additional equipment or arrangements required.

Any number of "players" are divided into two teams and "batting orders" arranged. Each player calls for a single, two-base hit, triple or home run, and he is given a one-view test ranging in difficulty according to the hit he is attempting. Slides, models, photographs, shadowgraphs, flash cards or any other media may be used. Error in identification means a strike-out.

As in baseball, a hit will advance a man on base, a home run will bring in all men on base, and three strike-outs retire the side for that inning.

### ► *Shadowgraph*

Perforated name tags insure that students will associate the name with the aircraft in recognition Shadowgraph presentation. Regular name tags, each with an aircraft name punched out by a machine used for making stencils, can be hung from hooks inserted along the top of the Shadowgraph frame. Light shining through the perforated column makes

the name of the aircraft visible immediately next to the silhouette appearing on the Shadowgraph screen. Names of the two aircraft being contrasted can be hung side by side by the respective slides.

### ► *Review Boards*

Recognition Review Boards of simple local construction fill a definite need in after-class activity. Cut a plywood board three by two feet and attach a coat hanger hook at top. One side is mounted with every available interesting picture of particular aircraft; the other side displays the three conventional silhouette views.

Following the lecture on a new aircraft type, the instructor hangs the appropriate review board in back of the classroom where it remains until replaced the following session. The flat, uniform construction and coat hanger feature makes for economical storage along a rod.

Chief advantages of the review boards are: display at a time when interest in the particular plane is at its height, permanent maintenance of good pictures safe from loss or damage through excessive handling, and instant availability of all views for review purposes.

### ► *Power and Octane Booklets*

Copies of the booklet "Power and Octane" have been distributed to training commands and air forces for use in connection with Training Film AF-179 "Power and Octane."

Initial distribution of film was completed 1 March 1944. Additional film prints are available on requisition to AFTAD.

### ► *E-14 Trainer Clarification*

In the interests of a standard nomenclature for training devices, attention of Training Aids officers is invited to the fact that the flexible gunnery trainer, type E-14, should not be confused with the Jam Handy (3-A-2) trainer. A 70 mm sight is to be used on the E-14 trainer. Replacement of the 70 mm sight by the 101 mm sight applies only to fixed gunnery devices.

### ► *Obsolete Film Disposal*

Directions for the disposal of obsolete training films, film bulletins and film strips are amended as follows at the request of Air Service Command:

"All film, film bulletins and film strips to be disposed of as obsolete subjects will be burned locally and the necessary certifications accomplished and forwarded to the Air Service Command Control Library, 1 Park Avenue, New York City. Reels and cans will be removed prior to burning the film, and will be shipped to the Depot Supply Officer, 802nd AAF Specialized Depot, Camden, N. J."

### ► *New Bombardier Trainer*

THE A-6 McKaba Bombing Trainer provides for simulated bombing missions with a wide variety of targets. The bombardier's position in this trainer is in a bomber-nose containing all rack controls, switches and instruments found in

## AIR POSTER SERIES . . . "Fighter Tips"

Flying a fighter plane, even in friendly skies, calls for flawless health, perfect coordination and top skill. Switch the scene to enemy territory and you have a job that contains no margin for error.

The Air Poster series "Fighter Tips," with its 26 situations, demonstrates the more important DO's and DON'T's in a style that's not easily forgotten. The idea is to impress them upon the mind of the pilot in a way that will make the experiences of men who have had combat time an automatic part of his mental "ticking" when the "pinch" comes—when he's got to make the right move without taking time out for study.

In "Fighter Tips," the negative and positive situations are pictorialized, mistakes high-lighted, consequences indicated. Every DO and every DON'T is hammered home, before it occurs. The pilot must learn to recognize the danger potential before the danger itself develops. He must be able to say, on the outer rim of a perilous situation, "I've been in that spot before and THIS is what I do about it," automatically making the single, proper, physical response.

This air poster series is available in color in the standard AFTAD Binder, size 22 by 32 inches.





the type airplane simulated.

This trainer is stationary but pivoted so that course corrections from the bomb-sight directional gyro may be followed. A moving terrain area is projected onto a screen below the bomber and the direction of travel of this terrain image is coordinated with the position of the bomber.

The projection system is placed below the screen and the image is transmitted through a small aperture in the screen to a ceiling mirror which reflects it on the screen. This position for the projector is advantageous since it permits a simple linkage to the bomber nose and also removes the projector as a source of interest and distraction. The use of ceiling mirror

doubles the projection distance permitting the use of a simple lens system to obtain the desired image size. The unit may be used in rooms of ordinary ceiling height.

The drift mechanism is so designed that the instructor may preset a drift-angle into the trainer and on the completion of an accurate bombing run this drift angle will be shown on the bomb-sight drift scale. This permits the instructor to set up any desired wind vector on an E6B computer and to set this problem into the trainer.

Training Aids Division has a project under way to obtain terrain projections

simulating as closely as possible combat areas being bombed at the present time. A total of 24 projection plates will be furnished with each trainer.

The shipping dates for this device are as follows: June 1, 15; July, 40; August, 80; September, 100; October, 100; November, 10. This order is to be distributed only within the Training Command.

#### ► Useful References for Instructors

*AFFS-1088: Teaching With Slide Films*—A film strip explaining the instructional importance of the film strip in Army training; explains and illustrates basic steps in successful teaching with film strips.

*AFFS-1089: Vivid Visualization—Mechanics of Slide Film Projection*—A film strip explaining correct procedures for preparing room and equipment for projection of film strips; gives hints for the operator and instructor and describes the operation and maintenance of the SVE Tri-purpose film strip projector (Air Corps Model C-2).

*FS 7-75: Visual Aids to Training*—A film strip illustrating problems which can be solved and simplified by blackboards, charts, models, sand tables, motion pictures, film strips, opaque projection, etc.

*FM 21-5: Military Training*—Field manual outlining basic steps in instruction of military units.

*TM 21-250: Army Instruction*—Technical manual outlining detailed procedures for instructors.

*TM 1-1000: Vocational Teaching*—Technical manual giving helpful advice to instructors.

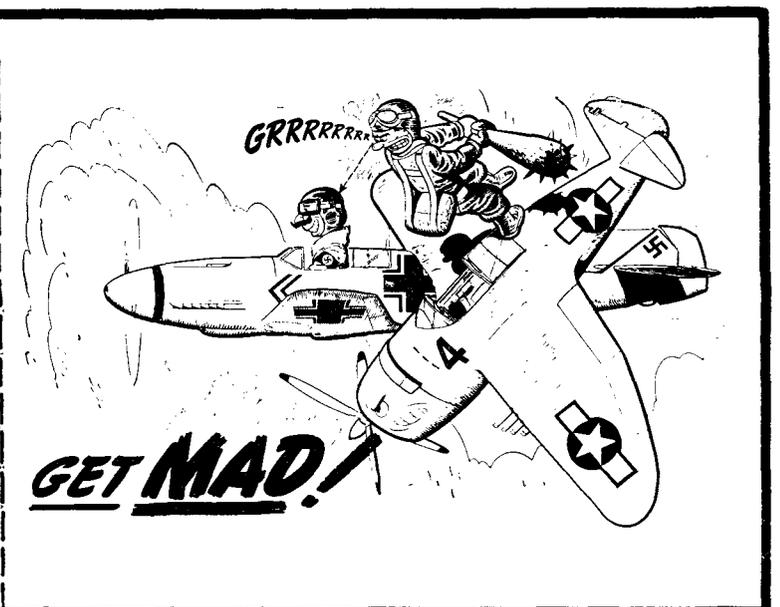
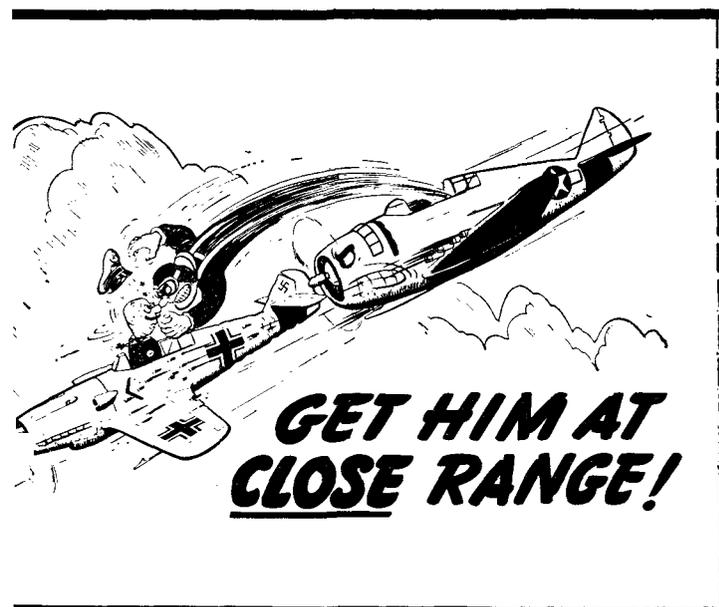
*TM 11-401: Training Film and Film Strip Projection*—Technical manual for projectionists, describing care and operation of motion picture and film strip projectors.

*FB-73: Use of Training Films*—A short motion picture illustrating some of the basic techniques which the instructor should follow in order to make the most effective use of training films.

*How to Use Film Strips*—An illustrated booklet describing procedures for using film strips in the training program. ☆

#### WHERE TO GO

Information on the availability of training films and film strips, aircraft recognition materials, training devices and training publications may be obtained from the Chief, Training Aids Division, Army Air Forces, 1 Park Avenue, New York 16, N. Y., upon request through channels. AAF Regulation No. 50-19 explains fully the functions of the Training Aids Division.



# Roll of Honor

A MONTHLY RECORD OF DECORATIONS AWARDED TO PERSONNEL OF THE ARMY AIR FORCES

(Continued from Page 48)

Robison, Robert A., Lt.  
 Rochez, Louis A., III, Lt.  
 Rodenberg, Elmer R., Lt.  
 Roddy, Vincent J., Lt.  
 Rodgers, Eugene L., Lt.  
 Rogers, Arthur L., T/Sgt.  
 Romano, Albert, Lt.  
 Roodman, Harold, Lt.  
 Rose, Joseph G., T/Sgt.  
 Rosenthal, David L., T/Sgt.  
 (& OLC)  
 Ross, George L., Lt.  
 Ross, Norman A., Lt.  
 Ross, Willy Wayne, Sgt.  
 Rothkrug, Edward, Lt. (& OLC)  
 Rotundo, Joseph T., Lt.  
 Ruark, Charles R., S/Sgt.  
 Ruetter, Chris H. W., Maj.  
 Runyan, Alfred J., S/Sgt.  
 Runyon, Theodore H., Capt.  
 Rurak, Philip A., S/Sgt.  
 Rusie, Robert K., T/Sgt.  
 Russell, Cal., T/Sgt.  
 Russell, David A., S/Sgt.  
 Russell, John F., S/Sgt.  
 Russell, Raymond J., S/Sgt.  
 (& OLC)  
 Rutledge, William H., Lt.  
 Ryan, George, Jr., Sgt.  
 Ryan, Lymé T., Lt. (& OLC)  
 Ryden, Donald A., Lt.  
 Ryerson, Gordon L., Lt.  
 Sachs, Morton L., Lt.  
 Salsbury, Richard G., S/Sgt.  
 Sam, Ernest, Lt.  
 Salmon, Walter J., Jr., S/Sgt.  
 Saltzman, Donald H., Sgt.  
 Salyer, Charles A., F/O  
 Samoski, Stanley J., Lt.  
 (& OLC)  
 Sampack, Adrian J., Lt.  
 Sampson, Jack, Sgt. (& OLC)  
 Sand, Edward A., S/Sgt.  
 Sanders, Richard L., Sgt.  
 Sane, David E., Cpl.  
 Sanford, William L., Capt.  
 Sargeant, Everett E., Jr., Lt.  
 Sargent, Ignatius, Capt.  
 Sartin, Luin W., S/Sgt.  
 Satterfield, Channing N., S/Sgt.  
 Satterlund, Carl S., F/O  
 Sauer, Robert R., Lt. (& OLC)  
 Savage, Harry R., Lt.  
 Savaria, Jerome D., Lt.  
 Savoini, Charles S., S/Sgt.  
 Scarborough, Theodore F., Lt.  
 Schaufele, Howard A., Lt.  
 (& OLC)  
 Schauland, Marlin F., Lt.  
 Scherr, Jerome A., T/Sgt.  
 Scherholz, Charles C., T/Sgt.  
 Schiweitz, Max H., Lt.  
 Schlenker, Leroy F., Lt.  
 Schoenfeldt, Verl B., Lt.  
 Schoer, Walter B., S/Sgt.  
 Scholl, Lawrence L., T/Sgt.  
 (& OLC)  
 Scott, George W., S/Sgt.  
 Scott, Harold W., S/Sgt.  
 (& OLC)  
 Scott, Henry W., Lt.  
 Scott, Leslie E., T/Sgt. (& OLC)  
 Scott, William, Lt. (& OLC)  
 Scribner, Dale H., Lt.  
 Scribner, Thomas E., Lt. (& OLC)  
 Seamon, Walter E., Jr., Lt.  
 (& OLC)  
 Sears, Frank L., Jr., T/Sgt.  
 Sears, Meldrum L., Lt. (& OLC)  
 Seear, Leonard M., Capt.  
 Sedlack, James J., T/Sgt.  
 Seibert, Gordon D., Lt.  
 Seldon, Franklin F., T/Sgt.  
 Semple, David, M/Sgt.

Sgroi, Anthony, Lt.  
 Shahan, Elza E., Lt.  
 Shanley, Edward M., T/Sgt.  
 Shannon, Robert H., Lt.  
 Shattles, David C., S/Sgt.  
 Shaw, Charles M., Lt.  
 Shaw, Edgar L., Jr., T/Sgt.  
 Shaw, John H., Capt.  
 Sheggrud, Earl, Capt.  
 Shelton, Jack A., T/Sgt.  
 Shepherd, Lloyd E., S/Sgt.  
 Sherburne, Darol M., S/Sgt.  
 Sheridan, William P., S/Sgt.  
 (& OLC)  
 Sherman, John H., S/Sgt.  
 (& OLC)  
 Shipman, Mark K., Lt.  
 (& 2 OLC)  
 Shirley, Edwin C., S/Sgt.  
 Shouse, Allen V., Lt.  
 Shreve, Leo E., Cpl.  
 Shriver, Philip K., Lt.  
 Shuler, Quentine E., Lt.  
 Shuler, Thomas H., Lt.  
 Shultz, Harry, T/Sgt. (& OLC)  
 Siegal, Gilbert, Lt.  
 Sigle, Michael P., S/Sgt.  
 (& OLC)  
 Silverman, Joel M., Lt.  
 Simmons, Charles U., S/Sgt.  
 Simmons, Mabry, Capt.  
 Singleton, John W., Lt. (& OLC)  
 Skowronski, Eugene E., S/Sgt.  
 Skradski, Joseph F., S/Sgt.  
 Skrovig, Sylvannus O., S/Sgt.  
 Slattery, Dennis E., T/Sgt.  
 Slieman, Aldo J., Sgt.  
 Slodki, Casimir J., S/Sgt.  
 Stoutin, Wesley C., Lt.  
 Smith, Charles E., F/O  
 Smith, Delmar E., T/Sgt.  
 (& OLC)  
 Smith, Francis H., Capt.  
 Smith, Harlan R., Lt.  
 Smith, Kenneth B., Sgt.  
 Smith, Louis, S/Sgt.  
 Smith, Richard B., Lt.  
 Smith, Robert D., Lt.  
 Smith, Thomas W., S/Sgt.  
 Smith, Walter D., T/Sgt.  
 Smith, Walter W., S/Sgt.  
 Snetting, Laverne H., Lt.  
 Snider, Harold E., Lt.  
 Snitkin, Emanuel, Lt.  
 Snodgrass, Duane F., T/Sgt.  
 Snow, Lorenzo H., S/Sgt.  
 Solberg, Frederic, S/Sgt.  
 Solom, Israel, Lt.  
 Solomon, Herbert, Lt.  
 Sorenson, Wallace A., Lt.  
 (& 2 OLC)  
 Soukup, Reynold A., Capt.  
 Souza, Joseph L., Lt. (& OLC)  
 Souzers, Wayne A., T/Sgt.  
 Sparr, Henry M., Lt.  
 Sparker, Gerald A., S/Sgt.  
 Sparks, Robert O., S/Sgt.  
 Spauldino, Perley W., S/Sgt.  
 Speare, Milford L., S/Sgt.

Speer, Robert E., Maj.  
 Speiser, Martin A., Lt.  
 Spellman, John F., Jr., Sgt.  
 Spindler, Frank L., S/Sgt.  
 Spionable, Edson J., Jr., Capt.  
 Spourrier, Chester E., Lt.  
 Stachow, Benny S., S/Sgt.  
 Stahl, Albert W., Lt.  
 Stampolis, Nicholas, Lt.  
 Stanlcy, Sylvester, Jr., S/Sgt.  
 (& OLC)  
 Stansbury, Jay W., Lt.  
 Stegg, James R., Lt.  
 Stein, William F., Lt.  
 Steinbinder, John J., Lt.  
 Steiner, Harold R., T/Sgt.  
 (& OLC)  
 Steller, Rudolph, T/Sgt.  
 Stemen, Roger F., Lt.  
 Stenborn, Harry W., Lt.  
 Steinbinder, John J., Lt.  
 Stephens, Robert C., Lt.  
 Schottelkerb, William P., Lt.  
 (& OLC)  
 Schrampf, William M., Lt.  
 (& OLC)  
 Schuerman, Donald S., Lt.  
 Schuller, Joseph F., S/Sgt.  
 Schweigert, Delmer M., S/Sgt.  
 Scollin, Victor E., S/Sgt.  
 Sternfels, Robert W., Lt.  
 Stewart, George A., Lt.  
 Stewart, Roderick M., Jr., Lt.  
 Stewart, William S., Lt.  
 Stiles, Ralph J., M/Sgt.  
 Stinson, Walter Dale, Sgt.  
 Stoddard, Robert T., S/Sgt.  
 Stoddart, Percy, Jr., Maj.  
 Storms, Leon M., Lt.  
 Story, Daniel, Lt.  
 Storz, Robert H., Lt. (& OLC)  
 Strand, Bernard C., T/Sgt.  
 Strandberg, Clarence W., T/Sgt.  
 Strasmeier, William R., S/Sgt.  
 Stratton, Hubert M., T/Sgt.  
 Strickbine, Edward, Lt.  
 Stricker, Thomas A., Lt.  
 Stubbs, James Woodrow, Lt.  
 Sullivan, Francis A., T/Sgt.  
 Sullivan, Gerard E., S/Sgt.  
 Sullivan, John A., Lt.  
 Sullivan, Joseph P., Lt.  
 Sullivan, Michael L., Sgt.  
 Surles, Donald C., Lt.  
 Swendar, George, Sgt. (& OLC)  
 Sweet, Adolphus J., Lt.  
 Sweet, Robert G., S/Sgt.  
 Swenmiw, John N., T/Sgt.  
 Sylvester, Robert B., Lt.  
 Tabaccoff, Harold, Lt.  
 Tabb, Clarence E., Jr., Lt.  
 Tamsh, Alexander S., Capt.  
 Tauaeircz, Joseph E., S/Sgt.  
 Tarter, Jerome, Capt.  
 Tate, Faustyn W., S/Sgt.  
 Tate, Joseph S., Jr., Maj.  
 (& OLC)  
 Tate, Moses F., S/Sgt.  
 Taylor, Carl E., Capt.  
 Taylor, James G., Lt. (& OLC)

Taylor, Vance, S/Sgt.  
 Taylor, Walter E., T/Sgt.  
 Tegnazian, Albert, Lt.  
 Teltser, Milton, Lt. (& OLC)  
 Temple, George W., Lt.  
 Terry, Derwin D., S/Sgt.  
 Terry, Edmond T., T/Sgt.  
 Terry, Hal J., S/Sgt.  
 Terry, Harvey N., Jr., T/Sgt.  
 Terwey, Alphonse J., S/Sgt.  
 Thacker, Robert E., Capt.  
 Thomas, Coy H., T/Sgt.  
 Thomas, John B., Lt.  
 Thompson, Augustus B., T/Sgt.  
 Thompson, Douglas W., F/O  
 Thompson, Jack P., Capt.  
 Thompson, Lesley E., T/Sgt.  
 Thompson, William E., S/Sgt.  
 Thrasher, Carl M., M/Sgt.  
 Thunell, Fred J., S/Sgt.  
 Tibbets, Paul W., Jr., Lt. Col.  
 Timberlake, Edward J., Col.  
 (& OLC)  
 Timmer, Robert, Lt.  
 Timpo, Peter A., Lt.  
 Tipton, Roger J., T/Sgt.  
 Titkeneyer, Charles W., Lt.  
 Todd, Robert E., Lt.  
 Toles, William, Lt.  
 Tortora, Bernardino O., T/Sgt.  
 Totten, Gerald J., Lt.  
 Town, Harold F., T/Sgt.  
 Townsend, Franklin, Sgt.  
 Travis, Euel A., Lt.  
 Travis, Leo G., Lt.  
 Treace, Harvey L., S/Sgt.  
 Treadway, Lloyd L., S/Sgt.  
 Triantafellu, Rockley, Lt.  
 Trouve, Louis V., Lt.  
 Troxell, Clifton H., Lt.  
 Tucholski, John P., T/Sgt.  
 Tucker, Loyd E., T/Sgt.  
 Turgeon, Alfred F., T/Sgt.  
 (& OLC)  
 Turner, Edwin L., T/Sgt.  
 (& OLC)  
 Turner, James E., S/Sgt.  
 (& OLC)  
 Turner, Kenneth L., S/Sgt.  
 Tushla, Harold R., Lt.  
 Tyka, Adolph A., S/Sgt.  
 Underwood, James C., Sgt.  
 Unger, Glenn R., S/Sgt.  
 Utley, James A., S/Sgt.  
 Utter, Blaine B., T/Sgt.  
 Van Every, Edward, S/Sgt.  
 Vangilder, Taylor H., T/Sgt.  
 Van Kleeck, Arthur B., Sgt.  
 (& OLC)  
 \*Vann, William M., Jr., Sgt.  
 Van Son, George, S/Sgt.  
 Varner, Lee A., S/Sgt.  
 Vaughn, Lawrence M., T/Sgt.  
 Verberg, Merlin H., Lt.  
 Vickary, Eugene P., Lt.  
 Victor, Jerome S., Lt. (& OLC)  
 Viets, John W., Lt.  
 Vinson, Arnold E., Capt.  
 (& OLC)

Wade, Horace M., Lt. Col.  
 Wagner, Earl L., Sgt.  
 Wagner, John C., Capt.  
 Waldman, William M., Lt.  
 Walker, Albert J., F/O  
 Wall, James T., Jr., Lt.  
 Wallen, Phil J., Lt.  
 Waller, Wade C., Jr., Capt.  
 (& OLC)  
 Walls, Daniel H., Lt.  
 Walsh, Martin R., Jr., Capt.  
 Walters, Wiley C., S/Sgt.  
 Walthers, George A., Lt.  
 Waples, Pershing W., S/Sgt.  
 Ward, Arthur D., T/Sgt.  
 (& OLC)  
 Warner, Raymond P., Lt.  
 Warren, Charles K., Lt.  
 (& OLC)  
 Wateski, Joseph C., Sgt.  
 Watkins, Alton O., Capt.  
 Watson, William H., Lt.  
 Waugh, Arthur T., T/Sgt.  
 Weber, Mark B., T/Sgt.  
 Weekly, Pharis F., Lt.  
 Weer, Harold F., T/Sgt.  
 (& OLC)  
 Weljan, Oeva O., Lt.  
 Weil, Burton L., Lt.  
 Weinberg, Charles W., Lt.  
 Weinfurter, Regis D., Sgt.  
 Welch, James W., Jr., Lt.  
 Welch, Darrell G., Capt.  
 Wells, Harold G., Jr., Capt.  
 Wert, Wayne E., S/Sgt.  
 West, Ernest E., S/Sgt.  
 Westcott, Earl C., S/Sgt.  
 \*Westcott, Elvin P., S/Sgt.  
 Weston, John T., S/Sgt.  
 (& OLC)  
 White, Arthur W., T/Sgt.  
 White, L. H., T/Sgt.  
 Whitener, Cecil J., Lt.  
 Whitesides, William W., S/Sgt.  
 Whitker, Frederic E., Lt.  
 Whitman, Edward N., S/Sgt.  
 Wicriszewski, Raymond C., M/Sgt.  
 Wiese, Edward B., S/Sgt.  
 Wight, Lee D., Lt.  
 White, Roy J., M/Sgt.  
 Wilkinson, Richard L., Lt.  
 Williams, Leo, Sgt. (& OLC)  
 Williams, Ed P., Sgt.  
 Williams, Lee M., Lt.  
 Williams, Llewelyn, Jr., Sgt.  
 Williams, Richard H., T/Sgt.  
 Williamson, Richard C., Lt.  
 Wilmarth, Clarence M., Lt.  
 Wilmes, Albert H., T/Sgt.  
 Wilson, Floyd D., S/Sgt.  
 Wilson, Herbert F., Sgt.  
 Wilson, Robert F., Lt.  
 Wilson, Stanley, T/Sgt.  
 Winchester, John K., Lt.  
 (& OLC)  
 Wisniewski, James, Sgt.  
 Witt, Thomas E., Lt.  
 Wolff, Joseph E., Lt.  
 Wood, Richard A., Lt.  
 Wood, William O., S/Sgt.  
 Woodring, Dugan V., Lt.  
 Woodruff, Jasper W., Capt.  
 (& OLC)  
 Woodward, James O., S/Sgt.  
 Work, Byron R., Lt. (& OLC)  
 Working, William H., Lt.  
 Workman, Matthew, Sgt.  
 (& OLC)  
 Wright, Donald G., S/Sgt.  
 Wright, Gottrell H., T/Sgt.  
 Wright, Lonnie D., Cpl.  
 Wright, Wilbur J., Sgt.  
 Wright, William M., Lt. ☆

## MISTAKES IN 'ON THE LINE' PICTURE ON PAGE 55

- The airplane is wet, dripping wet. Errors will be introduced if it is covered with moisture in any form. Cleanliness of aeronautical equipment as directed in TO 01-1-1 is imperative in weighing.
- You're weighing the airplane outdoors, men. "The airplane must be weighed in a closed hangar," says AN 01-1-10.
- The miscellaneous equipment left carelessly about will affect the weight of the airplane. The towing bar should not remain attached, for example, and for all we can tell, the mechanic at the nosewheel is going to put his foot into the weight. Correct loading depends on accurate determination of MAC and center of gravity limits.
- Looks as if the mech directly beneath the cockpit is entering figures on the airplane weighing form.

- Wrong! This is done *after* weight is computed and is entered by the weight and balance officer.
- The man in the cockpit chose a convenient spot for his boner. The level should be used inside the airplane in conjunction with regular leveling lugs. And it's obvious that this soldier's poundage is superfluous to the true basic airplane weight.
  - The reference datum line is going to be haywire. The mech at the nosewheel should hold his steel tape to the center of the wheel disc, and the man under the fuselage should hold it at the same level from the ground.
  - Someone is going to have an unexpected fall by tripping over that handle lying on the ground in front of the man reading the scales. Men, safety in maintenance *must* be observed.

## Answers to Quiz on Page 40

- (d) On a weather map
- (a) 27 feet per second
- (c) Bay of Bengal
- (b) 9,750
- (d) Brigadier General
- (b) England
- (d) 1,500
- (d) Dauntless
- (c) Twin-engine bomber
- (a) True (AR 600-45 C-1 9 Mar. 44)
- (a) 3,280 feet
- (b) C-54. The C-54 is a four-engine aircraft; the other three transports are twin-engine planes.
- (b) April 18, 1942, August 7, 1942 was the date of the first landings on Guadalcanal; June 7, 1942 marked the first Jap attack on Kiska, and on February 15, 1942, our forces on Corregidor surrendered to the enemy.
- (b) On the Malay Peninsula
- (b) One of the stars in the Dipper
- (d) 2,600
- (b) Meridian, Miss.
- (d) Four-engine bomber
- (c) Air Chief Marshal Sir Arthur Tedder
- Phosphorus bomb.

## **SQUEEZE PLAY IN THE FAR EAST**

Jap-controlled locomotive shops at Vinh in French-Indo China are blasted by B-24s of the 14th Air Force in an attack which caused extensive damage in this important target area. Workers' quarters, shown in the background, were untouched by the falling bombs. Targets in Indo-China, Formosa, Thailand and Burma have been added to Maj. Gen. Claire L. Chennault's original China coverage. This ever-increasing sweep has enabled the 14th to put the squeeze on Jap shipping, as well as rail communications and airdrome operations. The big dent made in Japanese shipping tonnage by bombers of the 14th has had telling effect on the enemy's defense against steady Allied advances among the islands of the Pacific.



# VOICE PROCEDURE

is vital to the  
mission!

**Complete knowledge and correct use of your communications equipment will help achieve maximum operational results.**

- ✓ **KNOW YOUR EQUIPMENT**
- ✓ **REMEMBER YOUR PRE-FLIGHT CHECK**
- ✓ **BE SURE YOUR EQUIPMENT IS ALWAYS PROPERLY ADJUSTED**
- ✓ **SPEAK SLOWLY—ENUNCIATE CLEARLY**
- ✓ **KNOW AND USE CORRECT CALL PROCEDURES AT ALL TIMES**