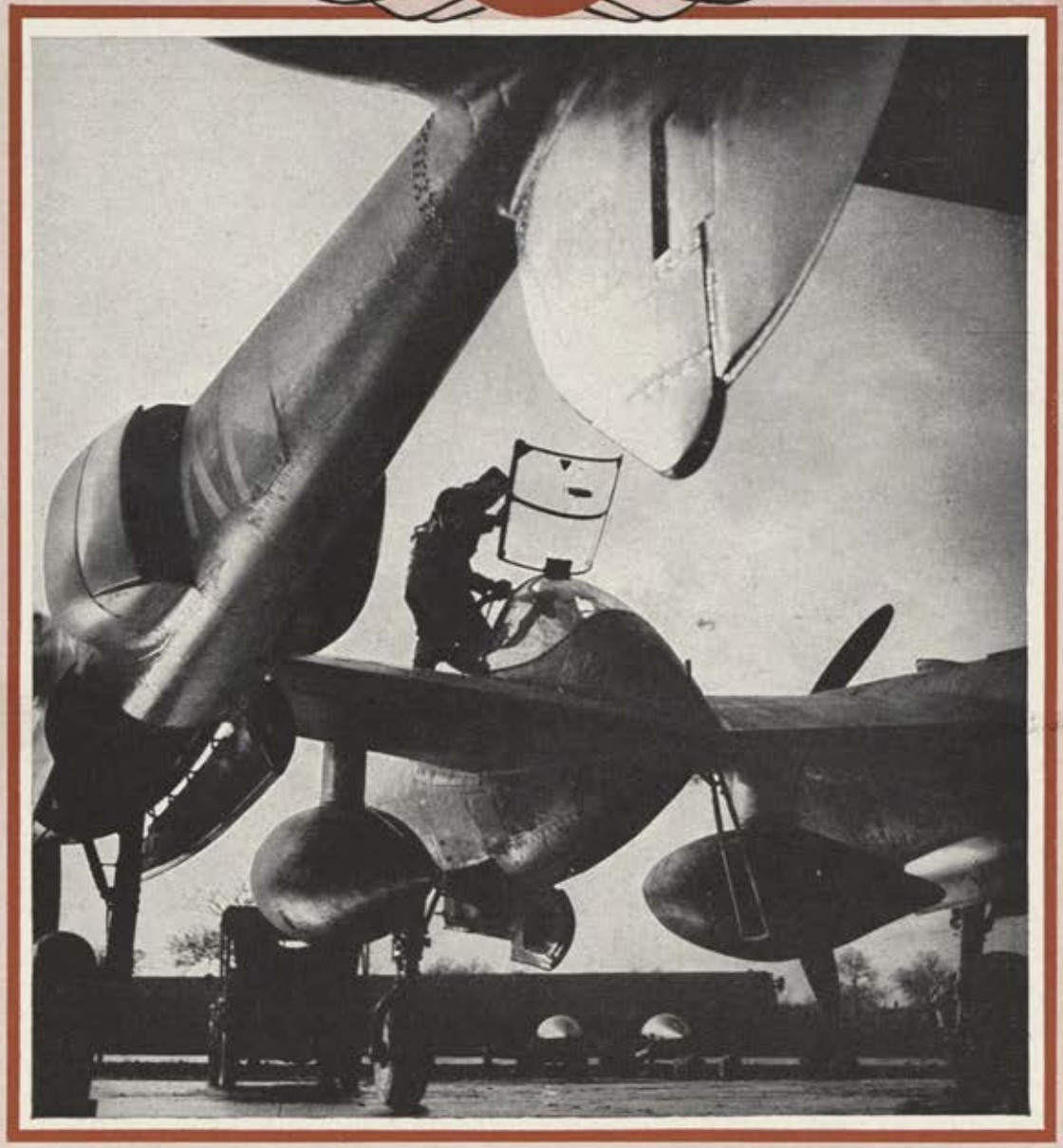
AIR FORCE

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



MARCH 1944

AIR-TO-AIR BOMBING

The enemy continues to drop bombs on our aircraft in flight.

This remarkable photograph of a Jap aerial bomb, one of the few if not the only one ever published, was taken by First Lieut. Lawrence P. Bachmann, AIR FORCE staff correspondent, while on a bombing mission in the Central Pacific.

Jap bombs such as this are reported to be accurately timed to explode five to ten seconds after they are dropped. Here the camera has caught the bomb explosion, showing white smoke streamers in a waterfall effect. Bachmann used a K-20 camera from the waist window of a B-24.

Both Germans and Japs are employing air-to-air bombing against our bombers. The evidence indicates that they place little faith in it as a destructive measure, but use it mainly in the hope of breaking up our formations. It has had little success.

Aerial bombs, generally speaking, have large lethal bursts, but hits are rare because the enemy has not yet achieved a high degree of bombing accuracy against fast-moving targets at high altitudes.

The idea of air-to-air bombing is as old as military aviation. During World War I, aircraft tried to destroy others in flight by dropping missiles of various kinds, including bricks and hand grenades. Even guns were thrown overboard at enemy fighters. ☆

CROSS COUNTRY

GROUND crews who know the habits of every sparkplug and cowling button on their planes but have to read the newspaper to learn what their charges do in the air are a thing of the past at a P-38 base in England.

They now learn from intelligence officers and from the pilots themselves just what their work amounts to when the planes meet the Luftwaffe. Once a week the crews and other ground enlisted men attend meetings at which pilots and ground officers explain just what the squadrons have been doing in the air over Europe.

This station works on the theory that, within certain bounds, the more men know about the job the greater the security will be, explains Capt. Walker Gabbert, an intelligence officer from Ojai, Calif., who adds that the plan also pays off in boosting the morale of ground men.

Attendance at the night sessions is entirely voluntary, but despite movies and other diversions on the field, it has been good enough to keep the meetings going for more than two months. Even workers from the orderly room, supply men and others who do no work around the planes turn out to learn what is doing in the air.

All squadrons at this field now hold the sessions, and the men look forward to them not only to learn a little more about the war but to hear the pilots' attitudes toward different phases of maintenance.

At a recent session Lieut. Gerald F. Leinweber of Houston, Texas, explained in detail what goes on at a briefing for fighter pilots. Acting as briefing officer and treating the men as if they were pilots, the lieutenant put them through a preflight session such as flyers attend before every combat mission.

He explained how pilots get the latest reports on the weather, where to expect heaviest fighter and anti-aircraft opposition, where to meet the bombers and how the escorting is to be carried out. He also discussed how that particular mission fitted in with the entire day's operations by other fighter and bomber outfits. Lieut. Arthur E. Hafstad of New York City went into further detail about the origin of the mission, how orders reach the squadrons through official channels and how the orders are acted upon before the take-off.

The sessions are not purely academic. Coffee and cakes occasionally are served—sometimes beer—and in the informal bull sessions which follow the men discuss manifold pressure, radio reception and gun performances with those who have learned the answers over Germany. Sgt. Morris Wegman, crew chief from Chelsea, Mass., buttoned it up this way: "It's one place where ground men can really learn the score."

ADDED ATTRACTION

While reading a dispatch from the Canal Zone, we felt a quick welling of pride for Pfc. Stefano Bianchi, a 6th Air Force military policeman at Guatemala City. We learned that Private Bianchi has become a symbol of military decorum since being assigned to the Central American base. This MP is described as a positively terrifying demon to those who misbehave, but a pal and a source of rich comfort to those who walk in the right. Private Bianchi, an East Boston boy, is looked upon with such respect that a Guatemala City night club, the Salon Granada, features him in its advertising. "Order — Gayety — Culture," the club boasts. "Only in the atmosphere of the Granada. Dine and Dance every Night." Then, in the space we ordinarily expect to find pictures of dancing girls, the Granada displays the triumphant face of Private Bianchi, Military Police.

GROUND SAFETY DIVISION

With the establishment of a Ground Safety Division in the Office of the Assistant Chief of Air Staff, Personnel, the AAF has broadened its safety program to cover all personnel and all establishments. Generally, it may be said that the Office of Flying Safety is concerned with all accidents which occur in the operation of aircraft as such, either in the air or on the ground. The Ground Safety Division is concerned with all other accidents.

It is the job of the Ground Safety Division to develop and supervise a program looking to the elimination of accidents, occupational hazards, and personal injury other than those covered by the Office of Flying Safety. It embraces all personnel, both military and civilian. As stated by Lieut. Col. W. L. Tubbs, chief of the division, the purpose is to reduce time losses resulting from accidents in training and production activities and to conserve

FRONT COVER

This month's cover shows a P-38 at an AAF fighter base somewhere in England. For a picture story of the day-to-day life of a P-38 squadron based at this airdrome, see Pages 32, 33 and 34 of this issue.

manpower and materiel by insuring safe working conditions.

The division will review the ground safety operations of all commands and air forces to discover and correct deficiencies. This does not conflict with the responsibilities of the Air Provost Marshal, who continues to supervise internal security matters, including safety in private facilities having contracts with the Army Air Forces. The safety program and accident prevention activities relating to such plants, however, are subject to the technical direction of the Ground Safety Division for integration with the over-all AAF ground safety program.

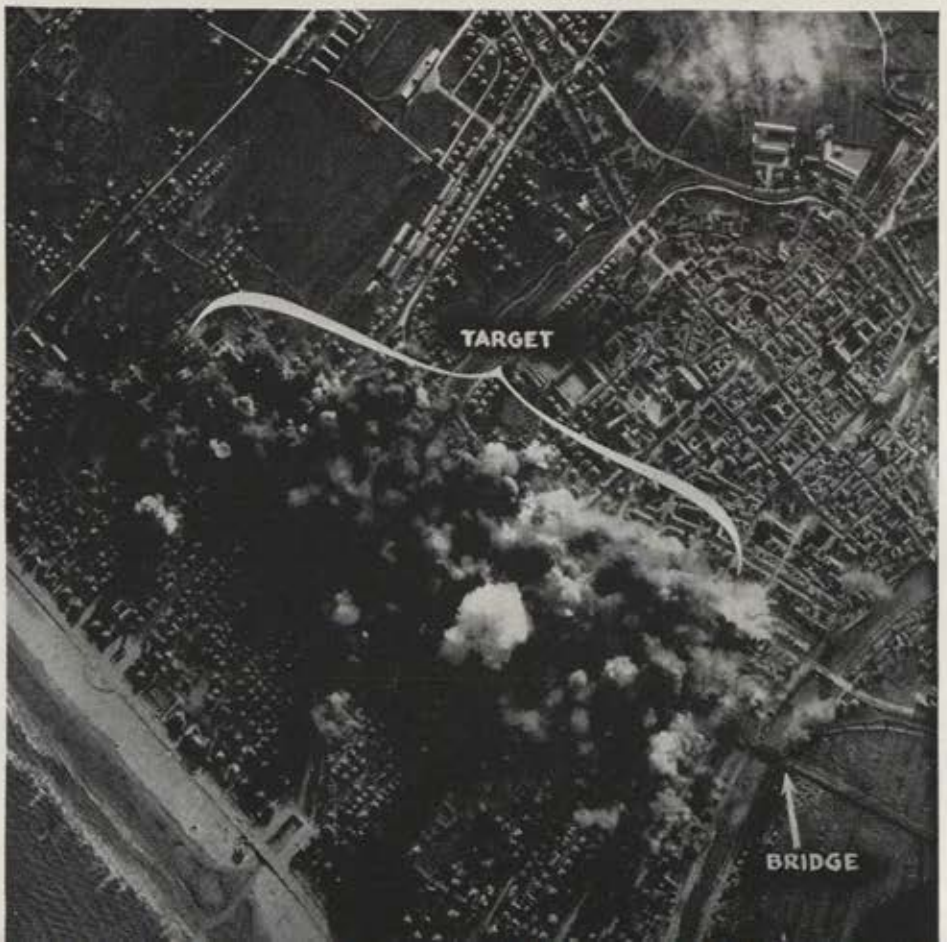
High Man on a Totem Pole

We learn that the Polynesian-Melanesian natives of a South Pacific island have taken quite a fancy to Capt. William R. King of the 13th Air Force, officer in charge of native laborers on the island. They have conferred upon him the honorary title of Chief Captain Goodheart. So far, Chief Goodheart's most exacting duty has been to attend as honored guest at a feast which followed the wedding of a prominent native son—an elaborate affair with entrees of fish and chicken and meat, certainly no onerous task. In addition to his title, Captain King has been endowed with such tokens as diving glasses, grass skirts, war clubs and a totem pole.

Chitt'lins in London

Bringing you what we faithfully believe to be the war's first mention of chitterlings, we pass along the contents of a V-letter just delivered from Lieut. Roy Wilder, Jr., now stationed in England. When the lieutenant left the States he carried with him a half gallon jar of chitterlings from his native hearth in Spring Hope, N. C. Despite the cold, grey, unappetizing fact that chitterlings are simply pig intestines, the lieutenant handled them with doting care and trusted their transportation to no one but himself. The jar was at his side every moment, taken along to make a great feast when three other North Carolina boys, also in England, could hold a reunion. Here, below, is an account of the chitterling strut as described by Lieutenant Wilder. We rush it into print as revealing a heretofore unknown contribution to morale.

"Well, we finally all got together,"



A perfect sighting from 24,000 feet enabled this bombardier to spill his bombs squarely on the Rimini railroad yards in northern Italy. To gain an idea of the amount of drift the bombsight computed for the trajectory, run your finger from the bomb cluster straight forward along the flight path. Then examine the lower picture and note the point of the impact which can be identified in both pictures by the bridge leading into the railroad yards. This December attack caused two explosions, set off a number of large fires and left the yards and much rolling stock beyond service to the enemy.

Wilder's letter began. "First we made corn dodgers from meal which John had picked up in Scotland. Then Allen, loudly contending that he was the only person who could be trusted with the real cooking, put the chitterlings in a skillet and soon the good aroma wafted over the room. We drew deeply of the wonderful odor and grinned at each other with keen anticipation.

"Now and then someone would yell, goat-like, in true North Carolina fashion: 'Ain't it hell! Chitt'lins in London. Man, this is fittin'.' With each such outburst Allen would dash in from the kitchen, tackle somebody around the waist and play football for a moment in contagious glee. Bill Speight (Navy) made several speeches on virtues of the simple life and among us we decided not to attempt to educate gourmets to chitterlings, but to devote our lives to keeping this delicious ritual on its Carolina hearthstones.

"When the chitterlings were done we ate them, smacking tenderly over each crisp, brown morsel. And all the while we kept watering that little pint of whiskey to make it last longer. Bill quoted Churchill that 'These are great days,' and we, in gratefulness for our reunion, fully agreed. However, we are certain that neighboring Londoners, awakened by the unique scent of cooking chitterlings, decided in cold and sudden sweat that surely, at that moment, Hitler had sprung a secret weapon."

Night Spider

The Black Widow, the AAF's new night fighter, designated the P-61, has been announced officially by the War Department. The new plane, heavily armed and armored, is powered by two Pratt & Whitney engines. Development began more than three years ago and contract for the first model was let to Northrop Aircraft of California in January, 1941. The plane is the outgrowth of intensive research and development by AAF and Northrop technicians, directed toward production of a powerful and effective night combat weapon, equipped with the latest devices. Details of the Black Widow's performance remain secret.

Flight of Fancy

Probably the first attempt ever made to glorify kitchen police duty is reported from Stuttgart (Ark.) Army Air Field. In the words of the base PRO: "The lonely figure of a soldier wrapped in a field jacket against the early morning chill . . . strides stealthily down the long aisle between the rows of sleeping men. His flashlight cuts an eerie shaft in the pitch dark as he seeks out the name tag. He gently nudges the relaxed hulk in the bunk. 'Madigan,' he whispers. 'Your flight takes off at 0445. You've got the China Clipper'."

Here the spell ends, for basically there is no way to beautify kitchen police. The flight at 0445 is to the mess hall. The China Clipper is pretty lingo for dishwasher. Somehow we still like the old-fashioned way.

Beyond the Call of Duty

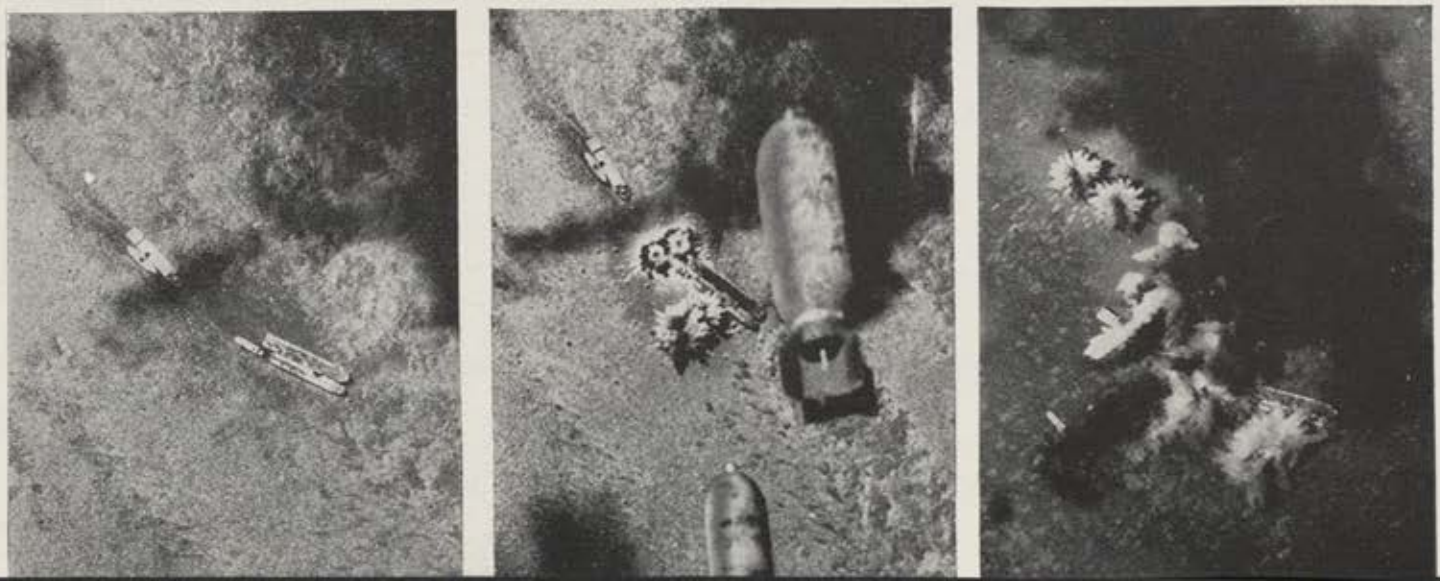
The Medal of Honor has been awarded to three more members of the AAF, two of whom gave their lives as total contribution toward the final victory.

Second Lieut. John C. Morgan (then flight officer) was serving as co-pilot of a B-17 which was attacked by a large force of enemy fighters over Europe. During the attack the oxygen supply to the tail, waist and radio gun positions was knocked out; a cannon shell burst through the plane's windshield and split open the pilot's skull, leaving him in a crazed condition. In words of the citation: "The pilot fell over the steering wheel, tightly clamping his arms around it. Flight Officer Morgan at once grasped the controls from his side and, by sheer strength, pulled the airplane back into formation despite the frantic struggles of the semi-conscious pilot. The interphone had been destroyed rendering it impossible to call for help. At this time the top turret gunner fell to the floor and down through the hatch with his arm shot off at the shoulder and a gaping wound in his side. The waist, tail and radio gunners had lost consciousness from lack of oxygen and hearing no fire from their guns, the co-pilot believed they had bailed out. The wounded pilot still offered desperate resistance in his crazed attempts to fly the airplane. There remained the prospect of flying to and over the target and back to a friendly base wholly unassisted. In the face of this desperate situation Flight Officer Morgan made his decision to continue the flight and protect any members of the crew who might still be in the ship. For two hours he flew in formation with one hand at the controls and with the other holding off the struggling pilot before the navigator entered the steering compartment and relieved the situation. The miraculous and heroic performance of Flight Officer Morgan on this occasion resulted in the successful completion of a vital bombing mission and the safe return of his airplane and crew."

Maj. Ralph Cheli was leading his squadron in a dive attack on the heavily defended airdrome in New Guinea when intercepting enemy aircraft centered their fire on his airplane, causing it to burst into flames while still two miles from the objective. The major's speed would have enabled him to gain sufficient altitude to parachute safely, but this action would have resulted in his formation being disorganized and exposed to the enemy. "Although a crash was inevitable, he courageously elected to continue leading the attack in his blazing airplane. From a minimum altitude, the squadron made a devastating bombing and strafing attack on the target. The mission completed, Major Cheli instructed his wing man to lead the formation and crashed into the sea."

Second Lieut. Joseph R. Sarnowski volunteered as bombardier of a crew on an important photographic mapping mission

While on patrol along the Irrawaddy River in Mandalay, bombers of the 10th Air Force found this target of Japanese freight carriers being towed by power launches. From 10,000 feet, the first stick of explosives may be seen bursting over the river craft, while more bombs are on their way to the target. Three freight barges and their towing launches were destroyed in this attack, along with their cargoes of Jap supplies. These craft usually make for shore cover when air attack is imminent. Shadows shown on the surface of the river were caused by clouds.



After ordering his crew to bail out of their burning B-17 on the Oschersleben mission January 11, Lieut. Jack W. Watson managed to fly the aircraft back to a base in England. This picture shows a firefighter crew smothering the flames with liquid foam. The man standing on the wing, who has checked to see that no personnel have been left inside, directs the stream of the foam toward remaining flames. Lieutenant Watson, by the way, is the pilot who gained dubious fame by buzzing Yankee Stadium during the opening game of the World Series last fall.

covering the heavily defended Buka area, Solomon Islands. When the mission was nearly completed about twenty enemy fighters intercepted. "At the nose guns, Lieutenant Sarnowski fought off the first attackers, making it possible for the pilot to finish the plotted course. When a coordinated frontal attack by the enemy extensively damaged his bomber, and seriously injured five of the crew, Lieutenant Sarnowski, though wounded, continued firing and shot down two enemy airplanes. A 20 mm shell which burst in the nose of the bomber knocked him into the catwalk under the cockpit. With indomitable fighting spirit, he crawled back to his post and kept on firing until he collapsed on his guns. Lieutenant Sarnowski by resolute defense of his aircraft at the price of his life made possible the completion of a vitally important mission," the citation concluded.

Hot Pilot

From the Panama area comes word of Willie, an air-minded raccoon who ambled in from the jungle one day and assumed a place as second in command of an outlying fighter squadron. Willie thrived on government rations and appeared quite contented. He found a home in the Army, as we sometimes say.

It was not until several weeks ago, however, that Willie took up flying as a vocation. Now he gets a bigger kick out of hitching a ride than any orderly room autocrat. Willie's first trip was with a pilot making a routine flight to another field in the area. The plane taxied to the flight line for servicing and the mechanic began his chore. Then suddenly he drew back aghast (at least, aghast) when he saw a small furry head with two beady, black eyes peering out at him from one of the landing wheel wells. Those eyes were Willie's. He had just completed his first flight. The return trip was made in a cardboard carton in the cockpit.

All efforts to keep Willie out of a plane proved futile, however, and a few days later he went aloft on a gunnery mission, again traveling as ex-officio co-pilot in the same wheel well. Since that time, pre-flight inspections have not been considered complete without a careful check on Willie.

After Due Consideration

We have heard it said that the first American flyer to examine a German aerial rocket is Staff Sgt. George T. Rankin, 29-year-old gunner from Fountain City, Tenn. Rankin's introduction came at the height of a battle when an object came through a waist window and hit the floor behind him.

"It looked like a dry cell battery stuck in one end of a stove pipe," Rankin said. "For a fraction of a second I thought of taking it back to England for analysis. But that fraction was also long enough for me to throw it out. A few seconds later I saw it explode far below."

Hats off to Form 1

Capt. Robert E. Smith, one of the first fighter pilots to reach China after Pearl Harbor, has a particularly warm spot in his heart for the Form 1. Returning from Hong Kong after a raid, the captain was forced to make a crash landing on a river bank. He slipped on the shoulder harness, but found that the snap was missing. He broke off the pencil from his Form 1 and used it as an improvised snap. When the crash came the pencil held. History might have taken a different turn if Napoleon had carried a Form 1 at Waterloo.

Off Base

An ME-410 which had been out at sea on a photographic mission made a grave error in navigation recently and came sailing into an Allied airdrome at Monte Corvino in Italy. After a normal circuit the plane came in with landing gear lowered, oblivious to the large number of Allied aircraft on the ground. As the German was turning in from his downwind leg, anti-aircraft fire was opened by the ground defenses, in response to which Very recognition signals were fired from the aircraft. The fire ceased and the plane made a normal landing, during which the Germans discovered their mistake.

At the end of the landing run the aircraft swung around quickly and the motors were revved up in an attempt to take off again. Two RAF officers intervened by driving a truck in the path of the aircraft, and when the pilot attempted to swing clear the truck blocked him out neatly. Meanwhile, one of the RAF men jumped from the truck and covered the Germans with his pistol. Under this persuasion the radio operator jumped out of

the plane and the RAF officer took his place and ordered the pilot to shut off the motors. It was only after the pistol was pressed to the German's neck and the Englishman seemed determined to do great bodily harm that the engines were stopped. The crew and aircraft were taken intact.

Suds in His Eye

Some AAF crewmen arriving in England fail to realize that London is really quite a city. Recently an engineer-gunner staff sergeant got a few days leave and went to London to look around. As a tidy afterthought he took his soiled laundry along to get it cleaned while he spent his days going from museum to museum. He alighted from the train, strolled up to a street and found a likely looking establishment to leave his clothes. After carefully noting the shop's name the sergeant set out to entertain himself. When the day of departure came the young man took a taxi and named the shop. At that moment the sergeant learned that the laundry firm had 200 branch stores in the city. After running up quite a taxi bill, searching at random, the American gave up. It was worse than trying to find all the Automats in New York City. Fortunately, a girl attendant at one of the stores offered to trace the package. Sometime later she mailed it to the sergeant at his base.

He Can Do No Right

Bombardiers probably take more ribbing from squadron wiseacres than any other member of an aircrew. At best the bomb-dropper has a hard enough time getting credit for his work—and if pictures show the target well splattered he is told solemnly that it was sheer luck, or that he simply closed his eyes and let them go. If the target was missed, however slightly, the bombardier really has a tough time. At one station in the European Theatre of Operations, after a mission that was only partially successful, an elaborate drawing appeared on the side of a Nissen hut. It showed a man being led by a Seeing-Eye dog and the inscription read, "That's our Bombardier."

Beating Their Gum

Flak tore into the radio compartment of a B-26 over Italy and partially severed a hydraulic fuel line. Lieut. D. L. Gibson, the pilot, informed of the fluid spilling away, had visions of a useless landing gear and a belly landing. Two staff sergeants reacted in what seemed like complete apathy, however. They broke out a first aid kit and began munching chewing gum. Wayne C. Armstrong, radio gunner, and Robert L. Weldon, engineer gunner, then combined their gum into one sizeable wad and plugged the flak hole in the line. Over this they applied adhesive tape, *(Continued on Page 62)*

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BRIEF

DEPARTMENTS

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OUR JET PROPELLED FIGHTER

By Capt. Ezra Kotcher

Fighter Branch, Engineering Division, Materiel Command

When it was announced that the AAF had a jet propelled airplane in production, there was considerable speculation among writers and aviation commentators. Some of the pronouncements, by persons who seemed astounded by the idea, had a certain dream-like quality; others offered rather sober discussions on the subject. So it seems quite in order that some popular misconceptins should be cleared up concerning the Army's first jet propelled military aircraft.

This airplane *is not a rocket plane.* It is propelled by a *turbo-thermal* jet engine. It is a twin engine, single-seater fighter plane with tricycle landing gear, built by Bell Aircraft. Its engines were produced by General Electric Company on modifications of a British design by Group Captain Frank Whittle, RAF. It is very effective at high altitude, but it doesn't look at all "Buck Rogers," and a layman seeing it in flight might not notice anything strange about it except its sound. Several hundred flights have been made.

The airplane is, perhaps, the greatest new development in aeronautical engineering of the last decade. The present-day, propeller-driven airplane begins to be stymied by the effects of compressibility at speeds much above 450 miles an hour; if much greater speeds are to be attained, they undoubtedly will be accomplished through jet propulsion. The next years will find the development of high speed, high flying planes definitely tied to the development of the jet propulsion engine.

Right now is a good time to define a few terms. When engineers speak of jet propulsion, they mean normally any form of reaction motor which develops its forward thrust by the rearward emission of a jet of air, gas or liquid. When a boy blows up a toy balloon, releases it, and it flies wildly about as air escapes from it, the lad has demonstrated a simple form of jet propulsion.

The development of jet propulsion; its future influence on the design and performance of our aircraft.

A rocket, then, is jet propelled. Engineers, however, define a rocket as a device which carries along with its fuel the oxygen, in some form or another, necessary to burn the fuel. This could be black powder, which contains oxygen, as in a Fourth of July skyrocket, or liquid oxygen used with a liquid fuel as in some small, experimental rockets. The high propellant consumption rate severely limits the rocket's endurance. Rocket motors have been used in assisted take-off for conventional airplanes. The "bazooka" gun is a good example of a rocket used as a weapon. When we begin wandering in the vacuum of interstellar space like the science-fiction fellows expect us to do one of these days, we will have to use a form of rocket carrying its own oxygen to burn the fuel necessary for producing the propulsive force to accelerate through space.

The turbo-thermal jet propulsion engine, on the other hand, uses the surrounding atmosphere as the oxygen supply necessary for combustion. It operates well in the stratosphere, but it cannot function in the regions where there isn't any air. The magnitude of its propulsive force, somewhat like that of the normal eciprocating engine, falls off with increasing altitude, unlike that of the rocket which can maintain relatively constant thrust with altitude. It is incorrect to refer to the type of jet propulsion unit we are using as a "rocket."

The jet engine eliminates propellers . . . may add 100 mph to speed.

The development of the present jet propelled airplane was accelerated early in 1941 when General H. H. Arnold, who had been interested in the subject, called for reports on how experiments were progressing in this country and in England. Much research had been carried on in the United States, but no designs had gone beyond experimental stages. The British, however, had built and flown in Gloucester, England, in 1941, a small, experimental plane propelled by an engine designed by Group Captain Whittle, a brilliant aeronautical scientist who had been working on the idea for years. After a visit by General Arnold to England and conferences with the British, it was decided to go ahead on Whittle's designs and build the unit for a military airplane to be produced here in the United States.

In late summer of 1941, several meetings were held in the offices of Maj. Gen. Oliver P. Echols, now Assistant Chief of Air Staff, Materiel, Maintenance and Distribution, in Washington. In order to expedite development, General Electric Company was chosen to build the unit because of the knowledge its engineers had gained in development and construction of the turbo-supercharger for the

Army. The completed jet propulsion motor was to resemble very closely a turbo-supercharger, and GE was picked arbitrarily because the utmost secrecy of the project would allow no announcements and solicitation of bids done in less hushed instances. Bell Aircraft, experienced in building fighter planes, was given the job of constructing the aircraft.

Brig. Gen. B. W. Chidlaw, now chief of the Materiel Division, was appointed liaison officer on the project, coordinating activities at Bell and GE with the British and Washington. Under Brig. Gen. Frank O. Carroll, chief of the engineering division of the Materiel Command, Col. Don J. Keirn was named engine project officer, to proceed immediately to England and obtain one of Whittle's engines, and Col. Ralph P. Swofford, Jr., was designated airplane project officer. Work for these men was to be hectic and nerve-wracking for the next year. In addition to the strain of the intense secrecy of their work, the new designs and methods involved in the project called for much travelling, many long conferences and numerous decisions. They even prepared a press release and hid it deep in the files so they could be ready, in case of any leak, to allay and direct speculation and publicity.

Keirn returned to this country with a Whittle model on October 1, 1941, just a year to the day before the completed plane was to make its first official flight. In April, 1942, General Electric, which had modified some features and redesigned others of the Whittle motor, made the first test run on the jet propulsion unit.

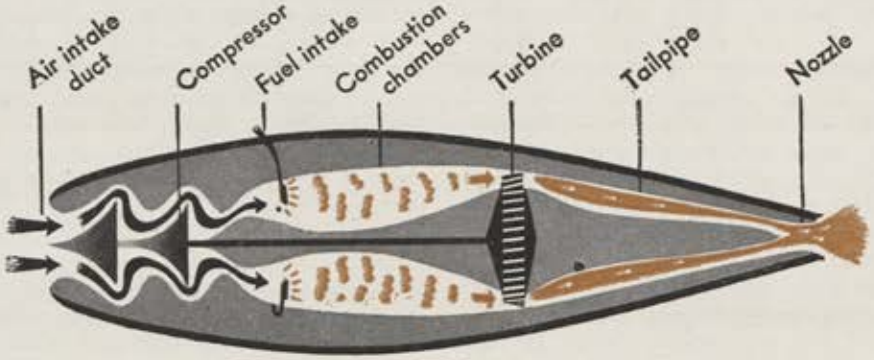
Then in September, 1942, at a remote station built specially for tests on the new plane, which the British call "the Squirt," preparations were made to fly the world's first jet propelled *military airplane*. Ground tests were run and on September 29, with an observer in a special open cockpit in front of the pilot, taxiing tests were conducted. Later, the plane made a stalled take-off to a height of one foot, then another to two feet. It is interesting that these were made with the right engine only since some trouble had developed with the left and it was shut down rather than delay the tests.

On October 1, Robert M. Stanley, chief test pilot for Bell, flew the plane to 25 feet, came down and took off again to a height of 100 feet. This flight pleased Stanley and the Army observers. The following day, two more flights were made, one to 6,000 feet and the other to 10,000 feet. They knew then that they had a military airplane suitable for the purposes for which it was built. On the same day Col. Lawrence Craigie, then chief of the Aircraft Project Section, now a brigadier general, took the plane up, getting the honor of being the first Army officer to fly it, and breaking the hearts of General Chidlaw and Colonels Keirn and Swofford. These three had planned to draw straws to be the first to handle the plane, but when the day came Keirn and Swofford were in England for duties relating to the jet propulsion project, and General Chidlaw was at his desk in Washington, feeling shackled.

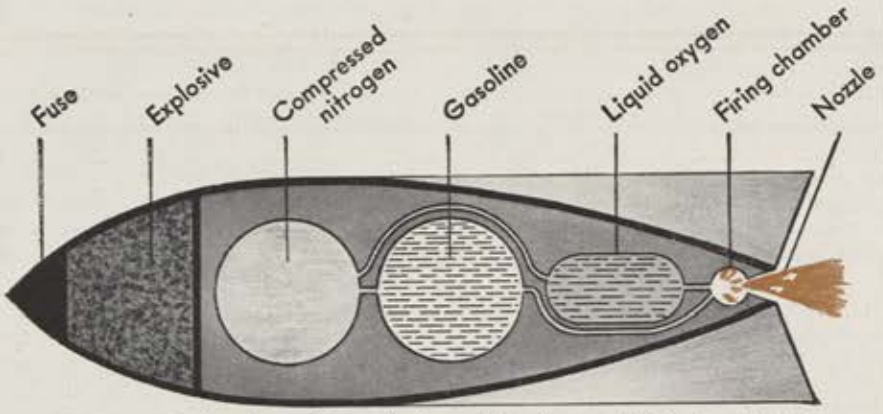
Tests were continued at the lonely station and some of the usual bugs had to be exterminated. The plane had so little vibration that a vibrator was placed in the instrument panel so the pilots could be sure the instruments were not stuck and were working properly. When the plane was taken on the field, it was covered with canvas and a flat, four-bladed mock propeller, cut out of plywood, was stuck on the nose, where dangling at a cockeyed angle and sticking out from under the canvas, it would give any pilot accidentally flying over the area the idea he was looking at a normal airplane. Now and then when the plane was in flight, a thin trail of smoke would follow from the jets and men in control towers at other fields would report they had seen a plane on fire. This slight smoke, when seen along the plane's trail, somewhat resembled typical exhausts of Diesel engines, and a few land-bound observers had the AAF developing a Diesel engine for fighter planes.

Eventually, of course, General Chidlaw and Colonels Keirn and Swofford got to fly their airplane. Officers at the dreary station had some fun staging a ceremony each time a new man flew the jet propelled plane. They would remove the "old-fashioned" propeller from the initi-

THERMAL-JET AND ROCKET SYSTEMS OF JET PROPULSION



THERMAL JET: This formalized conception by a staff artist of a jet propulsion motor is not intended to illustrate mechanical workings or portray any specific engine design. In the thermal-jet system, oxygen is obtained from air which enters intake ducts and is sent by compressors into combustion chambers. Fuel is added to the compressed air and ignited. The resulting gases flow through a turbine, which drives the compressors, and from there to a tailpipe where they are nozzled down, attaining great speed and forming the propulsive jet.



ROCKET: Both the thermal jet and the rocket systems get their thrust from a rearward jet which forces the mechanism forward. The rocket contains all the elements needed for combustion. In the example above, compressed nitrogen provides pressure to force gasoline and liquid oxygen into a firing chamber where they ignite, and the resulting high-pressure, high-temperature gas escapes and sends the rocket forward. Many rockets use a relatively slow burning powder instead of liquid fuels. The powder contains the oxygen necessary for burning.

ate's AAF collar insignia. Maj. Gen. W. E. Kepner, now a fighter command leader in England, also flew the ship.

General Arnold and other officers of the AAF decided upon a jet power plant when present planes gave indications they had about reached the limit of performance obtainable by means of propellers. The limit was imposed by the rapid falling off in the efficiency of the propeller when the effects of compressibility set in at extremely high speeds.

Many persons have probably been puzzled by the fact that it has taken aeronautical engineers all these years to discover that air is compressible. This can be explained by the fact that when dealing with low air speeds air can be considered as being incompressible (like water) and air is treated as such theoretically with negligible error. At speeds of about 200 mph compressibility effects can still be ignored. Above 300 mph you have to watch your step. Above 400 mph the incompressible aerodynamic theory for flow around wings, fuselages and windshields, shows serious signs of error, and a more cumbersome mathematical theory has to be evolved to explain what is happening. Theory or no theory, a certain new phenomenon is encountered under high speed airflow, a condition manifesting itself in an enormous, rapid increase in drag — which is strictly not good.

THE phenomenon is called a compressibility shock wave since it manifests itself by a sudden decrease in the airflow speed and a sudden rise in pressure and temperature. It's sometimes referred to as a compressibility "burble" since the streamline flow pattern breaks down. Compressibility shock waves (or "compressibility" as it refers to its drag increasing effects) are always linked with the velocity of sound because when the local airflow at any point along a body reaches the velocity of sound, you will get compressibility. That does *not* mean that the airplane or body has to be moving with the speed of sound, because there is always a local increase of air speed over the object in motion. That is why compressibility headaches occur at subsonic speeds. At supersonic speeds, such as in the case of projectiles, the shock wave is just in front of the body and can be compared to the bow wave in front of a ship travelling through the water.

It is obvious that in order to delay the development of a shock wave, the thing to do is to minimize the local increment of velocity over an object. This is done by keeping thickness ratios down. Because of its rotation, the propeller is affected by compressibility long before the wings of a plane are affected, first at the rather thick shanks and then at the very thin tips where the rotational speed is greatest. That is why cuffs are placed on propeller blade shanks.

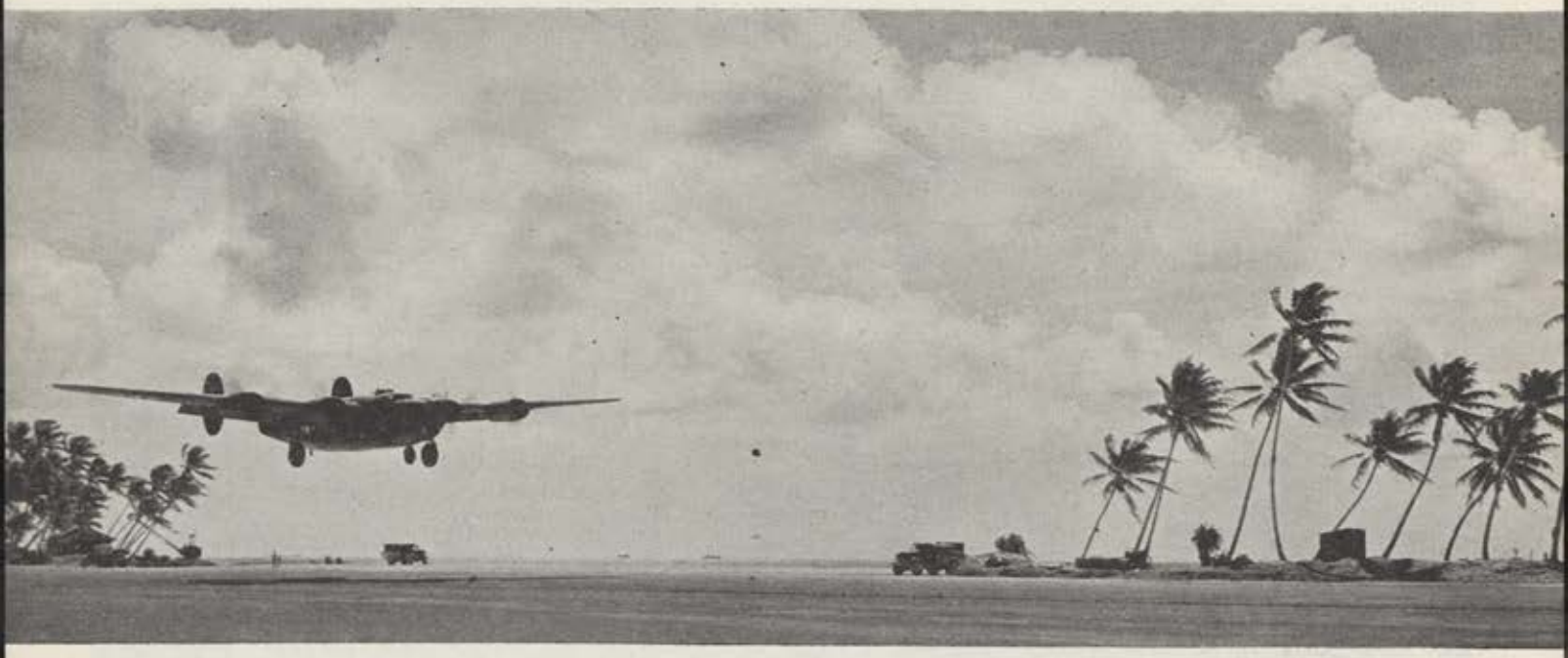
The jet engine eliminates propellers. It will not eliminate the inevitable effect of compressibility on wings, but since the breakdown of flows occurs on a propeller long before it does on wings, it enables the plane designer to realize the difference in speeds between the points where the propeller is affected and where the wing is affected. This difference may be about a hundred miles an hour for the immediate future.

Broadly speaking, the principle of the propeller and that of the jet engine are the same. Each gains its thrust by changing the momentum—which is the product of the mass of air handled multiplied by the change of velocity it experiences. The normal reciprocating motor develops its thrust through the means of a propeller creating a slip stream aft, while the jet propulsion motor develops its thrust through the medium of a nozzle which creates a slip stream, but one of much higher speed relative to the airplane than that made by the propeller. Actually, the jet propulsion motor developed by AAF and GE engineers on the Whittle design is quite a simple machine, being a gas turbine much like the turbo-supercharger. The difference is that while the turbo-supercharger uses waste exhaust gases from an internal combustion reciprocating engine to drive the turbine which drives the supercharger impeller, in the turbo-jet propulsion unit gases are not waste products but are deliberately created for the purpose of driving the turbo-compressor and then to be discharged through a tailpipe nozzle, giving the engine its thrust.

This is how it works: The unit is started by means of an external source of power which turns a turbo-compressor a few seconds. The compressor discharges air from its diffuser section into the combustion chambers. Fuel is injected into the chambers and ignited. The heated gases in the chambers, which are disposed circumferentially between the compressor and the turbine, expand and flow through the turbine to develop power to drive the compressor. The gases, still above atmospheric pressure, and hot, flow from the turbine into a tailpipe; then a final pressure drop takes place through a restriction—or nozzle—which greatly increases the velocity of the gases and thereby creates the momentum increase to develop the engine's propulsive thrust. Actually, then, it is the astonishingly simple restriction of the tail pipe to form the nozzle that represents the propulsive device that replaces the conventional propeller. It is an astounding fact that the simple process of squeezing down a piece of tailpipe which is called a nozzle represents the substitution of the normal propeller for creating thrust. The jet is smooth and continuous, and the motor is remarkably free from vibration inasmuch as there are only rotating parts.

The principles of the jet propulsion motor have been known for a long time, and there are hundreds of patents on various phases of the principles. It reached the point that you couldn't throw a whiskey bottle out of a hotel window at a meeting of aeronautical engineers without hitting some fellow who had ideas on jet propulsion. For years there have been discussions of the subject in scientific journals of all languages. For example a Frenchman, Rene Lorin, in 1913 proposed a jet propulsion motor, consisting simply of a duct and developing thrust from the cooling air by the so-called Meredith Effect as is done in liquid-cooled engine radiator installations on airplanes, which might have worked at near-sonic speeds but at anything below would have required fantastically high fuel consumption. In 1941 the Italians, who have had many "firsts" in aviation and science, but who never seem to follow through, flew a jet propelled plane dsigned by Secundo Campini from Rome to Milan at an average speed of 130 mph. The Campini unit had a reciprocating engine driving a compressor and thus lost the advantages of lightness and smoothness of operation which are features of the Whittle design. The principles of jet propulsion were known throughout the world and work in many countries was going on before war started. It is known that the Germans have done extensive work on the project.

A word about the thermodynamic efficiencies of jet propulsion motors may be in order. If it were not for the breakdown in propeller efficiency, it would be difficult to abandon the high thermodynamically efficient reciprocating engine as it shows up eventually in fuel consumption. The high thermodynamic efficiencies in the reciprocating engine are obtained by high compression (high temperature); firing is followed by the cooling effects of expansion in the chamber and then by the cooling intake charge, which with external cylinder cooling, make possible the use of high temperatures. In the 1920's, ancient times in terms of aeronautics, engineers thought that the gas turbine would not compete with the reciprocating engine because, being a continuous flow machine, the metals would limit the temperatures to relative low values and the thermodynamic efficiency also would be low. However, when we bring in the breakdown of the efficiency of propellers at high speed in combination with the efficient reciprocating engine, the jet propulsion engine, which improves in efficiency with increased forward speed, turns out to be the best over-all propulsive scheme for high speed as well as high altitude performance. *(Continued on Page 64)*



COMBINED OPERATIONS

By Lieut. L. P. Bachmann
AIR FORCE STAFF CORRESPONDENT

EACH theatre of operations has its own peculiar problems. The great ones of the Central Pacific are tremendous distances and scarcity of bases. This is predominantly a Navy theatre. Here the AAF is the strategic air arm of the operations. Here the Navy's carrier-based planes are the tactical air arm, offering direct support to invading troops.

In the Central Pacific the broad plans of the Joint Chiefs of Staff are carried out by Admiral Nimitz who is the theatre commander. An example of operations in this theatre was the occupation of the Gilbert Islands. In this action as in subsequent engagements, all combat personnel and the operation of such personnel are under the command of Vice Admiral Spruance who is directly under Admiral Nimitz. Under Admiral Spruance are a number of task forces and their respective commanders.

One of Admiral Spruance's task force commanders is Rear Admiral Hoover, who, in addition, is COMAIRCENPAC —Commander of Air in the Central Pacific. Generally, task forces are fluid. They are organized for specific missions as the situation warrants. When a job is done the task force is dissolved with the separate elements returning to their original organization to prepare for the next engagement. Thus there is complete flexibility of power at all times and for any manner of mission.

Admiral Hoover's task force is unique in that it is permanent. It is augmented when large objectives are to be taken and diminished when such missions are accomplished. But the permanent task force's identity and operation continue.

One of the largest fixtures in Admiral Hoover's task force is the 7th Air Force. As COMAIRCENPAC, Admiral Hoover is in charge of all land-based aircraft in the Central Pacific theatre—Marine, Navy and AAF.

General Hale, commanding general of the 7th Air Force, is second in command to Admiral Hoover. They have headquarters together at an advance Pacific base where both men confer daily on plans and operations. They are joined in these conferences by General Merritt, the Marine commander.

From Hawaii, scene of the Jap air attack that plunged us into war, our 7th Air Force has moved forward to advance operating bases as the strategic air arm of a Central Pacific offensive which has as its ultimate goal the reconquering of the Philippines and the conquest of the heart of the Japanese empire.

The report on current operations of the 7th Air Force, which appears on these pages, was written or compiled by Lieut. Lawrence P. Bachmann, AIR FORCE staff correspondent in the Pacific.

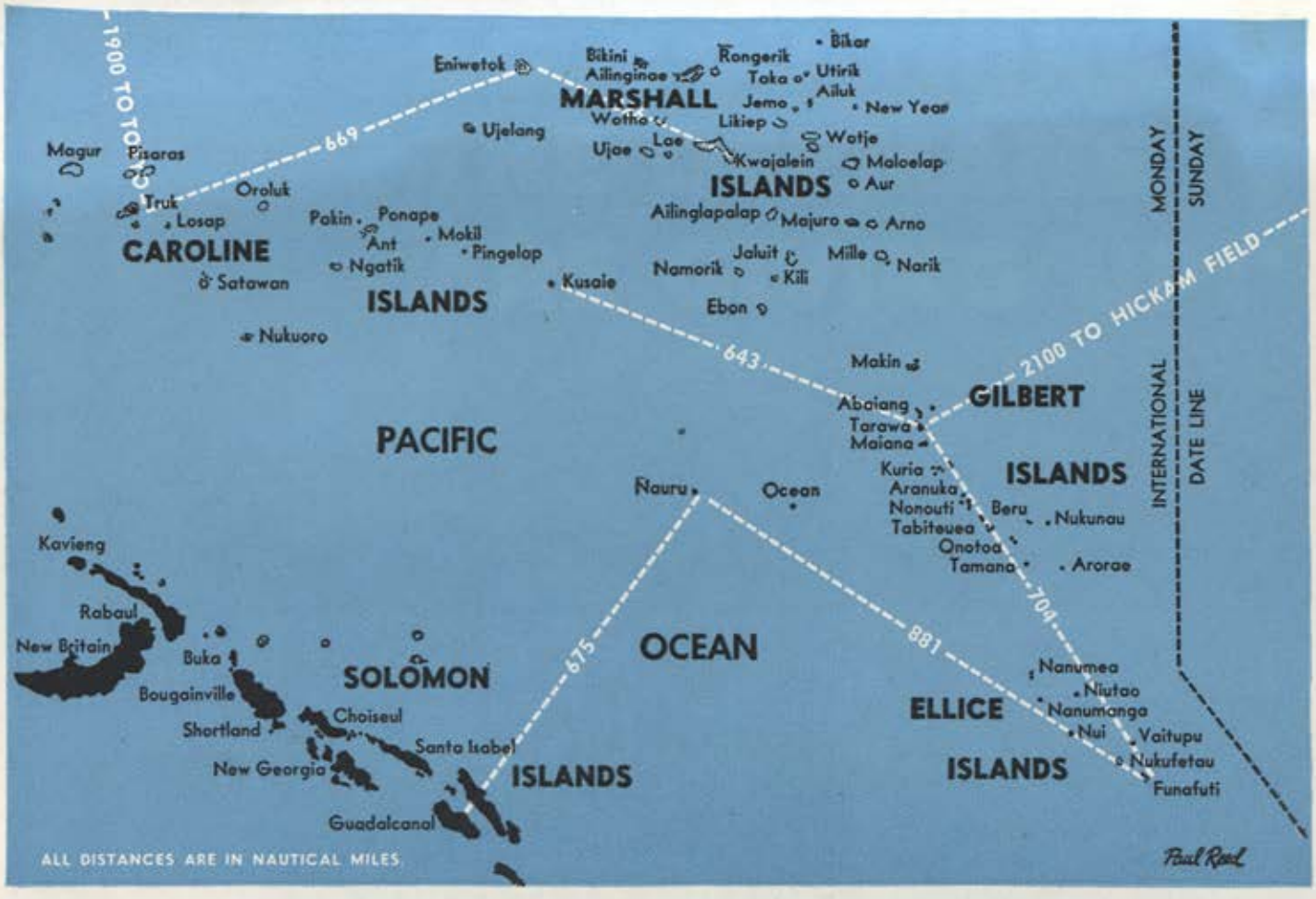
It is the function of the land-based planes—and because of the great distance involved at this time, that means the heavy bombers—to hammer the enemy's bases without let-up. In present operations a carrier force might be able to deliver heavier blows, but a carrier force could not stay and keep slugging. On the other hand land-based planes can, even though they are forced to fly great distances over water to do it.

The work of the 7th Air Force steps up when we move to take one or a group of islands. More and more missions are flown and heavier bomb loads are carried as they soften up the objective. It is obvious that enemy bases other than the planned invasion points cannot be neglected in the bombing attacks, since the enemy otherwise would know where the blow was coming. As D-day draws nearer, greater bombing power is turned on the objective. Heavy installations are pinpointed and knocked out. Photographs are continually taken for the task force commander and his staff to study in order to complete last-minute plans.

Bomber crews on these missions can see the task force assembling and gradually moving toward the objective. On the last few days before the assault, all available land-based bombers are thrown directly against the island. At that point it is too late for the enemy to get reinforcements or to repair damaged installations.

On D-day heavy bombers also fly diversionary missions against nearby enemy islands and nullify any aid which might otherwise be sent to the principal objective. Meanwhile, in the main action the

CENTRAL PACIFIC OFFENSIVE



ships' guns lay down intense barrages and carrier-based dive bombers strafe and bomb installations which have not previously been knocked out. As landing boats start for shore, fighter planes give direct air support to the landing troops.

The action is swift and decisive because of the limited space on these coral atolls or volcanic rocks. We must either smother the enemy immediately or else we will be forced to withdraw and return some other time. There is neither the space nor the cover for establishing a beachhead and then digging in. For that reason the combined operation acts with the utmost dispatch in all branches of the service. As soon as the objective is taken, service personnel—they may be Marine, Army or Navy begin putting in our installations, enlarging the airfield, and evacuating the wounded.

The task force withdraws after leaving behind more than enough equipment and personnel to hold the base. The heavy bombers continue to fly striking missions to protect and cover the newly won base and to prepare for the next combined operation. As soon as a newly won airfield is in commission our bombers move in without a pause in their operations. ☆

THE 7th AIR FORCE

By Maj. Gen. Willis H. Hale

COMMANDING GENERAL, 7TH AIR FORCE

THE object of operations in this theatre is to clean an avenue across the Pacific so that a campaign can be carried right into Japan. In order to do this we must take certain strategically placed islands from which we can operate.

Due to the very nature of this theatre with its vast water distances, operations are predominantly naval, supported and augmented by land-based aviation. The Navy must land the assault and occupation forces of the Army and Marines. It must remain in protection of the newly occupied bases until runways and shore installations can be prepared for land-based aircraft. Yet there is a very definite need and function for land-based planes since they have a greater range and can pack a heavy load. And as we move across the Pacific, consolidating our gains, turning the newly won islands to our use, there will be greater air force activity. But this will remain a Navy theatre at least until we begin land operations against the Philippines and Japan itself. The day is not too far off. Meanwhile, we aid the Navy in its extensive activities and gradually step up our own efforts.

After the first shock of the Jap attack two years ago, the immediate reaction was to throw everything into the defense of Hawaii. All the resources of the mainland were rushed to us and we braced for the assault. Ground defenses dug in. Our fighters and bombers were marshaled for air defense.

The islands being situated as they are, the pattern of defense as far as aircraft were concerned consisted principally of search missions with our alert forces al-

ways prepared to strike. These search missions marked the beginning of the 7th Air Force. Daily missions were flown covering the area around the islands for a radius of over 800 miles. This meant flights of more than 1800 miles, because a plane does not fly straight out and straight back; it flies a zigzag pattern in its search sector.

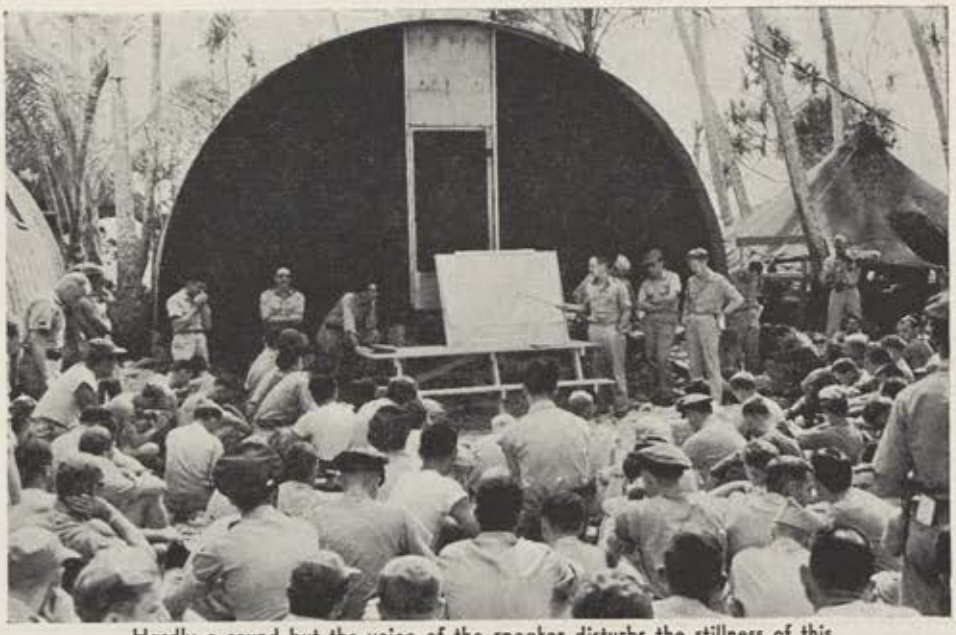
Our search missions stressed the obvious value of training men in over-water flights, with the direct result that the navigator became the key man of a bomber crew. The navigator's training as well as the pilot's was stepped up. We realized, however, that these search missions did not provide complete training. Although it is difficult to fly over nothing but water for 800 miles and return to base, there is still plenty of margin for error on the part of the navigator and pilot in this area. Once the plane hits any one of the numerous islands of the Hawaiian group, it is a simple matter to figure out where the plane is and to head for the home field. But we knew that the type of flying our men would be called upon to do would not permit such leeway. For that reason we started making round-trip flights to Johnston Island.

General Hale, author of the accompanying article, speaks as a bomber pilot as well as a commanding general. He has participated in a number of important missions, usually first ones against new objectives. He was at the controls of one of the bombers dispatched to Midway for the all-important defensive battle against the Jap battle fleet. On the first raid over Tarawa, General Hale flew the lead plane, and his was the first land-based bomber to show the Japs the shape of things to come in the Gilbert Islands.

Johnston Island is a typical small coral atoll some 714 nautical miles from Oahu. There are no other landmarks around Johnston. You either hit it or you don't, and the results are very tangible. In order that the men would get complete training we sent them down in the daytime and had them fly their return at night. Thus we trained our over-water flyers the practical way.

The thrust into the Solomon Islands directly diminished the threat to Hawaii. We were loaded with personnel who had been in extensive final phase training of the defensive type. Men and equipment were needed down below so we immediately sent combat units and individuals to the South Pacific. We also set up modification centers to improve the aircraft for the special type of missions they had to fly. This job was handled by the Hawaiian Air Depot.

We were able at this point to swing from defense to offense. We augmented the search missions with raids. To strike at the Jap we flew incredible distances over water.



Hardly a sound but the voice of the speaker disturbs the stillness of this advance post as the briefing officer outlines the next job to be done.

Our squadrons bombed Wake and returned to base. We flew bombers to southern bases and from there struck for the first time at Tarawa. In addition to damage inflicted on the enemy, these raids set records in distances for missions over water and—more important—they gave us experience.

July, 1943, marked the end of the defensive phase of our operations. Plans for the Central Pacific offensive were revealed to us. No longer would we fly from static defense positions in Hawaii, with occasional raids from our scattered bases. We prepared to take our bombers to bases hundreds and even thousands of miles away where we could close with the enemy and drive him back.

Admiral Nimitz gathered together one of the greatest task forces the world has ever seen and we were the land-based aviation arm. We were ready to move with the force. However, even though we were now changed to a striking force, Hawaii still had to be protected from the air. This protection remains one of the functions of the 7th Air Force.

At the outset, some thought was given to divorcing its units moving to remote bases and leaving the 7th as a purely de-

Palm fronds, nature's plentiful camouflage, are brushed aside while bombs are loaded onto the carrier which will take them to the waiting planes.

CENTRAL PACIFIC OFFENSIVE

Mille Atoll, closed to the outside world by Japs in 1935, is a typical target of the 7th Air Force. It has been bombed repeatedly since we began our raids on the Marshalls. Mille is triangular, about two miles from

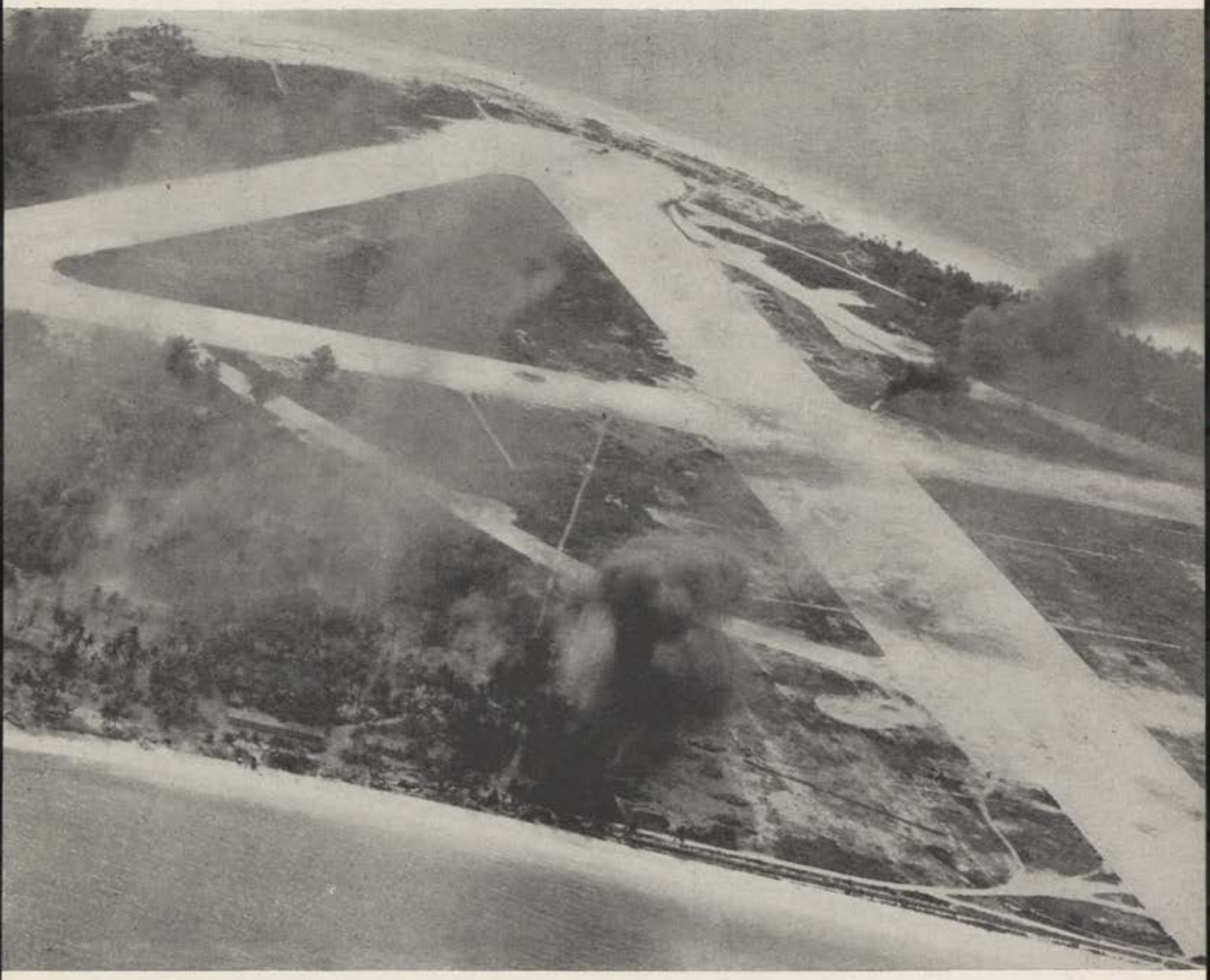
fensive arm while we formulated a new air force as the striking arm of land-based planes in the task force. But recent action has shown the advisability of retaining the 7th as a unified organization. Requirements in the field are too numerous and too great. We need home bases to fall back on both for supplies and to fill increasing demands for new personnel highly trained in our peculiar type of operations. Another advantage in maintaining the unit is that any possibility of friction or delay is eliminated. As it stands, the organization is under a single command. If anything is needed, I have only to consult my staff and arrive at a decision.

The results of our first joint major operation are known. The Gilbert Islands are in Allied control. We have moved up to operate from Gilbert's bases. The operation marked the first step in a very long campaign.

In this area the bases, whether ours or the Jap's, are either coral atolls or volcanic islands. In either case there is very little space to construct long runways and large installations.

In our long range operations it is obvious that we can not have fighter cover. On the other hand, by flying over these vast expanses of ocean we do not meet a great deal of enemy interception or anti-aircraft fire until we are over the target. To make up for the lack of fighter cover we have concentrated on gunnery skill. All of our crew members have gone through an intensive gunnery course at a school which was set up some time ago.

One of the principal differences in operations here and in any other theatre lies in the fact that we are encountering enemy bases and installations about which nothing is known. Some of these bases have not been seen since 1920 when the Japs acquired them and immediately cleared them of everyone except a few missionaries, and the majority of the bases have not been seen or photographed since



base to apex. This picture was made during an effective raid by heavy bombers and bombs are seen exploding in the camp area. When closed to visitors, Mille had a population of 515 natives and four Japs.

1935 when Japan withdrew from the League of Nations.

Most of these islands have absolutely no economic value to the Japs. They are not like Java, Sumatra and other rich island territories occupied by the enemy. We have to get much closer to Japan before the islands start having economic value. Those we are now moving against are purely military outposts which the enemy has prepared for military purposes.

Our great problem has been to get information—even photographic information—on these islands, and the capture of enemy bases has revealed why our photographs do not show the full enemy strength. The Jap has concealed himself by extremely heavy overhead camouflage. In doing so, however, he has limited his overhead anti-aircraft guns, and this has given our planes a chance to come in lower to knock out the enemy's permanent installations. Moreover, in digging themselves into strong defensive positions, the Japs have pinned themselves down with absolutely no mobility.

Living on any of these islands, whether originally occupied by us or taken from the enemy, is difficult and the conditions differ from those found anywhere else in the world. Often the atolls are so barren that even the natives, who are famed for living on practically nothing, shun them. Our men live on field rations with a minimum amount of drinking water. These bases are highly vulnerable to aerial attack because of the lack of room. There is no place for dispersal. There is just room enough for fox-holes and in some instances the water level is so near the surface they can't be dug too deep. It is a major feat and a tribute to the engineers that they manage to find locations for runways.

There is no such thing as area bombing in this theatre. We must pin-point our targets for the simple reason that the targets are small and (Continued on page 54)

SO YOU THINK THE GERMANS ARE GIVING UP!

By Col. John R. (Killer) Kane

FORMER CO OF A HEAVY BOMBER GROUP IN THE MEDITERRANEAN THEATRE

GERMAN airmen still think they are going to win this war. And we'll do them a big favor if we permit ourselves to get overconfident.

The "easy victory" boys who think the war is all but over never had their formations shot full of holes, their men knocked out of the sky, or their missions ruined by the highly skilled attacks of a cunning and powerful enemy.

I fought the Germans all across Africa, in Sicily, Italy and in the skies over occupied Europe, and I warn you that we are still a long, long way from victory. We will beat the Germans—there is no doubt of that—but the bitterest and bloodiest air battles of this war are still to be fought—battles that will make Schweinfurt and Regensburg and Ploesti look like peace-time picnics.

The Jerries today are flying better airplanes than ever before—planes with more powerful armament, improved ammunition and more efficient engines which can deliver more speed and can climb to higher altitudes. They are concentrating most of their production on fighter aircraft and the machines they are now turning out are more than just formidable foes; they are deadly airplanes, and it takes all we've got to knock them down.

We're beating the Nazis but their airmen still think they are going to win. Overconfidence on our part can work to their advantage.

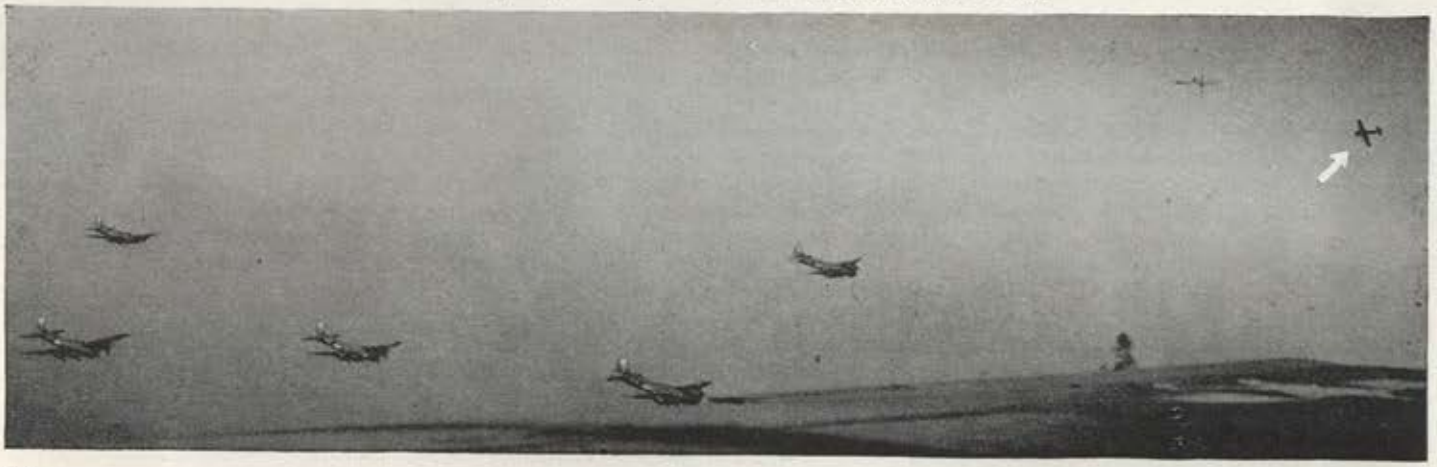
Their pilots, rather than deteriorating, have improved. It is true they have lost most of their old first line flyers and that the pilots who have replaced them are just kids. But these youngsters are products of the Hitler Youth Movement—fanatical Nazis who are completely sold on der Fuehrer and the Fatherland. Take a German kid, warm him over with goose-stepping and heel-clicking, add Prussian discipline, feed him for six years with "master race" propaganda, and you have a fighting man who is not afraid to die. The new Nazi pilots are as aggressive and dangerous as the veterans of a year ago.

The German airmen are now defending their own homeland—and that has brought even more fanaticism to their fighting. Previously, they seemed eager to enjoy the role of conqueror against defenseless countries; now they see their own cities blasted by the Allies' bombers, and they are striking back with a sense of revenge which borders on savagery.

Our own men are doing a great job, but it stands to reason that we would be fighting a more desperate battle if Washington and Chicago and Dallas were being leveled by German bombers. A people defending their own homeland have a distinct morale advantage over the attackers. The Jerries are fighting harder now than they ever did before.

German soldiers from the top ranking officers down are military robots. They believe what the high command and the propaganda boys want them to believe. And virtually every one of them is still sold on Nazism and the fact that Germany eventually will be victorious. They have

An FW-190 (arrow) moves in on a bomber formation from 10 o'clock.

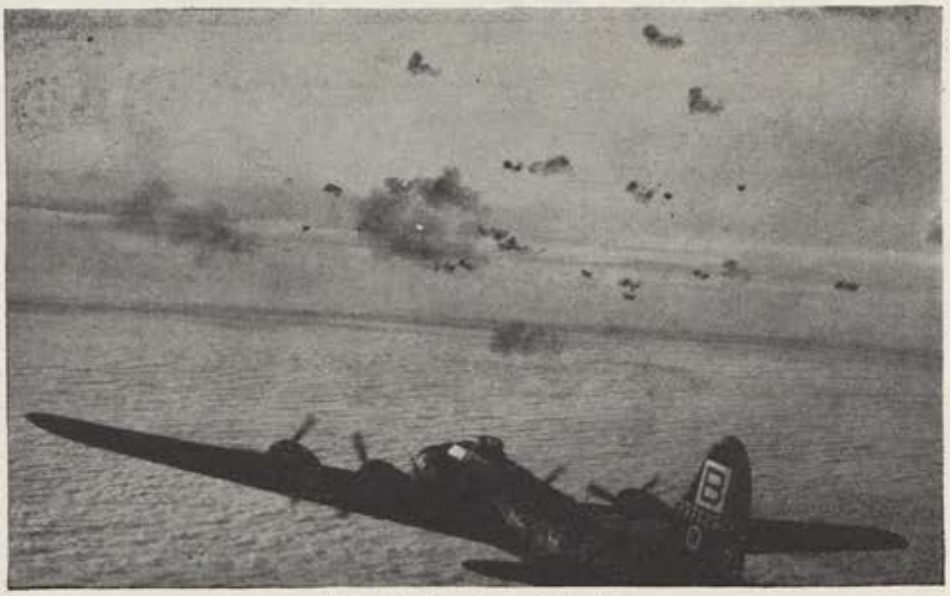


had drummed into them the belief that one day soon the Germans will start a big offensive which will defeat all their enemies at once. You can laugh at that if you like, but the Germans believe it and it makes them fight harder because they still feel they are on the winning side. German soldiers believe our east coast has been destroyed by Nazi bombers. Upon seeing New York, Nazi prisoners remark that we have done a good job of rebuilding it after the bombing raids.

THE Jerries are going to get tougher. As they are pushed back closer and closer to Germany itself, our battle will become more difficult. Their lines of communication will be shorter, and that advantage cannot be overestimated. One of the reasons of the failure of the Luftwaffe in Africa—and also for the defeat of the German ground forces—was their inability to get sufficient supplies to keep their planes in the air. This will not be the case when they are working out of Germany itself. Then the difficulties of supply will be ours.

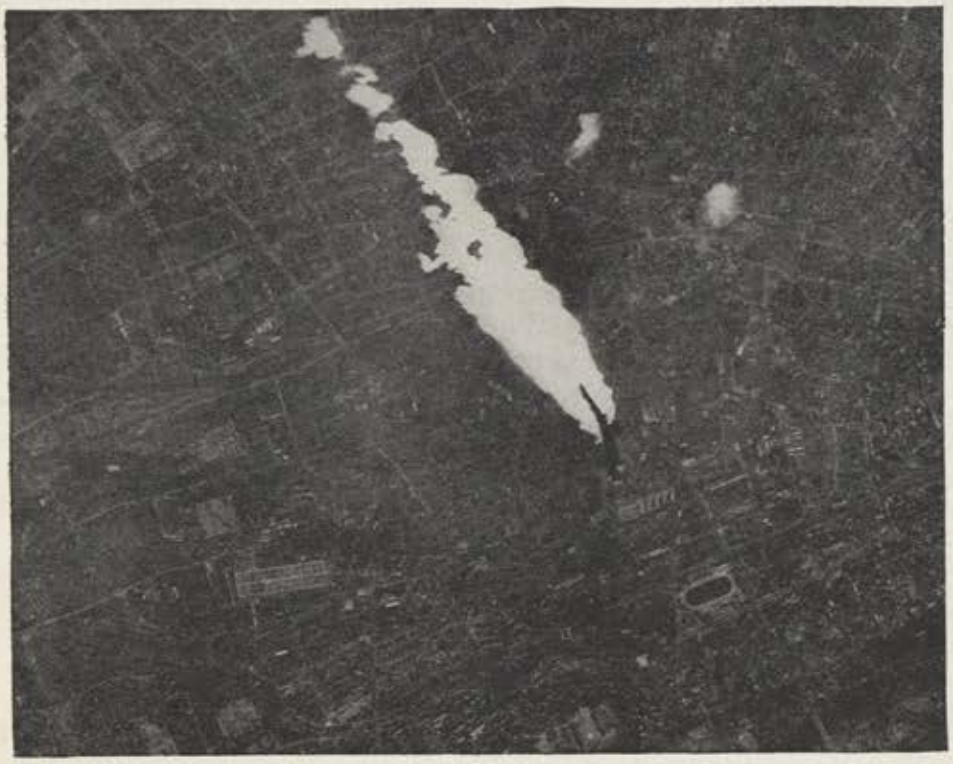
It is undeniably true that the Allied air forces have wrought incredible damage on Germany. But the Nazis have demonstrated their ability to put their cities back in working order. Many of the manufacturing centers which have been bombed out are once again in production—perhaps not at full strength but turning out enough material to cause us plenty of trouble. German engineering ability has never been doubted.

Remember that you are fighting an enemy who not only doesn't believe he is licked, but actually feels he is going to win the war. Indications of that belief are obvious to everyone who has ever fought the Germans. You have probably heard stories about a lack of enthusiasm on the part of Nazi pilots—of unwillingness to fight, particularly when outnumbered. Don't believe a word of it. I know of many cases where formations of thirty to forty B-24s have been attacked by only five or six enemy fighters—and I mean attacked. Those Jerries just didn't play around outside the formation. Probably they knew they were going to get shot down, but they came in, raked our planes, dove away and came up again for more.



Flak gets heavier and heavier.

A B-17 goes down in flames over Paris, hit by flak.



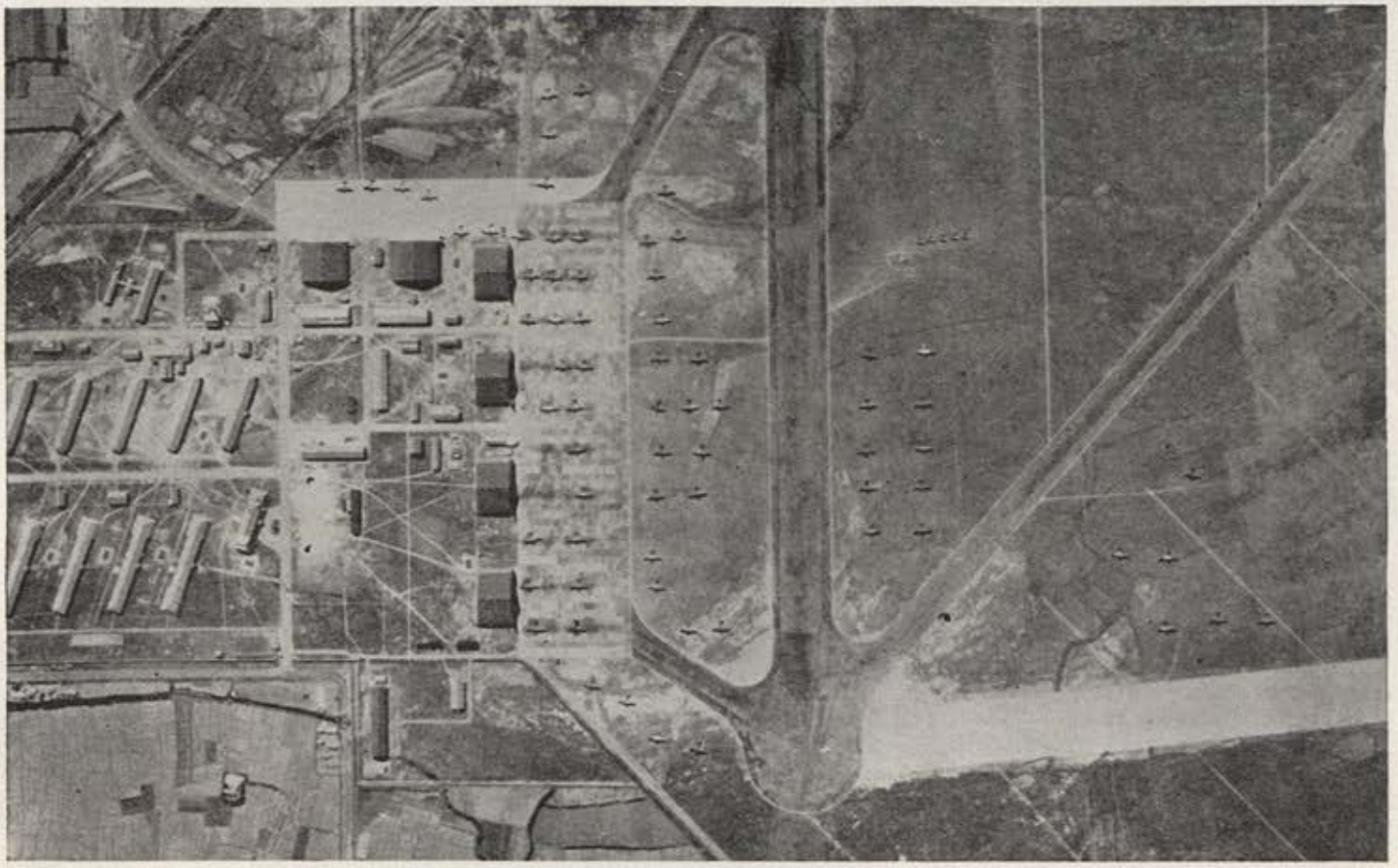
Even when a single German ship finds a strong Allied formation, he will rarely run away. He'll hang around making passes, trying to knock one of our ships out of the formation so he can jump on him. Then he'll start to work on a second plane. I found that to be true from El Alamein to Italy. And it will get worse.

When the Germans send a formation of bombers over London at night, they know full well that those planes will run into probably the strongest defensive setup in the world—intense flak and plenty of heavily armed fighters. Yet their bombers continue to come over just to see what's going on, to try to break up any preparations and, generally, to create as much damage as they can. The few bombers Germany has are highly important to her. They realize there is little chance of the entire formation getting back against the British defenses—yet they still send them over. Does that sound like an enemy who is unwilling to fight?

The Jerries guess wrong sometimes but you can usually count on a strong fighter force waiting to meet you. On most of our operations we found fighter opposition before we got to the target, while we were over the target, and long after we left the target. We can rely on the fact that the Jerries will chase us until they are out of ammunition and gas, then refuel and rearm, and come after us again.

The Germans will fight in the air until they are down to their last bullet and last gallon of gasoline. And they will be licked only by the sheer weight of our aircraft knocking them out of the air and destroying them on the ground—and not by our *wishing* they will fall. We're going to beat them, and beat them badly, but it is going to take a lot of high-powered fighting and close coordination to do it. Remember, the Jerries are not afraid of us. ☆

A VISIT TO FORMOSA . . .



A reconnaissance pilot brought back the above photo—81 Jap planes just asking for it. A portion of what they got is shown below.

On Thanksgiving eve a reconnaissance pilot in China brought back information that 81 Jap planes were parked on Shinchiku airdrome, Formosa. The following morning eight P-38s, seven P-51s and fourteen B-25s, six of the latter flown by members of the Chinese-American Composite Wing, took off to pay Shinchiku a surprise visit. Flying tight formation as they crossed the Formosa Strait, the planes skimmed along barely twenty feet above the water to avoid detection by Jap locators, but on reaching the Formosa coast they climbed to 1,000 with the Lightnings on the lookout. Near the target the Allied visitors found fifteen to twenty enemy planes carrying out routine flights at various altitudes, obviously unwarned. The P-38s knocked down six bombers, seven fighters, one Stuka and one transport, then poured 400 rounds of 20 mm and 4,000 rounds of .50 caliber ammunition into the parked Jap aircraft. The B-25s dropped fragmentation clusters from 1,000 feet, then strafed with 1,000 rounds. Meanwhile, the P-51s took care of other parts of the airdrome with 3,000 rounds. Twenty-five bombers, one fighter and a transport were blasted on the ground. We suffered no losses of personnel or equipment. Three B-25s were slightly damaged by small arms fire. ☆

At noon, we attempted a landing in the face of strong dive-bombing attacks.

HELL-BENT FOR WEATHER

By Capt. Howard J. Simpson

UNIT WEATHER OFFICER IN ITALY

SOOZIE came to us at Maison Blanche Airdrome, Algiers, on June 15, 1943. She wasn't much to look at with her low-slung build and liverish complexion, but she has been sturdy, uncomplaining and completely devoted to us. Jeeps look a lot alike, but they all have their own personalities and Soozie certainly has hers.

On the day after her arrival Soozie underwent a strip act. We peeled her down to the bare essentials because this little jeep had to carry us through the invasion of Sicily and later, although we didn't know it at the time, along the battle lines in Italy. Our jeep had to have mobility not only to save our skins in an emergency but to take us around in a hurry so we could maintain the fastest possible weather service for the benefit of our fighting air and ground forces. Like an adagio dancer, Soozie required freedom of movement.

After stripping Soozie down, we had the job of dolling her up again. We installed a Signal Corps radio unit, a small, semi-portable outfit with medium range. We also fixed Soozie up with an aneroid

Mobile Weather Unit No. 7 and a jeep named Soozie moved into the front lines in Sicily and Italy to perform a vital service for Allied air and ground forces.

barometer, hand anemometer, compass, four psychometric tables and thermometers, two portable typewriters, field desk and pyramidal tent for office use. Thus, Soozie became a mechanized weather station—officially, Mobile Unit No. 7.

Soozie and all hands boarded USN Landing Ship Tank (LST) No. 311 at Algiers on June 21. We were at sea with a warm salt breeze blowing in our teeth the next morning. Our objective was to establish a beachhead five miles east of Gela, Sicily, and the weather unit's aim was to set up for business at Ponte Olivo Airdrome. This field was about five miles north northeast of Gela.

JULY 10 was Invasion day. As LST 311 bounced in the sea chop, we hoped the involuntary evasive action would make us a tough target for the shore batteries which had opened up on us. At noon we attempted a landing in the face of strong dive-bombing attacks. We weren't hit, but our two companion ships to port and starboard didn't fare so well.

LST 312 ran aground and became a helpless punching bag for enemy artillery during the rest of the day. LST 313 caught a bomb squarely amidships and beached about 25 yards from us. That bomb exploded on the tank deck and touched off the ammunition. But in a few minutes our skipper had rammed the bow of our ship into the stern of the stricken LST 313 and we were able to evacuate many of the crew. Sergeants Graham and Nuhn helped carry wounded and near-drowned men to safety.

At dawn the next day we were at the landing again, unloading our ship while a dozen JU-88s rained heavy bombs down on us. Two ships were hit. Our outfit made for the beach.

Using our helmets, we dug slit trenches for all we were worth. Mobile Unit No. 7 of the U. S. Army Air Forces Weather Service now held a few square yards of Sicily, a little sandy hollow just a quarter of a mile from the water's edge. We clung to our position while a steady parade of enemy fighters came over and machine-gunned our beach.

July 12 was another rugged day. We huddled in our slit trenches while wave after wave of enemy planes roared overhead, dive-bombing and spraying the beach with machine gun bullets. Enemy artillery opened up and the hits were uncomfortably close. We learned, too, that enemy tanks were not far off and were boring in.

Just about the time we were getting pretty punchy, we saw our own paratroops and airborne infantry flying over. It was a heartening sight. Two enemy planes crashed a short distance down the beach from us and we watched bright orange flames lick them up. And in the meantime our heavier guns and tanks were being unloaded on the beach and our forces hoped to take the airdrome by nightfall.

Ponte Olivo was captured, and Soozie carried us to the field on July 13. We were housed in the same building used as headquarters by the commanding officer of the fighter group to which we were attached. Enemy planes bombed the field that night, mostly anti-personnel bombs of the delayed action type. Luckily, their aim was not too good.

We started operating the station the day after our forces took the airdrome. The boys began making observations. Our power generator unit had been doused in sea water during the beaching and had to be completely overhauled. Still we were able to get going somehow and establish contact with the radio weather net in Africa.

That was important because now we could get some reports on the trend of the weather in other parts of the Mediterranean area. It gave us some basis for forecasting. Within a few days Mobile Unit No. 7 was servicing several fields in the vicinity.

CAPTAIN SIMPSON'S *story is a graphic play-by-play description of the battle role weather men are performing. AAF weather officers and enlisted men are scattered all over the world, wherever American troops are operating and in many bleak lonely outposts where they aren't. Furnishing valuable information to the Ground and Service Forces as well as the Air Forces, weather men have been in the thick of the fight from the war's beginning. Five of the weather personnel in Hawaii, on their way to duty, were killed by a 500-pound bomb when the Japs attacked Pearl Harbor. A weather officer was drowned in the surf when his landing craft capsized off North Africa. Weather installations are located alongside fighter and bomber strips so the weather man gets it in the neck from enemy bombing and strafing just as much as the next fellow. Captain Simpson and Sergeants Nuhn and Graham will be decorated with the Silver Star for bravery, according to the commanding general of the Air Service Command—PRO, AAF Weather Wing, Asheville, N. C.*

Among the units receiving our forecasts and 24-hourly observations by now, (July 22) were: photo reconnaissance squadron and troop carrier command at Ponte Olivo field, a fighter bomb group at Gela East, a fighter bomb group and reconnaissance squadron at Gela West, and advanced headquarters of an air support command and air defense wing at the city of Gela.

Late in July our faithful Soozie got a new load of equipment to carry—pilot balloon apparatus, instrument shelter, anemometer and two radio units, one a wide range receiver and the other a powerful unit for both transmission and reception. The latter, lent to us by the Signal Corps, lacked some parts. Sergeants Bertram and McGee scoured the area and obtained the parts we needed to get it working. Our own weather men, of course, were handling the sending and receiving.

I can't minimize the importance of this wider range because now we could really fill in our synoptic map and find out what was cooking in a weather way for our neighborhood. Not only were we able to furnish forecasts twice daily, but we got together spot forecasts every time a fighter or bombing group prepared for a strike. Incidentally, on their return the pilots reported to us the conditions en route and over the target. Our forecasts panned out pretty well.

In about mid-August, I began to hear plans for the invasion of Italy. When Col. Joseph A. Miller, Jr., regional control officer of the 12th Weather Region, landed at Ponte Olivo in his P-38, we learned that Soozie and her crew weren't going to be left behind in the coming invasion.

While we were waiting, Soozie carted Major Wetterer, Lieutenant Moncada and me around to American, British and Italian airfields and meteorological stations. We obtained valuable climatological data from the headquarters of the Italian Weather Service at Syracuse. This is vital information for planning operations in advance and our forces drew heavily on it.

SOOZIE and her accouterments were turned and polished up before we left for the Milazzo West Airdrome with a fighter group, Major Wetterer and Lieutenant Moncada accompanying us. During the second week of September, while our first assault forces were making steady progress along the toe of Italy proper, we did a lot of loafing and swimming. But we were ready whenever our time came. Our time was the battle of Salerno.

On September 13 a C-47 picked up the complete personnel of our unit, including Soozie, bristling like a Christmas tree with all our instruments. We were off for the Salerno beach-head where the hardest fighting of the campaign was underway.

Our trip was fairly uneventful except that a P-40, escorting us on our port side, was shot down. When we arrived at Paestum field, the scene that met our eyes was one of dust and utter confusion. Three landing accidents had just occurred a few minutes apart and the wrecks were still littering the runways. The moment we got down two fighters taxied into each other like two small fluttering birds blinded by the dust.

Paestum field, outside the ancient town of that name, was located in the southern sector of the Salerno beach-head. To the

north of us, about five or ten miles, were the front lines. Those lines were so fluid and shifting, that Mobile Unit No. 7 had to be in readiness for immediate evacuation. However, we cruised around in Soozie looking for a place to roost. We ran across a brick building about a mile from the field and we decided to commandeer it. We began to move in our equipment.

Meanwhile, some of the allied forward units were being withdrawn from the front. When they began to stream past us, we took off in Soozie, evacuating the personnel and secret material to a point three miles south for the night. Major Wetterer and I returned to the building, determined to destroy the equipment if our position worsened.

At dawn the following day, our personnel came back to the station. It wasn't long before the boys had the radio going and we made contact with the weather net. Our operations were necessarily limited that day because of enemy activity. Shells plumped nearby, and when tanks broke through a valley two miles to the northeast, Soozie had to get us the hell out of there in a hurry. At nightfall the major and I, along with Sergeant Graham, went back to guard our building. By the next day our forces had begun to make local gains so we decided to move everything back in.

We began making forecasts on September 15. Within a few days we were distributing forecasts to a dozen units in the vicinity, including the ground forces of Lieut. Gen. Mark Clark's Fifth Army, air support, fighter and fighter bomber outfits, barrage balloon units and an observation squadron. Telephone communication was established with three local airfields and a "weather only" direct line was run to the fighter group at Paestum Airdrome.

In addition to spot forecasts, we prepared a detailed summary of climatological data for the months of October, November, December, January, February and March. It covered the area west and east of the Appenines. I issued this data to all the units which we were serving.

WITH things quieting down somewhat, several of us toured airfields and picked over the ruins of five Italian weather stations which had been destroyed along with practically everything else by the efficient demolition crews of the retreating German army.

One thing that we were able to salvage for the weather service was a beached motor launch formerly used by the Germans at a seaplane base. With the help of two co-operative Italian mechanics, we managed to make the boat shipshape and float her in the water. We christened our squadron launch Soozie Too.

Soozie Too could take us to islands off the coast where the original Soozie couldn't go.

However, we didn't forget Soozie. She was washed and given a new paint job; a new armature was installed in her generator, and her distributor got a new set of points. A new transmission was installed and Soozie was as sturdy as ever.

We've kept on moving, Mobile Unit No. 7, Soozie by land and Soozie Too by sea, getting out the weather reports needed for the fighting. Fairly soon, we trust, we'll be getting first hand recordings of the temperature in Germany. ☆

PERSONNEL of Mobile Weather Unit No. 7 which participated in the invasion of Sicily and furnished weather service at Paestum Airdrome in the Salerno sector of Italy during the heavy fighting there included:

Capt. Howard J. Simpson, unit weather officer.

Master Sgt. William K. Slate, station chief and forecaster.

Tech. Sgt. Leslie C. Nuhn, forecaster.

Staff Sgt. Albert T. Bertram, radio operator and weather observer.

Staff Sgt. Arthur L. McGee, radio operator and observer.

Staff Sgt. James F. Graham, observer and student forecaster.

Staff Sgt. David W. Fogo, observer.

Sgt. Alfred W. Hunt, observer.

Sgt. Clifford H. Wolf, observer.

Maj. C. S. Wetterer, sub-regional control weather officer, and his assistant, Lieut. V. V. J. Moncada, accompanied the unit on the landing at Paestum Airdrome.

What's Your AIR FORCE I.Q.?

ALTHOUGH you are given only eighteen rounds of ammunition in this month's AIR FORCE Quiz, instead of the usual twenty, chalk up the customary five points for each question answered correctly. On that basis a score of 90 is perfect; 70 to 80, very good; 60 to 70, not too bad; below 50, tsk, tsk. Answers on Page 64.

1. Formosa is located
a. East of Japan
b. Northeast of New Guinea
c. Due West of the Philippines
d. North of the Philippines

2. When personnel of the Troop Carrier Command refer to "DZ" they mean
a. Don't zigzag b. Direct zenith
c. Deployed zeros d. Drob zone

3. Cavitation refers to
a. The vacuum caused by whirling propeller blades
b. The name popularly given to defensive action taken by forces on Cavite
c. The expression used in describing the forward falling motion of bombs
d. An aerial maneuver resulting from hard left rudder

4. The wingspan of the P-47 is
a. 39 feet b. 46 feet
c. 41 feet d. 37 feet

5. Ellington Field is located near
a. Atlanta, Ga.
b. Panama City, Fla.
c. Houston, Texas
d. Shreveport, La.

6. The commanding general of the 15th Air Force is
a. Maj. Gen. James H. Doolittle
b. Maj. Gen. Howard Davidson
c. Maj. Gen. Nathan Twining
d. Lieut. Gen. George C. Kenney

7. H plus 10 refers to
a. Enemy installations located ten miles past your home field
b. Ten minutes after your estimated time of arrival
c. Ten hours required to complete a mission
d. Ten minutes after the hour set for an attack.

8. Most of the noise from the average airplane comes from its engine.
a. True b. False

9. "Flying the hump" usually refers to
a. The North Atlantic crossing
b. Riding a P-38 piggyback
c. An air route between India and China
d. Carrying supplies to Alaska

10. The name popularly given to the C-69 is the
a. Constellation b. Commando
c. Skytrain d. Caravan

11. The dress uniform of a US Navy aviator is
a. blue b. green
c. grey d. khaki

12. Which of the following colors appear on the Good Conduct Ribbon?
a. Yellow b. White
c. Red d. Blue

13. A renversement is
a. An instrument used by a bombardier
b. A maneuver in flight
c. Part of a radio compass
d. Part of the horizontal stabilizer

14. When reporting to a superior, an Officer Candidate named Jones refers to himself as
a. Mister Jones
b. Private Jones
c. Officer Candidate Jones
d. Jones

15. To control bleeding on the scalp above the ear, light pressure is applied
a. Above the ear
b. Below the ear
c. In front of the middle of the ear
d. Behind the ear

16. AP bombs refer to
a. All purpose bombs
b. Anti-personnel bombs
c. Altitude pressurized bombs
d. Attack power bombs

17. Rabaul is located on
a. New Britain b. New Ireland
c. Bougainville d. New Guinea

18. The Capital of India is
a. Calcutta b. Bombay
c. New Delhi d. Karachi

Combat Laboratory

From oxygen masks to bomber formations — nearly everything in the AAF is the business of the Army Air Forces Board.

THE silence is broken only by the grind of the projector. Officers lean forward in their chairs, eagerly watching the airplane formation shown on the screen. Now and then, one scribbles on a note pad: "too much interval on right turn" or "formation too tight" or "left element slow."

It is a serious business. Lives can be saved or spent by the calculations being made in this projection room. The Army Air Forces Board is at work.

The film is a kind of laboratory record of a new bomber formation which has been developed by the board and its staff of experts. A test run has been made over the Gulf of Mexico and the results photographed. With this and other evidence, the board weighs the results.

In theatres of operations everywhere, bombardment commanders have learned that in operations against a cunning and resourceful enemy, formations must be changed frequently. The continued use of standard formations, which the enemy soon comes to know and expect, would result in complete neutralization of our bombing missions.

The AAF Board, operating with the Tactical Center at Orlando, Fla., is the Commanding General's laboratory group for tactical research and experimentation. This matter of new and improved bomber formations is typical of the problems referred to the board by the Commanding General. The way the board proceeds on the quest for new formations tells the story of the operations and functions of the agency. The formation obviously must combine maximum firepower with maneuverability. Using these elements as goals, the board and its staff make analyses of combat reports to determine the most effective formations so far used in the various theatres. Borrowing from this experience and all other available sources of information, the board reduces a plan to writing.

Now comes the test. Missions are flown, with P-47s and P-38s providing fighter "opposition" and simulating as closely as possible the tactics that might be expected from enemy fighters. The attacks and the effectiveness of the various defensive formations are recorded on film by gun cameras. In addition, two photographic planes fly close to the formation to shoot stills and motion pictures.

At the conclusion of the mission, the photographs are developed while the board interrogates bomber and fighter personnel. Thus, the board is able not only to perfect the size of a model tactical defensive "box" but also to prescribe the distances between elements and the best methods of changing positions one with another for defensive advantage.

All this data is integrated into tactical doctrine which ultimately is distributed to the training air forces and the combat theatres. The job has been done as effectively as tactical units could do it in actual combat, where a single error in calculations might cause a major disaster.

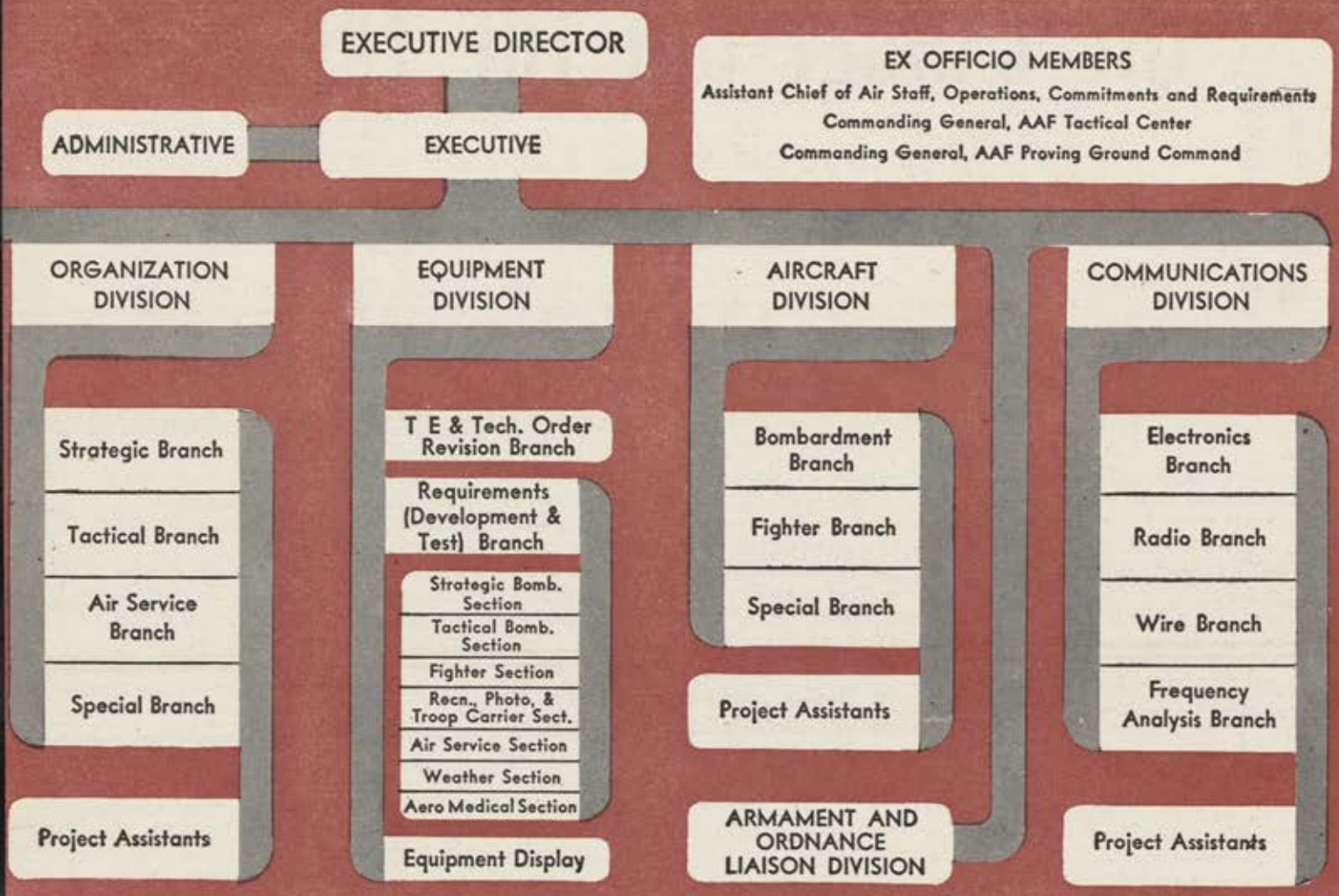
Take another case.

In central Italy a fighter pilot returns from a high altitude operational mission of two hours. The enemy hasn't scratched him, but when he removes his oxygen mask, there is a deep red mark from one cheek to the other and across the bridge of the nose, where the mask has chafed and rubbed the skin. This pilot's mask has been improperly fitted and its rough edges have caused severe irritation. Here is the danger line where a sizable leak may cause death. The mask must fit securely and snugly, and must not cause discomfort even when worn for a long time.

A call for help goes back to the States, and AAF Headquarters issues a test directive to the Air Forces Board. The question is subjected to experimentation. The mask is worn by fighter pilots on flights lacking only enemy bullets to make them real combat missions. On the basis of these tests the board makes recommendations, and the combat pilot gets a safer, more comfortable mask.

The Air Forces Board has operated for several years in various locations. Its organization was overhauled recently to adapt its operation to rapidly changing war conditions.

The executive director, Brig. Gen. Eugene L. Eubank, is the active head of the board, and is appointed by the



Commanding General of the Army Air Forces. Ex-officio members are Brig. Gen. H. A. Craig, Assistant Chief of Air Staff, Operations, Commitments, and Requirements; Brig. Gen. Hume Peabody, commanding general, of the AAF Tactical Center, and Brig. Gen. Grandison Gardiner, commanding general, of the AAF Proving Ground Command, Eglin Field, Fla. The board utilizes the personnel and facilities of the Tactical Center and the Proving Ground Command to conduct tests which precede its decisions and recommendations.

The Tactical Center embodies the School of Applied Tactics, a tactical air force, a strategic air force and other functioning subdivisions. It supplies men and materiel for employment by the board in conducting its projects.

The Proving Ground Command conducts tests, special studies and investigations of aircraft and equipment in accordance with directives of the Board as a basis for determining operational suitability of individual aircraft and items of equipment, developing improved operational technique, and completing engineering and development tests for the Materiel Command and Air Service Command. Most of the activity of the Proving Ground Command is centered at Eglin Field, but the Cold Weather Testing Detachment, permanently based near the Arctic Circle, also is under its jurisdiction. This detachment executes test directives pertaining to low temperature operations.

The office of the executive director of the board, located at Orlando, is the medium through which the board functions. The key assignments—tactics, organization, equipment, aircraft, armament and ordnance, and communications—are held by officers with combat experience, who are experts in their particular fields.

As a matter of operating procedure, all projects requiring action by the board should be addressed initially to the Commanding General, Army Air Forces. The board then operates under the direction of the Assistant Chief of Air Staff, Operations, Commitments and Requirements, who reviews, approves and implements its projects and findings.

In many cases experienced key personnel returning from theatres of operations are assigned briefly to the Tactical Center for duty with the board. This provides a channel for current combat information and tactics.

The findings of the board are reflected in the equipment the AAF soldier uses, the clothing he wears, the food he eats, the kind of war he fights. It is this agency's job to see that, in all these categories and more, he is the world's best air soldier. ☆

Brig. Gen. E. L. Eubank

THE GADGET DID THE TRICK

By Lieut. Col. William R. Stark

Operations Officer, AAF Headquarters, India-Burma Sector

Most pilots are skeptical of new gadgets, particularly those that take the controls out of their hands. Barely three years ago when anyone ventured to suggest that a gadget could handle the controls and fly a better bombing run than the pilot, despite heavy bursts of flak and attacks by enemy fighters, any man with the wings would declare indignantly that no mechanical robot was going to fly his plane when the going got tough. After all, what's a pilot for?

That was the attitude of the men in our group when we arrived in India in the summer of 1942 with automatic gadgets on our B-24s. The devices, new Automatic Flight Control Equipment known as auto-pilots, not only were supposed to fly us to and from the target but on the bombing approach and the actual run over the objective as well. With such heavily defended areas as Rangoon, Bangkok and Mandalay for our targets, we were afraid to entrust the success of our missions to this mechanical robot.

Although we frequently played around with the auto-pilot to see what it could do, we didn't seriously contemplate using it on operational missions. Some of our new pilots had heard about the mechanical brain before they left the States, but none of the flight school instructors had urged the use of it at that time. Although many of our men had flown on the older type AFCE before, others had never been in a plane with it. Besides, our maintenance crews had their hands full keeping our few planes flying their regular missions. None of the ground mechanics had been trained to repair or maintain the auto-pilot because it had been installed after the completion of their technical training courses. And they didn't have the time to teach themselves while we were flying operational missions.

By October, 1942, after flying some special missions, our group was bombing targets in Burma about once a week. These were carried out exclusively by manual control of the plane, and there was no apparent reason for us to change our methods of flying at such a late date.

Then, one day, a civilian in an officer's uniform dropped in at group headquarters with the announced intention of living with us. His name was Ted Frystak and on each shoulder were the words "Tech Representative" instead of official rank insignia. He was a representative of the manufacturer of the auto-pilot and his mission was to assist us by keeping the equipment in A-1 condition—an extremely simple task since we had never used it anyway.

How the heavy bomber boys in India learned to rely on their auto-pilots for precision bombing after many months as non-believers.

We didn't know Ted Frystak then, but before nine months had passed we knew him well. By the spring of 1943 he had enabled us to fly practically all of our missions and about 85 percent of our bombing approaches and target runs on the auto-pilot. Not only did his work enable us to improve bombing accuracy from 25 to 50 percent, but it also possibly saved the lives of some of our crews.

Frystak's first job was to sell pilots and bombardiers on use of this type of AFCE. He started with the primary lesson, explaining the dual function of the auto-pilot. It could fly the plane in any attitude, level, banking, climbing and descending. Through coordination with the bombsight we were using, it could keep the plane on a true bombing run over the target, truer than could be flown manually by a pilot. It was the latter claim that we doubted, due partly to lack of spare parts for perfect maintenance, but we were willing to learn so we reserved our final judgment until later.

Arrangements for Frystak to hold classes with our maintenance men, our bombardiers and our pilots were made by Col. Conrad Necrason, group commanding officer, and the squadron COs. Even Maj. Wesley Werner, one of the best pilots ever to fly heavy bombers in India and the one pilot in a thousand who was able to fly a perfect bombing run ninety percent of the time, recognized the potentialities of the new auto-pilot and encouraged the training of his squadron personnel in the proper use of it. (Shot down over Burma in November, Major Werner had flown more than 500 combat hours when he led his squadron out on what proved to be his last mission. He is officially listed as "missing in action."—Ed.) All of us believed we should know what the equipment was and how it

THE auto-pilot is an electro-mechanical robot which automatically flies the airplane in straight-and-level flight or maneuvers it in response to fingertip controls operated by the pilot or bombardier. It consists of various separate units electrically interconnected to operate as a system.

If an airplane, flying straight and level with the auto-pilot in operation, is suddenly turned by a crosswind, the gyro-operated directional stabilizer detects the deviation and moves a directional panel to get the plane back on course. Similarly, automatic corrections are made if the nose of the airplane drops or if one wing drops.

With this equipment, the bombardier actually operates the plane on a bombing run. The result has been to reduce the vulnerability of our aircraft, because the effectiveness of enemy anti-aircraft fire is directly related to the time consumed in the bombing run. Single aircraft have made approaches with runs of only eight seconds.

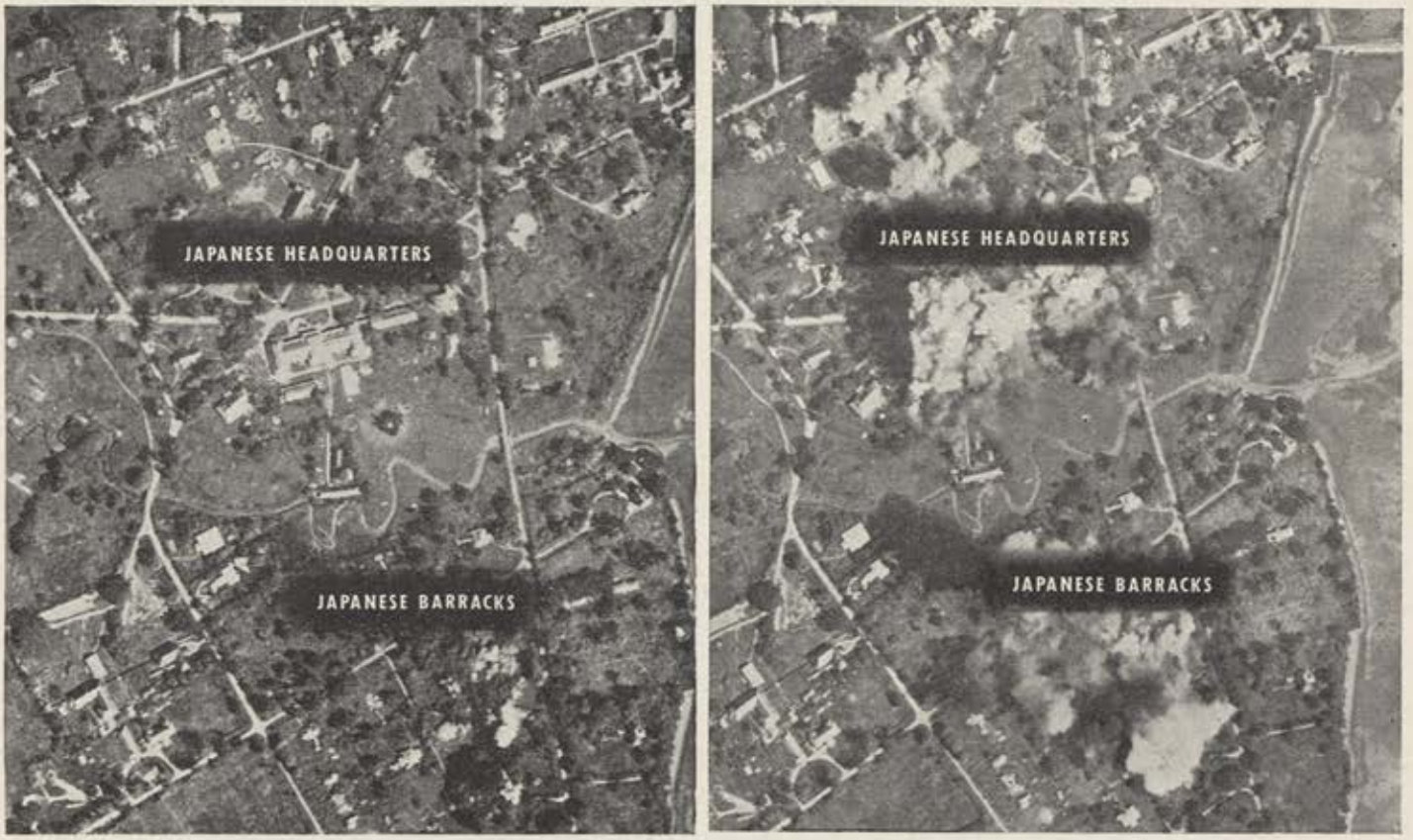
The greatest contribution, of course, is improved accuracy of bombing. It has been determined that application of the AFCE principle reduces the mean error fifty percent. This means that if the mean error is cut from 1,000 to 500 feet, the effect of the bombing is quadrupled. It follows that nine planes can do the work of thirty-six. It follows also that return trips over the target are cut to a minimum, fewer lives are risked, less effort is expended, and less equipment is needed to accomplish a mission.

AFCE dates back to 1926. Early in this war, largely because of rapid modifications of our bombardment aircraft, operational difficulties with AFCE became apparent. Through experimentation, done with the cooperation of experienced bombardment officers and manufacturing specialists, the major difficulties were overcome.

The proof of AFCE now is abundant. On many fronts it is being used by every bomber formation going over a target. Pilots, skeptical at first, now use AFCE on bombing runs as well as on long hauls to and from the target.

Along with other developments have come new methods of computing drift, dropping angle and length of run, plus new methods of using the computer to obtain figures quickly for any given heading.

The author of the above article was squadron commander and group executive of one of the first B-24 units to operate from India. He was largely responsible for the successful application of the newest AFCE to precision bombing missions over Burma.



Using auto-pilot equipment at 16,000 feet, B-24s of the 10th Air Force begin their run (left) on a Jap headquarters area somewhere in Burma. A few minutes later, smoke and debris billow from the targets (right).

should be operated, regardless of whether we ever used it on operational missions.

Since we had several days between each mission during the fall months, Frystak and Joe Wascavage, another technical representative, had plenty of time to help solve our maintenance problem while selling us on the merits of the device. Few of the pilots objected to the idea of using the auto-pilot as a relief pilot on their long flights to and from the target, particularly when weather was rough.

The men quickly learned the importance of trimming up their ship properly before flipping on the control switches, and before long they were beginning to fly on the auto-pilot, discovering that after unusually long missions (longest run was to Bangkok and return, 16½ hours, 2,700 miles) they were far less fatigued than when they had flown the same missions on manual control.

Frystak had won the first round with the pilots by doing them a favor. He had shown them how, through the use of the auto-pilot, they could fly without exhausting themselves on the controls.

Round two also was easily won, with the aggressive assistance of Maj. John Suggs, group engineering officer. Maintenance men began to pry into the auto-pilot to learn what made it tick and what could keep it from ticking. When their pilots began to rely on the auto-pilot on their long flights, the device had to be perfectly sychronized or some crew chief would get hell from the pilot for not doing his job. Then came round three, use of the auto-pilot on the target approach and on the bombing run. By this time pilots had grasped the fundamentals of using the gadget to and from objectives but bombardiers still had to be taught. Practice bombing missions were flown with four sets of pilot-bombardier teams. Target area was a white bulls-eye circumscribed by two circles, with 100-foot and 200-foot radii. Each team would make several runs on the target from 8,000 feet, dropping their practice bombs and visually observing the results while Frystak stood over them to correct mistakes made in setting up the auto-pilot.

JUST as teamwork between pilot and bombardier is extremely important on manual bombing runs, to make a successful bombing run with the robot, it is essential for the pilot to have the auto-pilot perfectly adjusted before turning into the target for the run. The bombardier should know in advance how much drift he will have to compensate for, the exact altitude and air speed the plane will be flying, and the angle of the last approach turn by the pilot when he starts the ship in on its bombing run and turns the auto-pilot over to the bombardier and the bombsight. With perfect coordination and teamwork, the bombing run can be made successfully in eight seconds.

By the end of the year, most of our bombardiers and pilots had learned how to use the new gadget properly. The accuracy of their practice bombing was better than their actual bombing over enemy targets. While conceding that the auto-pilot might have advantages over manual control of the ship for practice bombing, all crews agreed that the bombing of enemy installations was entirely different. They still had to be shown and no one was anxious to be the first to try a raid with the robot at the controls.

By the turn of the year, the auto-pilot was being used to and from most targets with such success that crews felt fresh enough to fly more and more combat missions. If this had been the only advantage gained, the device would have been a real contribution to our raids against the Japs. However, before Frystak returned to the States last November, he had witnessed operational successes attributable largely to the complete use of the auto-pilot by the entire bomb group.

Many months earlier, when we had begun to run out of excuses for not giving the gadget a chance at proving itself over enemy targets, our Squadron COs—Maj. Earl R. Tash and Capt. Willard A. Fountain—started using it. On one of the first trials, I was flying in the lead ship, so it was up to me to set up the auto-pilot and then turn the entire control of the plane over to my bombardier and his bombsight. The other planes in the formation relied on the gadget in my plane for proper course over the target; their only work was to sight for range. We didn't run into any trouble and our bomb-

pattern was near-perfect on our target for the day. When we returned to base there was only one report to make, the gadget was just as good over an enemy target as over a practice bombing range when the equipment is set up properly.

The ice was broken and the majority of our pilots began to use the auto-pilot on their bombing runs as well as on their long hauls to and from the target. On a later raid over Bangkok, Maj. Harry Watkins led his squadron through to the target despite bad weather and bombed it successfully. The mission lasted 16 hours and 30 minutes and the major flew 16 hours and 10 minutes of the time on the auto-pilot. The 20 minutes of manual control were used in taking off and landing.

Successful use of the device on complete missions was a gift from the gods for the navigators. Nowadays, if the pilot starts to fly his ship manually, he usually will hear a loud gripe over the interphone from the navigator in short order: "Throw it back on the auto-pilot so we can keep a straight course."

Never without an answer, the pilot snaps back: "Just wanted to see if you were awake." And both enjoy the free ride on AFCE.

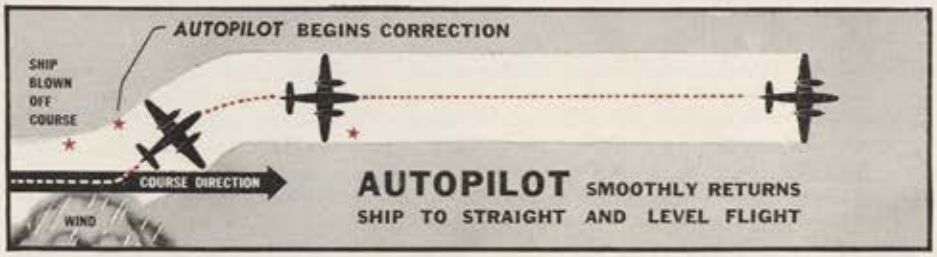
Even though the gadget proved itself to be almost-human, it can't be made to see or to think. Control knobs have to be adjusted in flight to compensate for changing wind, fuel consumption and other variables. The bombardier also has to be skillful in the adjustment of the knobs on the bombing run to place his eggs exactly on target. The auto-pilot can fly mild evasive maneuvers, such as those required to avoid enemy anti-aircraft and fighter interceptions, while holding the bomber formation together. However, on after dark raids when night fighter interception gets hot, making violent evasive maneuvers necessary, the pilot takes over and puts the plane through aerobatics that the auto-pilot never could accomplish.

There have been instances when the auto-pilot has saved the crew of a ship. While on a bombing run over Burma, the formation leader was attacked by Zeros and an explosive shell burst in the cockpit, temporarily knocking out both pilot and co-pilot. The rest of the formation was flying course set by the leader. Fortunately, the lead plane was under control of the auto-pilot so, when a quick-thinking crew member saw both pilots were unable to change course, he twisted the knobs and the plane went into a turning bank and headed for home with the other planes trailing in perfect formation behind—a formation that proved to be a protective cover for the wounded ship. Had the plane not been on auto-pilot, it probably would have fallen out of formation and been easy prey for the Zeros.

In other instances, some of the control cables have been shot away but the auto-pilot controls have remained intact and flown the plane back to base. Frequently the auto-pilot "takes over" while the men in the cockpit render first-aid to battle wounds of other crew members.

While our heavy bomb group was proving the value of the auto-pilot, further improvements in its operation had been developed in the States. These we learned about when some of the men responsible for the new modification arrived from Headquarters in Washington.

Frystak took the blueprints and went to work on all of our auto-pilots. He and the mechanics really "sweated out" the modification under a broiling sun that ran temperatures up to 140 degrees in the planes. Within a short time, the modification had been incorporated in all our aircraft and from that time on we began the intensive flying—even through the 1943 monsoon season—for which this 10th Air Force heavy bomb group is now famous.



With the Washington officials came another technical representative, George Smith, who continued his trip into China to assist the new heavy bomb squadrons of the 14th Air Force. Smith didn't have a practice bombing range and the squadrons he worked with didn't have any spare gasoline or bombs, for in China every drop of gasoline and every ounce of powder is expended on the enemy. Transportation of supplies to these AAF bases is too difficult to permit waste of anything on practice. Smith, nevertheless, found a way to run practice missions with his pilot-bombardier teams.

Every time one of the planes flew to India for bombs, gasoline, food or anything else, Smith would ride along and give his team a course of instruction on the way. Then, on the return trip, there was a target which proved to be excellent for practice bombing. It was a Jap air base and supply center. The crews would set up their auto-pilot and unload a couple of bombs on the Japs, then circle around to see how they were progressing in their instruction course. Fortunately, the base seldom offered serious resistance, for it would have deprived a lot of crews of the 14th Air Force from making practice bombing runs on the auto-pilot.

Because the crews that were sent to China had trained with the auto-pilot in the States, they started using it immediately on all missions and most of their bombing runs.

With enemy targets in Burma and occupied China as small as they are—such as bridges only eight feet wide, single-track railway viaducts in the mountains, merchant ships and river barges—our bombing has to be good in the CBI theatre of operations. A perfect pattern of bombs many times had blanketed a target but not destroyed it. Such freakish bombings are discouraging to crews but the men always have persevered until destruction of the target has been confirmed. The legend of the Mytinge bridge, for instance, includes such near-misses as the passing of a bomb through the trestles without hitting any supports, the puncturing of the flooring by another bomb, and the complete obliteration of the bridge by smoke and water from a perfect pattern of bomb explosions—yet the bridge still stood. It was knocked out temporarily several times, probably permanently in September. Another extremely difficult target has been a railway trestlework hugging the side of a steep mountain. Time after time, the bombs have dropped in a concentrated area apparently on target yet pictures later have revealed the structure to be undamaged because of the mountain shield and the open trestle-work through which bombs pass harmlessly.

With the necessity of flying perfect bombing runs to hit these small targets our pilots rapidly perfected a coordinated use of the auto-pilot until most missions now are being flown on the device, missions that have almost literally dropped bombs in "pickle barrels" — precision bombing missions that have built up a wide reputation for the heavy bombers of the 10th and 14th Air Forces. ☆

Notes from the Air Surgeon's Office:

When to Use the 'BENZEDRINE ALERT'

"WAKE up, Joe, we're almost home." It's the co-pilot, talking over the interphone system. After a moment of silence the reply comes:

"Yeah, OK—but I can't keep my eyes open."

Joe may be the tail gunner of a B-24 returning from a block-busting raid on Berlin. Or Joe may be the pilot of a night patrol plane over the North Atlantic.

Joe, the gunner, got quite a workout with the FW-190s and, now that the shooting seems to be over, he can't help dozing at the trigger. An enemy fighter could sneak up and roost on his sights before he could aim a shot.

Joe, the pilot, has had a tough fourteen hours of sea roving. A low ceiling has forced the plane down to within fifty feet of the waves, yet he can't keep from nodding. "Disappeared without trace" is the way the report might read.

Both Joes are so dead tired that no amount of will power can keep them alert—as alert and cagey as they were when they took off on their mission many hours before. They have won all the battles in the successful completion of a mission—against weather, against darkness, against high altitude, against the enemy—all the battles but one: they are losing the battle against sleep.

That battle can be won, too—with benzedrine.

As the result of extensive laboratory and field investigation of the value and limitations of benzedrine, also known as amphetamine, it has been determined officially that this drug is the most satisfactory of any available in *temporarily postponing* sleep when the desire for sleep endangers the security of a mission.

The responsibility for the tactical use of benzedrine rests with the commanding officer, who must decide when the situation demands it. Distribution and administration of benzedrine, however, is the responsibility of the medical officer. When it should be used, how much is needed and what the effects will be are matters of interest to every member of a tactical organization.

A definite understanding of the military use of benzedrine is especially necessary because of the disgrace into which the drug fell a few years ago following the abuse of its anti-sleep properties.

The benzedrine molecule was discovered in 1930 in the search for drugs having nerve-stimulating properties similar to those of epinephrine, more commonly known as adrenalin. Benzedrine (pronounced BEN-zuh-dreen) was found to have the ability to reduce the size of blood vessels for short periods. This shrinking property made it popular as a nasal inhalation for relieving the stuffiness of head colds. Whereas adrenalin acts on the nerves controlling the automatic functions of the body, benzedrine proved to be a stimulant to the brain, particularly the outer layers which form the center of the intellect. The effects were like those of the caffeine in coffee, but more marked.

THE drug was publicized as a means of dissipating mental fog due to sleepiness and soon college students were using benzedrine "pep pills" during cramming sessions and final examinations to ward off sleep and clear their minds. Instances of excessive use caused the Council on Pharmacy and Chemistry of the American Medical Association in 1940 to issue a warning against the use of benezedrine for the prevention of sleepiness except under medical direction. Indiscriminate, unsupervised use not only exposed the individual to the danger of a nervous breakdown but also violated the medical axiom that interference with the body's normal functions is a liability to good health. Sleep is one of these functions. It is a physiological necessity which needs no proof to anyone who has attempted to go without it.

In peacetime, our desire to go to bed when we become tired seldom presents a serious obstacle to the success of our work or, carried further, rarely jeopardizes our survival. In time of war, however, combat conditions frequently require men to remain on active duty long after the desire for sleep tends to overpower the demand for wakefulness.

The importance of the "sleep crisis" may be appreciated if one remembers that military success depends not only upon the arrival of enough men and equipment at the right place at the right time, but also upon their continuation in action the right *length* of time. To win a battle, in other words, striking power must be supported by *staying* power.

Under ideal conditions staying power is obtained by the replacement of tired men with rested reserves. The commanding officer will recognize that both military and humanitarian considerations necessitate conservation of manpower. Despite the extended mechanization of modern warfare on the ground and in the air, the physical and mental endurance of individual fighting men must be, as it has been in all military history, the deciding factor in many engagements.

While stamina varies greatly from one man to another, no man can work, think or fight well for more than a relatively few hours before his performance drops below par and his nerves and muscles seek to rejuvenate themselves in sleep. When this point of exhaustion is reached in the midst of a military mission medicinal interference with the desire to sleep loses its objectionable qualities. Rather, the use of benzedrine fortification in such an emergency becomes a great boon: one pill may be worth a B-17 and crew of ten when the man who is flying it can no longer stay awake.

The effect of benzedrine upon a person ready to fall asleep is to restore his alertness and produce a sense of well-being and confidence without impairment of judgment. The drug is of no value to well rested or moderately tired individuals. In fact, its benefits appear to be in proportion to the degree of fatigue.

The amount of benzedrine required to prevent sleep where the fatigue is largely mental, as in the case of pilots, is smaller

.nan that needed by men doing heavy physical work. A single dose should not exceed five milligrams to relieve mental weariness, or ten milligrams for physical fatigue. In both instances, the drug should be taken only when the tired feeling becomes excessive. Thus, the man facing the "sleep crisis" achieves the maximum intensity and duration of stimulation.

The ten-milligram dose should not be repeated more often than every six hours, but the five-milligram dose may be repeated every three hours. The safe limit of total dosage is thirty milligrams in any one week.

This amount, if consumed in the course of one mission, will permit about thirty hours of continuous effective action provided the men begin fresh and take the first benzedrine ration after three or more hours of activity. It is not desirable to use the drug on missions of less than six hours unless the men are already tired.

The drug begins to take effect within thirty to forty-five minutes after taking and attains its maximum influence within sixty to ninety minutes. The effects slowly subside over a period of five to eight hours, depending upon the subject's need for sleep. In a rested man, a single dose may postpone sleep for eight to twelve hours. In a tired man, the demand for sleep eventually will become powerful enough to overcome the drug's influence.

Since benzedrine does not provide rest but merely conceals the need of it, sleep following a "benzedrine alert" preferably should be of such duration that the accumulated fatigue is completely relieved. In general, benzedrine should be employed with the realization that the body's demand for sleep will become urgent in from thirty to sixty hours after the last period of normal rest.

UNDER unusual circumstances where an opportunity for sleep presents itself while the drug is still active, a mild sedative can be given by the medical officer to counteract the insomnia produced.

Benzedrine is not habit-forming in the sense that a tolerance or physical craving for the drug may be acquired. Like the morning cup of coffee, however, the drug produces a stimulation so pleasant that the problem of excessive use may arise among individuals without sufficient will power to do without an unneeded "crutch." For this reason the administration of the drug should be under the control of a medical officer.

Overdosage in fatigued individuals produces undesirable effects similar to those experienced by rested persons under the influence of small doses of benzedrine; excessive excitement, tenseness or uneasiness, palpitation and headache. A nervous breakdown due to lack of rest may follow continued loading of the body with benzedrine. However, if the drug is properly used, there is a wide margin between the required dose and an excessive dose. Because a few persons are abnormally sensitive to benzedrine in ordinary amounts, five milligrams should be given as a test dose for toxic effects in advance of missions wherever possible. If a sensitivity is found, the individual should *not* use benzedrine during flight. Such men will have to rely on coffee to keep them awake —if they can get it.

A variety of experiments in the laboratory and in the field have demonstrated the value of benzedrine. In a series of tests in the Aero-Medical Laboratory, Wright Field, a ten-milligram dose of benzedrine significantly improved the coordination of individuals undergoing long, boresome, routine tasks. This dose was recommended for flyers on long, routine flights, for fatigue on return flights, and in emergencies where repeated missions must be carried out.

Crews flying night patrols for periods ranging from four to eighteen hours were the subjects of another study. The investigator gave benzedrine tablets, in doses of ten to fifteen milligrams, and dummy tablets, containing chalk and sugar, at random to the flyers showing signs of fatigue. One-third of those receiving benzedrine recognized that they had received the real thing and, judged both subjectively and objectively, received marked benefit from it. The pilots, co-pilots and navigators showed the most need, and they were glad to get the drug. In contrast, gunners who worked in watches and customarily slept in bunks while off duty complained of insomnia. In planes where the gunners were required to remain continuously on duty, however, the drug appeared to relieve their boredom and to improve vigilance. Little need for a stimulant was found on the four-hour patrol except among those returning from trips where gruelling combat or weather conditions were encountered. No undesirable side-or-after-effects were noted.

In another experiment, 100 Marines were kept continuously active for 60 hours range firing, a 25-mile forced march, a field problem, calisthenics, close-order drill, games, fatigue detail and bivouac alerts. Fifty men received seven 10-milligram tablets of benzedrine at six-hour intervals following the first day's activity. Meanwhile the other fifty were given dummy (milk sugar) tablets. None knew what he was receiving. Participating officers concluded that the benzedrine definitely "pepped up" the subjects, improved their morale, reduced sleepiness and increased confidence in shooting ability. During the first night, when the forced march was made, it became apparent that the benzedrine group was in better condition than the control group. The latter, however, demonstrated a psychological benefit from the dummy pill; they simply believed that the benzedrine group had received a more potent stimulant. In firing eighty rounds daily with the M-1 rifle, the benzedrine group showed a significant superiority in the number of hits (bull's-eyes) and in firepower (hits per minute), although their total scores on an "A" target at 200 yards were not significantly better than the control group's. It was observed that men receiving benzedrine tended to lead the march, take their sore feet and blisters more lightly, and to remain wide awake during "breaks," whereas members of the control group were inclined to indifference. No harmful effects from benzedrine were noted. The subjects had no difficulty in sleeping at the end of the experiment.

THE use, effects, dosage and limitations of benzedrine were described for the medical officer in War Department Circular Letter No. 58, issued by The Surgeon General on 23 February 1943.

In a letter from the Office of The Adjutant General on 7 August 1943, the commands of the Army Ground Forces were informed that "The large scale use of benzedrine is essentially a command decision."

"It is the responsibility of commanding officers," the letter stated, "that personnel are instructed in the use of this drug and that it is administered under the supervision of medical officers."

Ground conditions under which benzedrine might be utilized were listed as follows: task problems continuing from 18 to 36 hours without opportunity for sleep; all-day combat problems followed by guard or alert duty through the next night or day; missions carried out by isolated parachute troops or soldiers over a period of 48 to 60 hours; night patrols involving missions of not more than 12 hours; truck-driving requiring day-and-night duty or continuous driving for eight to ten hours.

Studies have provided conclusive evidence that benzedrine has a definite military use as a temporary sleep preventative. It is therefore recommended to AAF commanding officers for use among personnel on tactical missions involving losses of sleep.

Regulation of distribution and administration should remain under Medical Corps direction to prevent misuse or abuse, either by officers or enlisted men. The large scale use of benzedrine should be attempted by the tactical officer only after consultation with a medical officer.

Both the commanding officer and his men must understand that benzedrine will not produce supermen. It merely postpones for a relatively short period of time the body's pressing demands for rest. The drug is not a substitute for sleep, and its practical value will be defeated if the individual using it is denied proper rest following a "benzedrine alert." Properly employed, it will give an army a few extra man-hours of fighting at the time they are most needed. ☆

2 WAYS TO MANDALAY...

A LITTLE railway line which runs from Myitkyina, in the upper Irrawaddy River Valley, to Mandalay and then south to Rangoon, has been the Japs' main supply artery in Burma. But India-based United States and British bombers have smashed the terminal yards at Rangoon, Pyinmana, Thazi and Mandalay, and demolished important rail bridges at Wuntho, Myitnge, Loilaw and Mu. The poundings have forced the Japs to try shipping much of their supplies by boat on the Irrawaddy River which parallels the railroad line. During the monsoon season the river is navigable for large vessels up to Katha, between Mandalay and Myitkyina. When the Japs turned to the river, however, Allied bombers turned there too. Japanese shipping losses have become so heavy that they are obliged to ship only during the night. In the daytime, the Nips camouflage their river boats to blend with the banks, or disguise them as promontories of the wooded shoreline. But even these devices are not working so well, for low-flying bombers on regular river sweeps often detect the camouflaged boats since the pilots are able to observe the shore at an oblique angle. In this instance, a cleverly camouflaged river boat, almost perfectly disguised by a foliage cover, was spotted by a B-25 which scored hits amidships causing the vessel to burn and sink.

No Boyer, Very Little Lamarr

By Capt. George Bradshaw
AIR FORCE STAFF CORRESPONDENT

WHEN you are in North Africa and get a little time off you make for Algiers. By hook or crook, by plane or truck or even your own two delicate feet, you get to Algiers. There, your spies tell you, is where the stuff really is; that's where things are going on; that's where the big boys hang out; that's where the babes are; that's where the market is really black.

You're in for some surprises.

In the first place, there is one thing you have to remember about Algiers. It never snows. Just why this is so, no one has been able to figure out. God knows, it's cold enough. You are going to shiver while enjoying your leave.

With that in mind, you might as well be sensible and stay in bed all morning. There's nothing to do, anyway, if you get up. If you have friends in town they'll be working; the movies aren't open, neither are the cafes; about all you can do is sit around a canteen and read six-month-old magazines. So stay in bed.

When you do get up the thing that will surprise you most about Algiers is how big it is. The place goes on forever—and this is brought home to you by the fact that if you want to get anywhere you have to walk. There are no taxis—well, maybe one or two—and the streetcars are off limits for soldiers. Civilians must have a few breaks.

You push around the streets on foot—and push is the word. The other night the German radio from Paris gave a description of Algiers. An abandoned city, it reported. "The streetcars don't run, the restaurants and shops are closed, the streets are deserted." So said the Hun.

But just ask the GI who has tried to cross a Rue. New York in those old golden days when there was plenty of Esso was never like this. Every kind of truck, reconnaissance car, staff car and jeep, captured volkeswagons, lumbering 8th Army trucks with desert camouflage, ambulances, Navy station wagons (yes, Navy station wagons) and French civilian cars—a lot of them run by what look like old-fashioned waterheaters.

And the people. Soldiers, sailors, French, British, American, in every conceivable uniform. The British in their smart, practical battle dresses, decorated with all manner of warlike insignia and flashes; the GI, well certainly you know what a GI looks like by now; the French, also in GI uniforms, except the ones who wear great red or blue or yellow capes. And all the native troops. Goums you call them. Any uniform you don't recognize you call a Goum. Of course, there are still all the civilian types who fill up the town pretty well in the first place.

AND let us not forget the veiled Arab women.

Even at this late date a word might well be spoken about the veiled—and barefoot—Arab women. They are a hardy race. On a day when any sensible GI has on two pairs of socks, Mademoiselle Arabe goes plodding along the icy streets in her pinkies. Maybe she has a cold in the head—but that's something the eyes of western man are not permitted to see.

It's that veil.

Mysterious and romantic it sounds and all that—from a safe distance,—say Jefferson Barracks, Mo. But up close . . . well you can bet that veil hasn't been washed since before Pearl Harbor.

What a spot this place would be for one of those American advertising campaigns. One of those soap ad cartoons. You know. . . .

In the first picture the little Arab boy, sad-faced, is hanging around the kitchen while his mother cooks up a fine meal she has found in the garbage can outside American Officers' Mess. "What ails thee, Mohamet?" she says. "Why don't thee go out and shine shoes like the other boys?"

In the second picture the little Arab boy—and Mohamet is his name, no kidding—says, "Gee, mom, all the fellows say your veil is tattle tale gray. . . ."

In the third picture we have mom in the privacy of the harem taking off the veil and giving it a good look. "By Allah," she says, "the kid's right."

Then we have a long series of pictures where mom goes into the market place and haggles for a bar of Fels Naptha. Then she goes and sells it to any American soldier for three times what she paid for it.

Wait. We got back into real life for a minute there. Home goes mom with her soap, off comes the veil, and to the music of a gay old Arabian beheading song the veil is washed in a bucket of cold water. (Pretending there was hot water in Algiers would be going a little too far.)

The last picture shows Mohamet, happy again, dancing around with the other fellows, who let him have first chance on all the shoe shine jobs—boy, is this fiction—and mom, looking ten years younger, and a lot more sanitary, watching from the balcony. And just to make the whole thing really absurd, the sun is shining.

How we Americans falsify the actual . . . but boy, how we sell soap.

Sooner or later you are going to get hungry. You have been in North Africa long enough to know that no matter where you go you are not going to find any Southern fried chicken and apple pie, so you go hunting around for a little place on a back street where one of your spies told you they have beefsteaks and eggs. You go in and hint around in your excellent French (which consists of English spoken very loudly). You discover

Illustrated by James T. Rawls

Those dreams of babes and romance in Algiers will vanish into smelly air when you tour the grounds.

your spy was a damned liar. Finally, you eat what you get in any cafe on any street.

You'll get soup, tasting suspiciously as if meat had been in at one time or other, then a salad of tomatoes and lettuce, which the medical officers have told you to eat under no circumstances, then some kind of stew, or maybe, if you're lucky, some lamb, probably a vegetable, lots of hard, brown French bread, a bottle of wine and, for dessert, tangerines. No matter what else they don't have in North Africa, they have plenty of tangerines.

Well, it is not by any means as good as the food you get at your mess, but it's a change, and you don't have to stand in line. If, in the afternoon, you get hungry—and you probably will—you can stop in for something at the Red Cross. That's a fine institution, the Red Cross. It's the only place in town you can always get something to eat, and a comfortable place to sit down. In years to come there shouldn't be any trouble with quotas for the Red Cross drives—not from the boys who were in Italy and Africa.

Let's say you're fed. What to do? You can walk around and look at the war memorials or wander through the stores although they have nothing you want, for this is a sold-out town; you can hang over the parapet above the waterfront and watch the freighters and the battleships; you can sit in the park and have your shoes shined by one of a million shoe shine boys. Or you can go to the movies.

If you have been over here long enough—say five years—the movies will seem new to you. Otherwise you'll go to them because it's raining. At the moment you have your choice of "The Goldwyn Follies," "The Lady Vanishes," Deanna Durbin in "It's a Date," and "Les Commandos Frappant," which turns out to be "The Commandos Strike at Dawn." You can't just drop in on a movie. They run only at certain hours; the lines are worse than at the Paramount when Sinatra sings, and the film has a habit of breaking every fifteen minutes. But what the hell, it is something to do.

You can't write a GI tourist's eye view of Algiers without mentioning the one really famous part of the town, but the trouble is, the Casbah is out of bounds—and that means you too, Lieutenant.

Of course, there's a way to get around everything, even an MP, and in Algiers the way has been found by the most sensible of agencies, Thomas Cook and Sons. The GI, even when clutching the warm, tender hand of his sergeant, is not allowed to venture into those Lamarr-hallowed streets, but under the watchful eye of a Mr. Cook's guide the joint is supposed to be as harmless as Chinatown.

And cheaper. For thirty francs—sixty cents—you can look all afternoon.

It's not all legitimate Casbah. First you are forced into a number of churches and public buildings which you would ordinarily avoid, *and* you are given long lectures on the tiles. Tiles are a great thing in Algiers. No floors are made of anything else; everything is tiling—fancy, plain, of every color and design. The only thing you never find out is why. All the tiling does is make your feet cold.

Finally you get to the Casbah. And, brother, it is not what you expected. Maybe if you lived in the Casbah for awhile—says fifty years—you would come to love it, but for a winter afternoon's stroll it is just a long walk.

The guide warns you to be careful of fleas and pickpockets, and he is not merely making idle conversation.

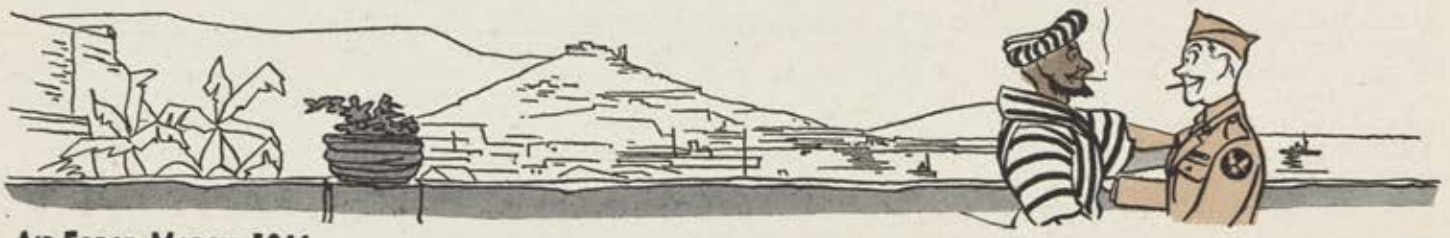
The Casbah is old. The word actually means fort—and there is a fort which is now a museum—but gradually it has become the designation of that part of North African cities where the Arab population lives.

There is nothing in America to which you can compare the feeling of oldness you get from the streets and buildings of the Casbah. That filth and those smells must be thousands of years old—no mere matter of centuries could produce them.

The streets are narrow, crooked, winding. Some of them are no more than lanes where two people can just walk abreast. The facades of the structures—you can hardly call them buildings—are dull and dirty. Whatever life goes on in this place is confined to the interiors and the rooftops. The women work and chatter on the hidden balconies, up in the sunlight above the filth, with a view of the busy, handsome harbor. A street to an Arab is simply a means of getting from one place to another. They never think of it as a promenade in the sense we do. Wide avenues flourish as places for women to see and be seen, and the Arab woman is hidden behind doors. At least the good-looking ones are.

You'll see for sale, spread out on the dirty street, every kind of article, from the greasy rags which the men peddle as clothes to pieces of mouldy bread. And the prices are high.

When you return to the brightness of the French part of Algiers, you get a shock. It has never seemed a clean city, but after the Casbah it seems spotless. ☆



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.

How Not to Stop

The photograph below depicts a sad anti-climax to an otherwise nice job of handling an emergency.

The pilot of this B-26, finding himself without hydraulic pressure, brought his plane in with skilled technique, including use of the air emergency system for his brakes to bring the plane to a stop.

Then he nullified the good work. Using the hand pump he built the hydraulic pressure up to 1,000 pounds, released the air pressure, and started to taxi. He knew his hydraulic system was defective (the trouble was later traced to the master brake cylinder), yet he started and, as advertised, the pressure fell off to zero. The wall finally stopped the plane.

COMMENT: TO 01-35EA-1, dated 20 March 42, states that once emergency air pressure has been used do not release the brakes until the plane is in the hands of the ground crew. Anyway, why try to taxi a plane with doubtful brakes on a field cut up with ditches?

A Dangling Belt is Useless

A colonel of the Engineers, who has served as camouflage officer in Hawaii and Alaska, has spent considerable time in the air with both Army and Navy pilots. He reports that the Navy boys are much the smarter in the use of safety belts. In fact, his experience has been that Army pilots aren't smart at all.

He brings out a point that the average flyer tends to forget. No pilot is sufficiently omnipotent to know when his plane might hit a down draft strong enough to throw him from his seat.

This is especially true when flying over a strange territory.

"I have experienced tremendous drops due to down drafts, in some occasions dropping as far as 800 feet," the colonel said. "In one instance while flying with the Navy (in Hawaii), the ship got into a down draft and fell so fast that five of us in the cabin, who were engaged in photographic work at the time, were knocked unconscious. I am convinced that were it not for the fact that both the Navy pilot and co-pilot had their seat belts on at the time that I would not have lived to dictate this letter."

A few days later, three Army fighter planes flying formations in the same territory mysteriously cracked up and all pilots were killed.

Refusal to wear seat belts and safety harness simply denotes a careless pilot who is asking for it.

Competition Helps

The accident rate at a southern primary school was reduced by the introduction of competition among instructors. Names of the instructors are listed on a bulletin board and when the student of one has an accident, whether dual or solo, an appropriate entry is made.

Keeping Tabs on Grads

When a pilot graduates from Turner Field's twin-engine advanced flying school, the school's interest in him doesn't stop there.

Reason is that from performances of past graduates the school can mold its future policies and application of training methods.

Here's how it works:

After the pilot graduates from Turner Field a questionnaire follows him to his new operational training unit asking about his flying proficiency, accident record, general remarks on his ability and other pertinent data about the pilot—good or bad.

The director of training keeps a chart on each class and enters information on individual pilots as the completed questionnaires come in from OTUs.

From OTU averages and remarks the director of training can pick out the weak and strong points of the training program.

Taxi Correctly or Walk

Student pilots can be impressed with the importance of careful taxiing, it has been found, by penalyzing carelessness with a tour of duty as a wing walker on the ramp.

More on 'Featheritis'

In the February issue of Air Force, the Office of Flying Safety provided an article on engine failures in multi-engine aircraft which might require slight amplification for newer pilots.

The point was made that an engine should not be feathered as long as it delivers approximately twelve Hg. of power. An important exception was noted, which OFS feels should be still further emphasized—that is, when an engine is vibrating excessively.

When this condition occurs, and the vibration cannot be brought under control by reduction of power, the feathering process is mandatory.

Pilots were advised to check the oil temperature on an engine showing decreased oil pressure before deciding anything is radically wrong. To make the point stronger, OFS adds that a fluctuation of oil pressure, within normal operating limits is not unusual.

It was stated that a rough engine at times can be cured by switching to single magneto operations. OFS desires to remind pilots that when an engine is operated on one mag, power should be reduced and the mixture richened.

All-around Men Scarce

The days in the AAF when a pilot was equipped to fly anything after a brief check out are gone forever. In the first place, the experience level is necessarily low and, secondly, modern combat aircraft daily become more complex.

The Seattle Fighter Wing has adopted a simple yet ingenious device of keeping track of a pilot's qualifications to fly a particular type of plane.

When a pilot checks out in a plane he

is issued a qualification card for that particular equipment. The card must be kept alive by the accumulation of time, otherwise another check is required.

Use the RSO

Rapid expansion and turnover have created a condition in which key officers of an organization often lack a thorough knowledge of emergency procedures and instrument flying.

Here's a tip to the commanding officer: Regional Safety Officers of the Office of Flying Safety have assisted at a number of bases in bringing such officers up to standard. Usual method has been for an RSO to check the proficiency of flying personnel, then choose the most experienced to serve as instructors for the others. Best results are obtained when a regular schedule for the instruction is established.

Teaching Teacher

Link trainer instruction at one base was considerably improved when the operators were given actual practice in working out radio range problems. Many operators know little or nothing about range procedures.

Safeguard the Fighters

With inclement weather conditions prevailing in many parts of the country, great caution should be exercised in clearing fighter aircraft, fitted with VHF radio equipment, to a station where an instrument approach might be needed. The majority of control towers cannot be contacted with this equipment.

Don't Flirt With Water

Pilots being briefed for overwater missions should be reminded of the danger of low flying. It's not safe, as many pilots believe, to buzz the waves because there are no obstacles to hit. On the contrary, it's extremely hazardous. Water, especially on a calm day, provides little or no point of reference by which to judge altitude. A B-26 was lost in the Gulf of Mexico recently because the pilot was unaware of this fact.

Flying On a Diagonal

Many young pilots are not equipped to understand the implications of a "red diagonal," yet are afraid to ask questions, or reject the plane, for fear of censure.

Recognizing this situation as an invitation to accidents, the 2nd Air Force recently directed that group or squadron commanders be responsible for flights where any instrument carries a "red diagonal."

Where the trouble is mechanical, the group or engineering officer must sign.

The action was intended to insure that when a pilot flies a plane on a diagonal he understands the necessary procedures and precautions to take to overcome the defect in his equipment.

Belly Landings

Where a pilot, faced with a wheels-up landing, has a choice, should he make it on or off the runway?

Experience has shown that with heavy bombardment aircraft such a landing should be made on the runway. In any type of plane, a runway landing probably will cause less damage to a ship than setting it down on dirt or sod.

The reason is dirt rolls up into balls, fracturing a plane's skin and rupturing the members.

Photographs taken at the specialized four-engine school, Hendricks Field, Fla., graphically display what happens in the two types of landings.

In Figure 1, to the uninitiated it would appear that the pilot had found a nice soft field and brought his plane in with a minimum of damage. (Actually, in this instance, the pilot had no choice due to engine trouble.)

But take a look at Figure 2. Notice how the skin is ruptured. The damage extended from Station 2C to 11 (bomb-bay to tail wheel).

The plane in Figure 3 made a belly landing on the runway at night. Reason: Damaged gear.

The skin, aft of the bomb-bay was unscathed (Figure 4). Nor was the plane's structure damaged. The commanding officer said that in a pinch, the plane could have been made flyable by the next day.

Fear of fire mainly is responsible for a pilot's distaste for a belly landing on the concrete. In combat areas, where a damaged plane might have loose gas aboard due to a punctured tank or broken line, the friction created by a runway landing is a fire hazard. But in the U. S., if the gas system is intact, such fears are largely groundless.

However, a prudent man will get out of any plane that has made an emergency landing under any conditions as quickly as possible. ☆

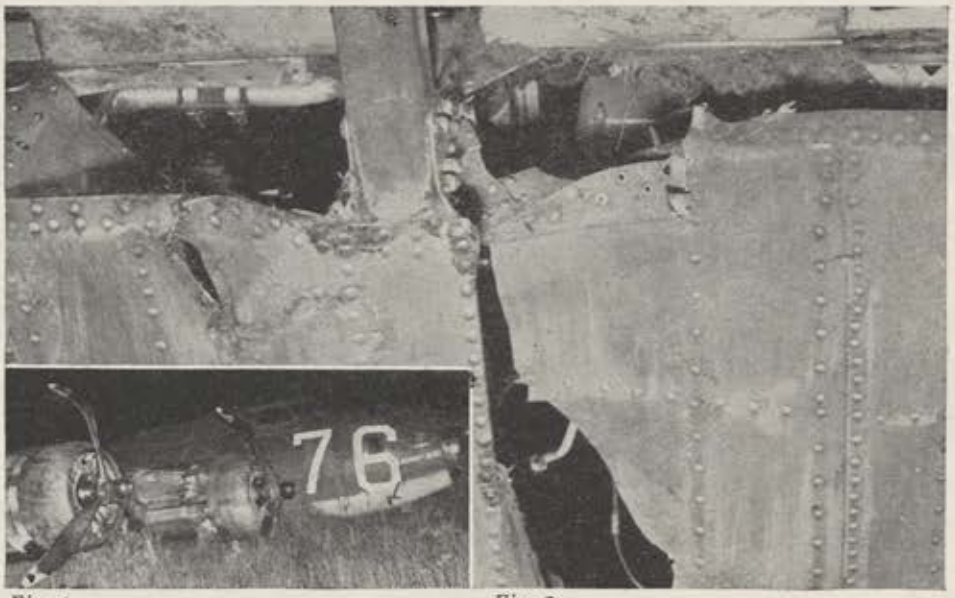


Fig. 1

Fig. 2

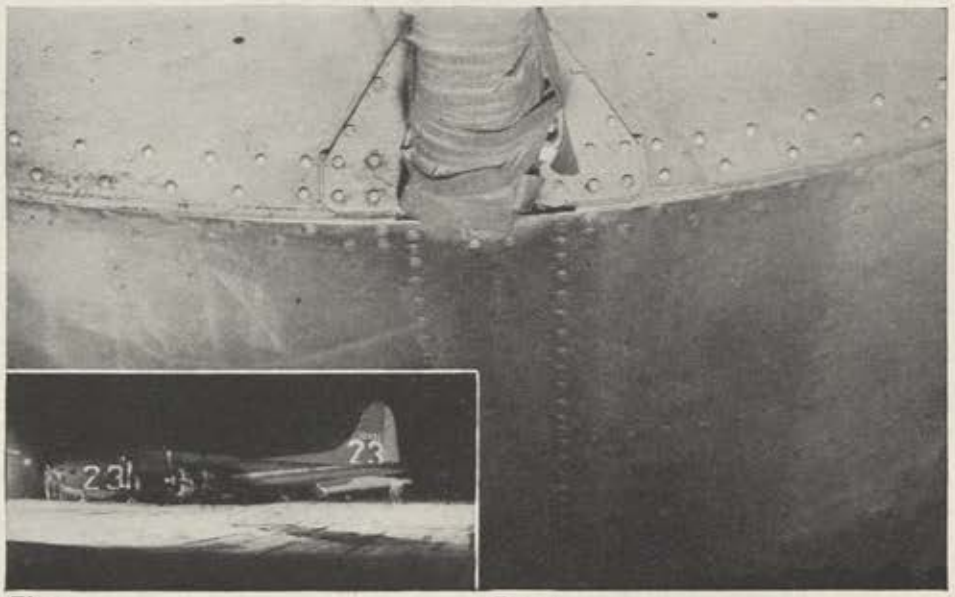


Fig. 3

Fig. 4

COMBAT LIFE WITH THE ESCORTS

The boots at the foot of the ladder tell their own story of the respect which this ground crew has for Mr. Dunc of the P-38 Duncs.

THEIR pilots trained by veterans of the North African and Sicilian campaigns, our P-38s are doing a brisk escort business out of England these days. The success of our bombing attacks has begun to lean heavily on fighter protection—and the men of our fighter groups in England know it. From the time they are briefed for an escort mission (see opposite page) until they bring their planes home, the one concern of our fighter pilots is to help the bombers reach the target and return safely to base. It is reassuring to the bomber crews to know that while they are leveling off for their runs, the fighters are up there knocking off the MEs and FWs.

The first group of Lightnings to fly cover out of England spent some time back in the States flying patrol and interceptor missions in the Washington-Oregon area. The boys found life quite different in Britain. Pictures on these pages tell why.

Until the belly tank came along, fighter protection was extremely limited and the big boys had to shift for themselves when they came into the target area, where the opposition usually was thickest. However, these two cylindrical tanks furnish P-38s with a round trip ticket to most targets.

Flaps and wheels down, a fighter comes home from a mission.

The tail end of a mess line is always a discouraging view to the hungry GI who has rushed off to the noon feed with such high hopes. Only a little "sweating out" will solve the situation.

English weather and English soil beget a muddy terrain that makes boots an indispensable item of equipment.

An English pub lends its friendly, congenial atmosphere to ground crew men who toss down a few ales with the local barkeep.

The Author

SERVICING OUR AIR ASSAULT ON EUROPE

By Brig. Gen. Hugh J. Knerr
COMMANDING GENERAL, 8TH AIR FORCE SERVICE COMMAND

IN executing the mission of destroying the German Air Force through demolition of sources of supply and repair, the 8th Air Force is demonstrating for the first time the basic modern principle that the Achilles' heel of mechanized warfare is the industry that supports it. Destruction of German air power in the air is a mere unavoidable incident. That the German fighter command insists upon feeding its aircraft into the buzz saw of our bomber offensive is of no primary interest to us. Our formations do not deviate one yard from their predetermined course to knock down the Germans. Their nose is on a Regensburg or a Schweinfurt or a Bremen and the red herrings of aerial opposition are ignored.

For this task the 8th Bomber Command carries the torch. All other elements of the Air Force are subsidiary to this effort. The Fighter Command supports the bombers as far as it can into enemy territory; the Composite Command completes the training of the crews that man the bombers, and the Service Command supplies and equips the Air Force and repairs and maintains the machines involved in this fight to the finish.

Aerial warfare has brought an entirely new set of standards for the measurement of time and space. An hour is no longer the hour of the escort wagon and the blacksmith shop of even the last war. There is only one minute and twelve seconds in the aerial hour. In other words, a 250-mile-an-hour airplane travels the same distance in one minute and twelve seconds as the mule-drawn escort wagon travels in one hour. Therefore, what is to be done must be done quickly.

Likewise, the oceans have shrunk down to mill ponds in comparison with the

Before bombs reach Berlin they are handled many times by hand and mechanical devices. They are transported by trucks from Service Command depots to the bomber bases where they are fuzed and finned. Ordnance men then cart the explosives to the planes and hoist them into the bomb bays. Before the bomb can accomplish its purpose one operation remains. When the plane reaches the target the bombardier takes care of that.

Mobile repair units for crashed aircraft, like medical units for injured personnel, follow their planes and make emergency repairs. The 8th Air Service Command maintains units which travel wherever disabled planes have landed. This plane's four engines and ball-turret were damaged in an emergency landing, but the bomber was able to take off from a make-shift runway after the mobile unit had completed the repair job.

oceans of the last war. The battlefields of this war are restricted only by the fact that we can't get off this planet. The space required by the last war is microscopic in comparison.

And yet it has only been within the last year or so that we have put any serious effort into bringing our military management into line with the rules of this new game. In this, the Service Command has not been laggard. Our present organization is a worth while contribution.

THE Service Command is involved in an effort as many-sided as an industrial organization. While our business is aerial, we deal in commodities as prosaic as the peacetime products of General Motors. We have found that we can do our job better with an industrial type of organization rather than the rigid type of military organization. This accounts for the fact that the Service Command has only four main sub-divisions. One deals with men (Personnel Division), the second with materials (Supply Division), the third with machines (Maintenance Division) and the fourth with management (Staff).

The chiefs of these divisions are in fact deputies to the commanding general, with full authority to act on any subject pertinent to their division that is within the framework of basic policies controlled by the commanding general.

The chief of the Personnel Division engages in the reception of newly-arrived Air Force men, their housing, trade classification and distribution to the installations of the 8th Air Force. He maintains rest homes for battle-fatigued personnel and supervises the technical training of the men who maintain the aircraft of the 8th Air Force.

The chief of the Maintenance Division handles all matters concerned with the maintenance of aircraft—their overhaul, repair and reclamation. He directs the modification of aircraft in conformity with the latest in combat experience and supervises the experimental engineering that will keep us a jump ahead of anything the German air force can devise.

The chief of the Supply Division operates a vast mail order house with a stock ranging from rivets to complete aircraft. He procures material from both British and U. S. sources and distributes American products to the RAF as well as the 8th Air Force.

The chief of Administration performs the military function of a chief of staff, and the management function of an industrial manager. He directs the activities of the special staff sections that procure and furnish to the Air Force the supplies not immediately related to the aircraft itself, and the equipment and facilities without which aircraft cannot operate.

There are bombs and ammunition and delicate fuzes to be stocked and to be delivered on time. There are heavy food requirements for a vast Air Force personnel, clothing from ordinary fatigues to electrically-heated flying suits, regular and special medical equipment dictated by the combat experience of one of the world's toughest air theatres. The Air Force necessarily has a huge appetite for radio and signal equipment. With all of its winged machines, the Air Force in the European theatre ordinarily has a greater demand for trucks and for other vehicles than does the Ground Force. There is also the network of airfields, depot installations, storage space and housing facilities to be engineered and maintained.

The Arms and Services involved in executing these ancillary functions include Ordnance, Signal, Quartermaster, Engineer, Chemical Warfare, Surgeon and Transportation. These have been woven into the structure of the 8th Air Force Service Command in such fashion that they are an integral part thereof, along with the specialized functions of the Adjutant General, Judge Advocate, Chaplain, Intelligence, Fiscal Officer and Inspector General.

No theoretical organization can exist in practice unless it works. Ours works because it is based upon the principle of centralized control and decentralized operation. In these days when the course of world history changes within 24 hours through the success or failure of a single air action we have to be light on our feet. Sitting down in this fight would be as fatal as stooping to tie a shoe lace in a prize fight. On October 14, at Schweinfurt, we put over one of our most devas-

tating punches in the face of the heaviest enemy opposition. In five days 56 percent of our battle-damaged airplanes were repaired and back on the line ready to hit them again at Duren.

At another point, policy determined that the overhaul of engines was not keeping pace with the demand for them, so we decided to militarize the base depot. After the uniformed Air Force men took over, the output of overhauled engines jumped thirty percent with less men doing the job. In fact, at the present rate of increase of engine repair, the importation of new engines to the United Kingdom can be decreased. Other examples of increased production through formulation of policies at our headquarters and the decentralization of operations to the field have led to the conclusion that we can soon cut future planned depot area personnel by many thousands and still do a better job.

The fact that we never sit down is revealed in our operation of on-site repair. The boys bring the B-17s back. They don't ditch them in the Channel unless there is nothing left to fly with. When they crash-land them, mobile repair units —complete workshops on wheels, capable of anything up to a major overhaul job—go wherever the planes come to rest. They repair the planes and fly them to a depot where they are made ready for another crack at the enemy.

THE rapid pace at which this war rolls along is brought home to us forcibly by the modifications demanded on aircraft when they arrive here. The youngsters doing the fighting are not prima donnas demanding changes in their equipment to gratify a whim. They either live or die because they are better men or have better equipment than their opponent. They discover a weakness here or spot an improvement there that will counter a new fast one put over by some Kraut over Schweinfurt. And they want it tomorrow.

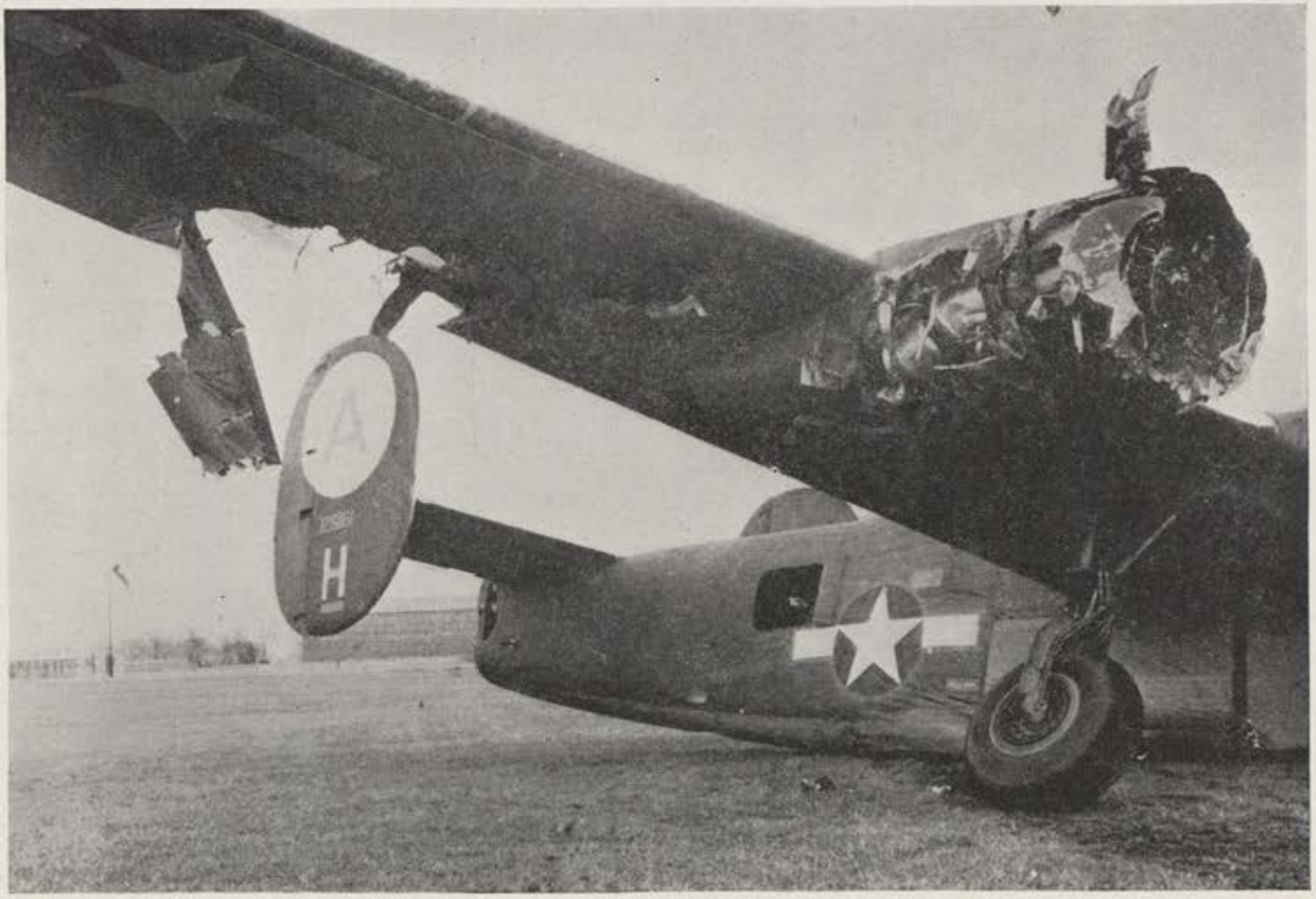
We do our damndest to give it to them but it will be three long months before the factories back home can get it in an aircraft coming off the production line. We fill in that gap by manufacturing kits at one of our base depots and installing them there or at an advanced depot. Imagine trying to route that through a ponderous staff type of organization and you will get a well deserved headache.

Only by controlling the policy upon which modification is based at our headquarters and decentralizing its fabrication and application to the operating depots can we keep up with the insistent demand for more and better equipment.

In all of these operations the difficulties of communications are ever present; the roads are narrow; the skies are cluttered up with clouds and balloons; the telephones are "engaged" and the mails are slow. As a result we must operate our own airline, truck system and teletype network in order to satisfy the insistent demands upon us. By these various means, we transport each month over a distance of 250,000 air miles, a total of 400 tons of cargo, 3,000 military and some civilian personnel, and more than 1,000 ferried aircraft. Overland we accumulate monthly a total of 1,800,000 truck ton-miles. Every ton of bombs, every can of spam and every air crewman must be transported from a port of entry, sea or air, to a destination "Somewhere in England." This, for the Air Forces, is one of our chores.

These and other activities constitute our day's work—days that have no beginning or end; work that furnishes the rumbling background for the power of the 8th Air Force. ☆

ASC inspectors overseas continually examine battle-damaged planes to determine whether they should be repaired, or disassembled and the parts discarded or repaired. When the inspectors mark planes for salvage every usable part is removed, repaired when necessary, and stored in a depot for use on other planes. Even the wings and fuselage are sheared with acetylene torches and the metal sent to processors for salvage.



Roll of Honor

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

MEDAL OF HONOR

Morgan, John C., Lieut.
*Sarnoski, Joseph R., Lieut.

DISTINGUISHED SERVICE CROSS

Arooth, Michael, T/Sgt.
Baker, Addison E., Lieut. Col.
Buck, William E., Jr., Lieut. Col.
Cleven, Gale W., Maj.
Gettys, Richard O., S/Sgt.
Le May, Curtis E., Brig. Gen.
Norton, Charles E., Lieut.
Schellin, Roy L., S/Sgt.
Stireman, John O., S/Sgt.
Trout, Chester E., Capt.
Williams, Robert B., Brig. Gen.
Wilson, James W., Maj.
Wood, Jack W., Col.

DISTINGUISHED SERVICE MEDAL

*Gabel, Percival E., Col.
Giles, Benjamin F., Brig. Gen.
Weaver, Walter R., Maj. Gen.

LEGION OF MERIT

House, Edwin J., Maj. Gen.
*Howarth, Loren E., Sgt.

SILVER STAR

Bertram, Joseph L., S/Sgt.
*Chow, Shu Tung, Lieut.
*Johnson, Thomas T., Lieut.
Price, Charles T., Lieut. (Also DFC & AM)
Raphel, Eugene V., Capt.
Rasberry, Ottis W., Sgt. (Also DFC & AM)
Ross, Herbert E., Maj. (Also AM & 15 OLC)
*Salitrnik, Robert J., Lieut. *(Also PH, DFC & 3 OLC to AM)
Sederberg, Robert S., Lieut.
Whitmore, Warren B., Lieut. Col.

PURPLE HEART

Ackerman, Harry, Lieut.
Alison, John R., Lieut. Col.
Barrail, Robert W., Lieut.
Bartholomei, Victor H., Lieut.
Blanchette, Milton P., Jr., Lieut. (Also DFC)
Bolles, Harry, Jr., Sgt.
Brasher, Harold C., Lieut. (Also DFC)
De Russey, John H., Lieut. Col.
Dieffenbach, Albert W., Capt.
Farrar, John W., Capt.
Gladhart, David, Lieut.
Hosman, Ralph W., Capt.
Kiser, Raleigh, Sgt. (Also AM)
Larson, Harold B., Lieut. (Also AM)
Lipe, Fort W., Lieut.
Manee, Ferry H., Lieut.
McCoy, Ronald G., Lieut.
Novogrodsky, Nicholas, Cpl.
Olds, Sherwood W., Lieut.
Rodgers, Harvey B., Lieut.
Rotter, Gerald D., Lieut.
Smith, Abbott M., Jr., Lieut.
Storie, John H., Lieut.
Taylor, Robert L., Lieut.
Van Dyke, Stanley M., Lieut.
Wallace, Robert B., Lieut.
Weiemeth, Arlynn E., Lieut.
Whitson, William D., Lieut.
Larsen, Pernell O., Lieut. (Also AM)
Laurie, John H., Sgt. (Also AM)
Lavender, Jack B., S/Sgt. (Also AM)
Leader, Kent E., Lieut. (Also AM)
Leaman, James H., S/Sgt. (Also AM)
Lefevbre, Armand J., T/Sgt. (Also AM & OLC)
Lindsay, Joseph H., Lieut. (Also AM)
Livingston, John W., Capt.
Long, John F., S/Sgt. (Also AM)
Long, Paul J., Maj. (Also AM & OLC)
Lovelace, William Randolph, Lieut. Col.
Low, Curtis R., Lieut. Col.
Lusk, Virgil W., Lieut. (With 3 OLC, AM & 3 OLC)
Luton, Baxter C., S/Sgt. (Also AM)
McGlynn, Thomas J., S/Sgt. (Also AM)
McJunkins, Keith P., Sgt. (Also AM)
McKain, Karl J., T/Sgt. (Also AM)
McKee, James T., Capt.
McMurray, Robert A., Lieut.
Madsen, Rudolph V., T/Sgt. (Also AM)
Maguire, Leslie L., Jr., Sgt. (Also AM)
Mahboub, Frank W., Sgt. (Also AM)
Makar, Peter, S/Sgt. (Also AM)
Maliszewski, Edward P., Lieut.
Mally, William O., Lieut. (Also AM)
Matthews, Donald E., Lieut.
Mayhew, Wilbur W., Jr., Sgt.
Mears, Frank H., Col.
Medford, John C., Lieut. (Also AM)
Meek, Noel W., T/Sgt. (Also AM)
Mengel, Herbert O., Lieut. (Also AM)
Mickus, Frank J., S/Sgt.
Milam, Fred, Lieut.
Miller, Richard G., Lieut. (Also AM)
Mobbs, George D., Capt. (Also AM & OLC)
Monday, Robert E., S/Sgt. (Also AM)
Monohan, Thomas P., Lieut.
Moore, Johnnie C., T/Sgt. (Also AM)
Moore, William P., Lieut. (With OLC, AM & 3 OLC)
Mooty, Mark T., Capt. (Also AM)
Muehlberg, John R., Capt. (Also AM)
Neal, Charles P., Lieut. (Also AM)

AIR MEDAL

Abelson, Sidney, S/Sgt.
Abraham, George M., S/Sgt. (& 2 OLC)
Abram, Robert V., Lieut.
Ackridge, Leo C., Sgt.
Aiello, Richard V., T/Sgt.
Allen, Brooke, E., Col.
Amos, Lee H., T/Sgt. (& 3 OLC)
Anderson, Frederick L., Jr., Brig. Gen.
Anderson, James E., S/Sgt.
Anderson, Norman C., T/Sgt.
Andresen, Malcolm K., Lieut. (& 9 OLC)
Andrychowski, Bernard J., T/Sgt.
Antonio, Basil J., Lieut. (& 3 OLC)
Archer, William E., Lieut.
Ashe, George M., S/Sgt.
Asher, John G., S/Sgt.
Atkins, James L., Jr., Capt.
Atkinson, Philip E., Lieut.
Auman, Rictor H., Lieut. (& 3 OLC)
Bachelle, Stuart, Lieut.
Bachman, Franklyn, Lieut.
Baguley, Raymond, Lieut.
Baird, James D., Lieut.
Baity, Ray H., Jr., S/Sgt. (& 3 OLC)
Baker, Ross C., Lieut.
Baldwin, Irl E., Capt. (& 3 OLC)
Barnes, Charles G., Sgt. (& OLC)
Barnes, John T., T/Sgt.
Barnett, Clyde H., Jr., Lieut.
Barsam, Meran A., Jr., Lieut.
Bartlett, Frank W., S/Sgt. (& 2 OLC)
Bass, Paul L., T/Sgt.
Bator, Stanley J., Jr., S/Sgt.
Battersby, William, Capt. (& OLC)
Bauley, James E., Lieut.
Beahan, Kermit King, Lieut. (& 3 OLC)
Bean, Joe M., Lieut.
Beatty, John J., Jr., Cpl. (& 2 OLC)
Beck, Joseph A., II, Lieut.
Bell, John R., Lieut. (& OLC)
Bennett, Osee V., S/Sgt. (& OLC)
Berou, Robert A., Lieut.
*Bevlock, James J., Capt.
Biehn, Carl M., M/Sgt.
Billette, John P., T/Sgt. (& 3 OLC)
Binder, Ray J., Capt.
Binowetz, Melvin, Lieut.
Bise, Dalmas F., S/Sgt.
Bialda, Paul A., Lieut. (& 6 OLC)
Blakesmith, Bassell, Lieut.
Blanton, Thadd H., Capt.
Blasic, Walter P., Sgt.
Bloomhuff, John E., Lieut.
Boggess, William V., Lieut.
Bone, Donald R., Lieut. (& 3 OLC)
Boone, Daniel M., S/Sgt.
Boreen, Glenn W., T/Sgt. (& 3 OLC)
Bormhiemer, E. J., Sgt.
Boswell, Hilroy M., T/Sgt.
Bott, Robert N., Lieut.
Bourgeois, Robert C., M/Sgt.
Bowar, Carlos L., Lieut.
Boyle, Francis H., T/Sgt.
Brady, John M., S/Sgt.
Bragdon, Oren D., Lieut.
Bram, Denny E., Lieut.
Branch, Henry, II, Lieut.
Branch, Peter W., Lieut. (& 2 OLC)
Brandkamp, Charles H., Lieut.
Brant, Donald W., S/Sgt.
Brehm, William J., Lieut.
Brennan, John G., Lieut.
Bridenbaugh, Joseph R., Lieut.
Briggs, James D., Capt.
Brighton, Kenneth A., Lieut.
Brill, Allen, Lieut. (& 2 OLC)
Britt, James O., Lieut. (& 2 OLC)
Brogan, Robert C., Capt.
Broman, Theodore H., Lieut. (& 4 OLC)
Brouhard, Lawrence H., Sgt.
Brown, Charles S., Lieut.
Brown, James S., Lieut.
Brown, Robert I., Lieut. (& 3 OLC)
Brown, Wilbur E., S/Sgt.
Brozack, Nicholas T., T/Sgt. (& OLC)
Bruner, Marshall T., S/Sgt.
Buckey, George R., Capt. (& 2 OLC)
Bullock, Charles R., Lieut.
Bumgarner, Carl T., Capt.
Bunch, James B., S/Sgt.
Burger, Arthur L., Lieut.
Burnett, Andrew H., Sgt.
Burnett, John D., Lieut.
Burns, Robert H., Sgt.
Bush, Ralph, Cpl.
Buskey, Douglas H., Capt.
Callery, Philip J., S/Sgt. (& OLC)
Campbell, William C., Lieut.
Caraday, Alva L., Sgt.
Carlisle, Robert H., S/Sgt.
Carlton, Robert N., Lieut. (& 3 OLC)
Carnathan, Hollis E., Jr., T/Sgt.
Carpenter, Warren A., Lieut.
Carr, Raymond O., Lieut.
Carroll, Richard J., Lieut. (& OLC)
Carter, Charles M., Lieut. (& 3 OLC)
Keith, Troy, Lieut. Col.
King, Charles E., S/Sgt.
Kish, Andrew K., Lieut.
Klasch, John E., T/Sgt.
Klein, Charles A., Lieut.
Koch, Erich J., S/Sgt. (Also AM & 2 OLC)
Kramer, Glenn H., Capt.
Kramp, Joseph J., Capt. (Also AM)
Krizan, John L., T/Sgt. (Also DFC & AM)
Kreuger, William F., M/Sgt. (Also DFC & AM)
Kynett, Martin W., Capt.
Lancaster, James W., Lieut. (Also OLC to PH)
Landers, Gerard Q., Sgt. (Also DFC & AM)
Lane, John H., Lieut.
Lawrence, Dennis W., S/Sgt.
Lawrence, Max E., Sgt.
Lebel, Adrian A., T/Sgt. (Also DFC & AM)
Leidecker, Frank J., Lieut. (Also DFC & AM)
Lopes, Norman R., Sgt.
McGahey, Benjamin C., Lieut.
McKenzie, Lawrence O., Lieut. (Also DFC & AM)
Mahurin, Walker M., Capt. (Also DFC, AM & 3 OLC)
Mangas, John H., Lieut.
Markey, Walter M., Lieut.
Mathis, Peyton S., Jr., Capt.
Merrigan, William J., S/Sgt. (Also DFC & AM)
Mete, Anthony P., S/Sgt.
Miller, William B., Lieut.
Milner, Robert S., Lieut. (Also AM)
Montgomery, Alfred E., T/Sgt. (Also DFC & AM)
Mosley, Albert W., Jr., T/Sgt. (Also DFC & AM)
Myers, Duncan C., Lieut.
Myers, Henry V., Lieut. (Also AM & 2 OLC)
Neeley, Ralph E., S/Sgt. (Also DFC & AM)
Newbury, Edward S. E., Capt.
O'Boyle, James, S/Sgt.
O'Meara, Joseph D., Lieut. (Also DFC & AM)
Orance, Albert, Maj.
Papke, Leonard A., S/Sgt. (Also AM)
*Parrish, George A., Lieut.
Paul, George C., Lieut.
Planck, Carl G., Jr., Lieut.
Portmore, Gilbert S., Lieut.
Postelle, Arnold W., Lieut. (Also DFC, AM & OLC)

OAK LEAF CLUSTER TO PURPLE HEART

Caird, Almond E., T/Sgt.

DISTINGUISHED FLYING CROSS

Adams, John E., S/Sgt.
Allen, Donald S., S/Sgt.
Anders, Virgil M., Lieut.
Anderson, James L., T/Sgt.
Anderson, Karl W., S/Sgt.
Andres, Arthur E., Capt. (Also AM)
Androkovich, Stephen A., T/Sgt.
Anholt, Dean H., S/Sgt.
Ard, Gilbert H., Sgt.
Baker, Jess Francis, Lieut.
Barsh, Phillip W., Sgt.
Bartlett, George H., Lieut.
Battersby, William, Capt.
Bauer, Clarence E., Sgt. (& OLC)
Beck, Richard H., Capt.
Beezley, Wilbur B., Capt.
Berran, Ignatius E., Sgt. (Also AM)
Bing, Andrew J., Capt.
Blend, Clarence K., S/Sgt.
Bloomfield, Thomas F., Lieut.
Bowland, Charles F., Sgt.
Brandt, Norman R., S/Sgt.
Breeding, Marvin L., T/Sgt. (Also AM & OLC)
Breedlove, Richard D., S/Sgt.
Brookhart, Joseph W., Lieut.
Brown, Fred F., T/Sgt.
Bryant, Warren E., Lieut. (& OLC)
Budz, Chester H., Lieut.
Buller, Henry A., Sgt.
Burger, Elmer L., Sgt. (& OLC)
Cardaro, Peter P., S/Sgt.
*Chopping, Robert D., S/Sgt.
*Chorn, Ralph W., Sgt. *(Also AM)
Clark, Walter, Capt.
Collins, James F., Maj.
Da Silva, Francis P., S/Sgt. (Also AM)
Duncan, Cecil E., Lieut.
Dunn, Edward T., Lieut. (Also AM)
Dyess, William E., Lieut. Col. (& OLC)
Hanlon, Melvin F., T/Sgt.
Kennedy, Lawrence C., Capt. (Also AM)
Kilgore, Joe M., Capt. (Also AM)
Kimbell, Charles L., Lieut. (Also AM)
Knox, Grover L., T/Sgt. (Also AM)
Komurke, Joseph C., M/Sgt. (Also AM)
Krantz, Howard L., S/Sgt. (Also AM & OLC)
Kyle, Paul J., Lieut.
Lang, William Alfred, Sgt. (With OLC, AM & 3 OLC)
Newsome, Reese W., Sgt. (Also AM)
Nicks, John D., Lieut.
Nye, Francis W., Lieut. (Also AM)
Nye, Lawrence R., Sgt. (Also AM)
Oglesby, Sam R., Capt. (Also AM)
Olds, Thayer S., Col. (Also AM)
Omohundro, Thomas T., Lieut. (Also AM)
Osterhaus, Albert F., S/Sgt. (Also AM)
Parker, Lyn, Jr., Lieut. (Also AM)
Parkhill, Victor G., T/Sgt. (Also AM)
Parkinson, Thomas C., Lieut.
Parr, Earl C., S/Sgt (Also AM & OLC)
Patrick, Anderson T., S/Sgt. (Also AM)
Patrick, Augustus R., Sgt. (Also AM)
Patterson, Cecil E., Jr., Lieut. (Also AM)
Paullin, Robert I., Capt.
Payne, Coy B., S/Sgt. (Also AM)
Peek, Charles O., Lieut. (Also AM)
Pence, Robert E., Lieut.
Pestel, Paul, Lieut. (Also AM)
Peterson, James R., S/Sgt. (Also AM)
Pickett, Eldon P., Sgt. (Also AM)
Pierce, Russel K., Jr. Lieut. (Also AM)
Plavchak, John, Jr., T/Sgt. (Also AM)
Porter, Larry D., Lieut.
Prchal, Louis A., Lieut. (Also AM)
Press, Harry F., Jr., S/Sgt. (Also AM)
Pullium, Lewis E., S/Sgt. (Also AM)
Ransdell, Robert F., S/Sgt.
Rasmussen, Philo O., Maj.
*Treweek, James M., Capt.
Wild, Hugh E., Capt. (& OLC)

OAK LEAF CLUSTER TO DISTINGUISHED FLYING CROSS

McIntyre, Jack C., Lieut.
Puerta, Frank J., Maj.
Rang, Francis B., Capt.
Wuertele, Carl E., Capt.

SOLDIER'S MEDAL

Baker, Edward L., S/Sgt.
Belzowski, Frank J., T/Sgt.
Cowart, Claude J., S/Sgt. (& OLC)
Dailey, Andrew E., Sgt.
Johnstone, James, Sgt.
McMillen, William J., Sgt.
Miller, William R., Sgt.
Otto, Stanford J., Lieut.
Rockafellow, Alfred A., S/Sgt.
Simoneau, Wilfred J., T/Sgt.
Steiner, Charles V., Lieut.
Williams, Grover C., Jr., S/Sgt.

* Posthumous

Carter, John F., Lieut.
Castle, Robert D., T/Sgt.
Cates, Vernon C., S/Sgt.
Caton, James B., S/Sgt.
Caukin, Roger L., Lieut.
Cendretto, John J., T/Sgt. (& OLC)
Chamberlain, Lloyd H., S/Sgt.
Chapman, Arney F., Cpl.
Chastain, Alfred E., Sgt.
Cheek, Walter V., T/Sgt.
Childress, Peter M., Lieut.
Chiles, John W., Capt.
Chin, Ree, Lieut.
Clark, Thomas W., Maj. (& OLC)
Clawson, Paul D., T/Sgt.
Coats, Robert D., Sgt.
Cochran, Ivan E., Sgt.
Cochran, Wharton C., Lieut.
Cohen, Schiller, Sgt. (& OLC)
Cole, Robert W., Sgt. (& 2 OLC)
Coleman, Ralph E., T/Sgt.
Cook, Bud W., T/Sgt.
Cooke, Henry, T/Sgt.
Cooper, Irving, Lieut.
Cormier, Lionel J., Lieut. (& 2 OLC)
Costello, Edward A., Lieut.
Couch, Robert E., Sgt. (& OLC)
Couturier, Alfred J., T/Sgt.
Cox, Hollis D., Sgt.
Crain, Richard T., T/Sgt.
Cram, Philip, Lieut.
Cram, Reginald M., Maj.
Cranman, Arthur H., Lieut.
Crause, Leo D., Lieut.
Crawford, William, Jr., Lieut. (& OLC)
Crockett, Allan A., Maj.
Crow, Howard B., Sgt.
Cuddeback, Aaron E., Lieut.
Cummings, Claude H., Jr., Lieut.
Cunningham, Bennie B., Sgt. (& 3 OLC)
Cunningham, Joseph R., Lieut.
Cunningham, Lee O., Lieut.
Curb, Cyril E., S/Sgt.
Currie, John, Sgt.
Cypress, Mandell L., Lieut. (& OLC)
Damann, Carl G., Lieut.

Groff, George E., Lieut.
Grothaus, Robert J., Lieut. (& 3 OLC)
Hafner, William M., Lieut.
Hall, Allan W., Sgt. (& 2 OLC)
Hall, James G., Lieut. Col.
Halloran, Francis A., M/Sgt.
Hannah, William W., Lieut. (& OLC)
Hanson, Robert J., T/Sgt. (& 3 OLC)
Harden, Dixie R., S/Sgt.
Hardin, William G., Jr., S/Sgt.
Harlow, Henry M., Capt.
Harris, Ray E., Lieut.
Harrison, James A., S/Sgt. (& 2 OLC)
Hartbrodt, Frederick A. V., Capt.
Hatfield, Albert S., T/Sgt.
Hatt, Edward, S/Sgt.
Haupt, Fred J., F/O (& 11 OLC)
Hawk, Leonard F., S/Sgt.
*Hawke, Thomas C., Lieut. (& 6 OLC)
Hayes, Frank, Sgt. (& 3 OLC)
Haygreen, Paul W., S/Sgt. (& 3 OLC)
Heaton, Donald H., Lieut.
Heckman, Willard L., Lieut. (& 3 OLC)
Heinrich, Lewis A., S/Sgt.
Henderson, Winthrop C., Lieut.
Hennin, Phillip F., Maj.
Herndon, Joseph T., Lieut.
Heskew, Wayne R., S/Sgt.
Higgins, Wellington H., Lieut.
Hill, Robert A., Jr., Lieut.
Hiner, Warren J., Lieut.
Hoelle, William J., Lieut. (& 3 OLC)
Hohman, Jack, F/O (& 13 OLC)
Hokenstad, Theodore R., Lieut. (& OLC)
Holloway, Lee C., Capt.
*Homes, George P., Sgt. (& 4 OLC)
Honczaryk, Peter G., S/Sgt.
Hopper, Richard R., Lieut.
House, Kenneth L., Sgt.
House, Rodney W., Lieut.
Hou, Yuan, Lieut.
Howe, Phillip, S/Sgt.
Hunley, Charles L., M/Sgt.
Hyde, Elbert W., Lieut.
Irish, Robert A., T/Sgt. (& OLC)
*Ivanhoff, William M., Sgt. (& OLC)

Leikness, Marlow J., Lieut. (& 13 OLC)
Lindley, Stephen H., Lieut. (& 3 OLC)
Littlejohn, Rogers D., Lieut.
Littleton, Joe, Lieut.
Loch, Harold P., T/Sgt. (& 3 OLC)
Locker, H. M., Lieut. (& 2 OLC)
Lomax, Melvin, Sgt.
Lorence, William A., Capt.
Love, Earl L., Sgt. (& 3 OLC)
Lovelace, John Wade, Lieut.
Luciana, Albert, S/Sgt.
Luhrsen, Vernon G., S/Sgt.
Lundby, Roland O., Capt. (& 2 OLC)
Lynn, John A., Sgt. (& 3 OLC)
MacCubbin, Emmet C., Capt.
MacDonald, Anderson A., Sgt. (& 2 OLC)
MacDonald, Henry G., Capt. (& OLC)
MacNutt, Frederick A., Jr., Lieut.
McAnnely, Edwin C., Lieut.
McArter, John L., S/Sgt. (& OLC)
McCinnell, Charles H., Lieut.
McCleelan, Wilbut A., T/Sgt.
McClintock, William F., Lieut. (& 3 OLC)
McColgin, Franklin H., Capt.
McCombs, Robert L., Pvt.
McCombs, William J., Lieut.
McComsey, Robert M., Lieut.
McCorkle, John P., Sgt.
McCoun, Gordon K., Lieut. (& OLC)
McEnany, Bernard P., T/Sgt.
McGinnis, Earl Carroll, Sgt. (& 3 OLC)
McIlheran, Robert C., Maj.
McKenna, John G., T/Sgt. (& OLC)
McKnight, Louis S., Lieut. (& 2 OLC)
McNally, Harvey J., S/Sgt. (& OLC)
Mackley, John R., Sgt.
Madison, Willard R., Pfc.
Magee, Alan E., S/Sgt.
Magnis, Barney, Sgt.
Mahoney, Frederick T., Capt.
Mahoney, Hugh, Lieut.
Maier, Walter, Sgt. (& 3 OLC)
Malizeski, Chester J., T/Sgt. (& 3 OLC)
Mallett, Frank, Sgt. (& 3 OLC)
Malone, Maurice C., Sgt. (& 3 OLC)
Manlove, Wayne M., Lieut. (& 12 OLC)

Natiello, Oreste G., Sgt.
Naydock, Samuel, Sgt. (& 3 OLC)
Nee, Don D., Lieut. (& OLC)
Neely, Eber J., Jr., S/Sgt.
Nelson, Vernon, Pvt. (& 4 OLC)
Nesterowicz, Edmund F., S/Sgt.
Nestman, Howard E., Sgt. (& 2 OLC)
Newhart, Joseph A., Sgt. (& 2 OLC)
Newman, Albert G., Cpl.
*Nichols, Clarence B., Sgt. (& OLC)
Nichols, John C., Lieut. (& OLC)
Nichols, Robert J., Sgt. (& 3 OLC)
Nix, Foreman, Cpl.
Noble, Charles M., T/Sgt. (& OLC)
Noel, Milton A., Sgt. (& 3 OLC)
North, Charles A., Lieut.
Norwood, Feaster A., Lieut.
Nuessle, Harry C., Lieut. (& 3 OLC)
Nunlist, Paul F., Lieut.
O'Brien, James J., Sgt. (& OLC)
Odell, Donn C., Lieut.
Olmstead, Jesse N., Pfc.
Olsen, Edward, S/Sgt.
Onorato, Joseph B., Lieut.
Ordille, James A., Lieut.
Orlando, Dominic S., S/Sgt.
Orr, Jim M., Sgt.
Osbourne, Glenn C., Lieut.
Otto, Robert F., S/Sgt.
Park, Kenneth B., S/Sgt.
Parker, David A., Lieut.
Patterson, Robert G., Lieut. (& OLC)
Patterson, Wallace A., Lieut. (& OLC)
Peaslee, Jesse C., Maj.
Pendergrass, Hugh, Sgt.
Penland, D. L., T/Sgt.
Perkins, Homer W., S/Sgt. (& 2 OLC)
Perry, Edward W., S/Sgt.
Peterson, David R., Lieut. (& 2 OLC)
Peterson, Lamar C., Lieut.
Peterson, William P., Cpl.
Pett, David, Lieut. (& OLC)
Phillips, Russell A., Lieut. (& 2 OLC)
Piotrowski, Edward P., S/Sgt. (& 13 OLC)
Pittard, John T., S/Sgt.
Platt, Alvar B., Sgt.

S/Sgt. W. D. Deringer

Capt. Don A. Johnson

Maj. Rudolph E. Flack

Lt. R. L. Vincent

Capt. A. B. Hughes, Jr.

Capt. J. W. Farrar

Davis, Harlan G., S/Sgt.
Dawson, Paul E., Lieut. (& OLC)
Del Signore, Henry L., T/Sgt.
Delucia, Angelo P., Cpl.
Deringer, William D., Jr., S/Sgt.
Dietz, Edward R., S/Sgt.
Dinke, Charles R., Lieut.
Doak, Aivah A., Sgt.
Dominy, John T., S/Sgt.
Dority, Guy E., Sgt. (& 3 OLC)
Drillas, Christopher A., Sgt.
Duckworth, Melvin H., S/Sgt.
Dufour, John, Maj. (& OLC)
Durham, Joseph E., Lieut.
Eagle, Buren O., T/Sgt.
Eaton, Dudley Paul, Lieut. (& 3 OLC)
Edwards, Fred W., Lieut.
Elliott, Jack C., Sgt. (& 2 OLC)
Emrich, Herbert B., Lieut.
Engel, Godfrey, Jr., Lieut. (& 3 OLC)
Eshelman, Dean H., Maj.
Esmay, Carle H., Lieut. (& 2 OLC)
Evans, Eugene H., Sgt. (& OLC)
Evans, Vincent, Lieut. (& 3 OLC)
Eyster, Ercil F., Lieut. (& 2 OLC)
Fahrland, Robert R., Lieut.
Farmer, Joseph E., T/Sgt.
Feay, Marc E., S/Sgt.
Feist, Edwin L., Lieut.
Ferguson, James M., Lieut. (& OLC)
Ferree, Ralph J., Lieut.
Field, Edwin J., Lieut. (& OLC)
Filley, Oliver D., Jr., Lieut. (& OLC)
Fischer, Henry A., Jr., Lieut.
Fisher, Albert S., T/Sgt.
Fitzpatrick, Robert L., Cpl.
Fletcher, Basil E., M/Sgt.
Flowers, James D., Jr., Lieut.
Foglemnn, Coin C., Jr., Sgt. (& 3 OLC)
Ford, Carey B., S/Sgt.
Foster, Charles L., Capt. (& OLC)
Foster, Leo J., Jr., Maj.
Fox, Leonard M., T/Sgt.
Frederick, George W., Lieut. (& 2 OLC)
Freeman, George J., S/Sgt.
Freese, Lewis C., S/Sgt.
Friermood, Max J., Lieut.
*Fuller, Rogert W., Lieut. (& 3 OLC)
Fuller, Walter B., S/Sgt.
Galloway, Paul A., Sgt. (& 2 OLC)
Gates, Edmund, Jr., S/Sgt. (& OLC)
Gazo, Albert A., S/Sgt.
Gentile, Don S., Lieut. (& OLC)
Gerry, Clark H., Lieut.
Giammara, Joseph A., Cpl.
Gisel, Clarence P., Lieut.
Goolsby, Fleming C., Lieut. (& 2 OLC)
Gover, Leroy, Capt. (& OLC)
Grabowski, Frank W., Sgt. (& OLC)
Graf, Robert F., Cpl.
Gray, Wayne J., S/Sgt. (& OLC)
Gregory, Lewis H., Lieut. (& 3 OLC)
Griffith, John H., Lieut.

Ives, Eric B., S/Sgt.
Jackson, Emil I., S/Sgt.
Jackson, Glenn Luther, Lieut. (& 3 OLC)
Jaegers, Robert A., Lieut.
James, Jefferson M., S/Sgt.
James, Joe C., Sgt. (& 2 OLC)
James, Ray A., Sgt. (& 2 OLC)
Janette, Raymond M., S/Sgt.
Jennings, Charles F., Lieut.
Jent, William T., S/Sgt.
Jeter, Charles H., Maj.
Jobe, Fletcher H., Lieut.
Johnson, David W., Capt. (& 2 OLC)
Johnson, Don A., Capt. (& OLC)
Jones, Charles H., T/Sgt.
Jones, James F., T/Sgt. (& OLC)
Jones, Robert T., Lieut.
Jones, S. J., Cpl.
Junget, George W., Sgt.
Kaszubski, Edward A., T/Sgt.
Kayhoe, William F., Capt.
Kehoe, James Grant, T/Sgt.
Kelly, Van C., Jr., S/Sgt.
Kendrick, George E., S/Sgt.
Ketch, William H., Jr., S/Sgt. (& OLC)
Kile, Lavelle, S/Sgt.
Kirkpatrick, George B., S/Sgt.
Klee, John P., S/Sgt.
Klester, Alexander A., S/Sgt.
Knifton, Thomas O., M/Sgt. (& 3 OLC)
Knott, Carroll S., Lieut. (& 12 OLC)
*Koch, Walter, T/Sgt. (& 2 OLC)
Koehler, Gilbert L., S/Sgt.
Kramer, Robert F., S/Sgt.
Krapcha, Edward L., Sgt.
Krasevac, Albert L., Sgt.
Kreidler, James F., Lieut. (& 2 OLC)
Kuk, John, Cpl.
Kulakoski, Alvin John, Sgt. (& 3 OLC)
Kusowski, Thaddeus F., S/Sgt. (& 2 OLC)
Lach, Waldemar J., Lieut. (& 2 OLC)
Laclair, Thomas J., S/Sgt.
Lahmers, Donald E., T/Sgt.
Laite, Frederick R., Sgt. (& 3 OLC)
Lammers, Robert, T/Sgt. (& 3 OLC)
La Mondola, Joseph J., Pfc.
Landers, John D., Lieut.
Lange, Donald E., Capt.
Langley, Clifford R., Sgt.
Lanzo, Philip A., Lieut.
Laplant, William P., Sgt. *
Laretsky, Alexander, Cpl.
Lasseter, Wilbur H., Capt.
Lavin, John N., Capt.
Lawrence, Albert L., Sgt.
Lawrence, Claude H., Lieut. (& 2 OLC)
Leaman, Alton D., Sgt.
Learned, Harold G., Jr., Lieut.
Leasor, Keith R., S/Sgt.
Ledford, William B., T/Sgt.
Leffingwell, Claude V., Lieut.
Lehti, Robert W., Capt.
Leighton, Charles B., Capt. (& 3 OLC)

Maraschiello, Sebastian, S/Sgt. (& OLC)
Marchese, Francis T., S/Sgt. (& OLC)
Maresh, Theodore J., Capt.
Marrer, Robert E., T/Sgt. (& OLC)
Marsh, Edmund W., Lieut.
Martensen, William B., Lieut.
Martin, Calvin, S/Sgt.
Martin, Donald A., Sgt. (& 3 OLC)
Martin, Donald O., S/Sgt. (& OLC)
Martin, George K., S/Sgt.
Martin, John J., Cpl.
Matheis, Stuart J., Lieut.
Matt, Charles W., Lieut.
Matthews, Milton F., S/Sgt.
Maxwell, Arthur L., Lieut. (& OLC)
Maxwell, Raymond A., Sgt.
*Mayes, John Bernard, Lieut. (& OLC)
Mayne, William B., Pvt.
Mekler, Jacob A., Sgt. (& 2 OLC)
Melvin, Miles W., Sgt. (& 3 OLC)
Meneely, Harold, S/Sgt.
Merrell, Clinton P., T/Sgt.
Messina, John J., T/Sgt.
Meyers, Kermit E., Capt.
Meyers, Robert H., Lieut.
Mika, Henry E., T/Sgt. (& 2 OLC)
Millard, Thomas L., T/Sgt.
Miller, Charles J., Pvt.
Miller, Marshall W., S/Sgt. (& 2 OLC)
Miller, Ralph V., Lieut.
Milliren, James R., S/Sgt.
*Mills, Robert W., Sgt. (& 5 OLC)
Milstead, James C., Sgt.
Minton, Lewis T., T/Sgt.
Mitchell, John H., S/Sgt. (& 3 OLC)
Mitchell, Robert A., Jr., Lieut. (& 2 OLC)
Mitchell, Robert H., Lieut. (& 2 OLC)
Moffatt, Robert J., Lieut. (& 2 OLC)
Monda, George E., Lieut. (& OLC)
Moore, Burton L., Lieut.
Moore, Raymond T., T/Sgt. (& 2 OLC)
Moore, Robert L., Sgt.
Moose, Robert A., Lieut.
Moran, Frederic S., T/Sgt.
Morgan, Ray, Lieut.
Morgan, Raymond D., S/Sgt.
Morgan, Wilbur E., S/Sgt.
Morris, Herbert A., Lieut.
Morris, Thomas J., Jr., Capt. (& 3 OLC)
Morrissey, Robert L., Lieut. Col.
Morrison, Thomas H., Sgt.
Morton, Daniel F., Jr., T/Sgt.
Moser, Roy R., Lieut.
Moses, Samuel, S/Sgt.
Mostow, Jechiel, Sgt. (& 3 OLC)
Moszyk, Aloysius L., Sgt. (& 2 OLC)
Mulgrew, William C., S/Sgt. (& OLC)
Murdt, Richard J., Capt. (& 2 OLC)
Murphree, Clyde E., Lieut.
Murray, Lawrence W., T/Sgt.
Murray, Robert A., T/Sgt.
Muscato, James T., T/Sgt.
Nastal, Casimer A., S/Sgt. (& 3 OLC)

Polifka, Karl L., Maj.
Poncik, Victor J., Lieut.
Poole, Edgar T., Lieut.
Potter, Richard E., Lieut. (& OLC)
Powell, Thomas Herman, Lieut. (& 3 OLC)
Prestidge, Howard F., Cpl.
Preston, William F., Jr., Lieut.
Priester, Robert I., Lieut. (& 2 OLC)
Pucilowski, George A., Lieut. (& 3 OLC)
Pugliese, Vito, Sgt. (& OLC)
Puleo, Frank, S/Sgt.
Pullen, James F., Lieut.
Pulley, Isaac H., Jr., Pfc. (& OLC)
Pulliam, Harold K., Lieut. (& OLC)
Pyle, Clifton, Capt. (& 3 OLC)
Quackenbush, Mathias J., Lieut.
Quinlan, John P., S/Sgt. (& 3 OLC)
Radetsky, Harold A., Lieut. (& 3 OLC)
Rasmussen, James H. S., Capt.
Reitman, Michael L., Lieut. (& OLC)
Rembt, William E., Sgt.
Richardson, Donard R., M/Sgt. (& 2 OLC)
Riley, Earl F., Lieut. (& OLC)
Rogers, Tom P., S/Sgt.
Romig, Eugene A., Maj. (& OLC)
Ross, James R., Lieut.
Rounds, Gerald L., Lieut. (& 13 OLC)
Rudder, Carl F., Maj. (& 12 OLC)
Ruiz, Ernest C., Lieut.
Rush, Eddie P., Sgt.
Sanders, Lyman A., Jr., Lieut.
Sanders, Richard C., Col.
Scalpone, Joe D., Capt. (& 5 OLC)
Schauer, Louis A., Lieut.
Shaw, William D., Lieut.
Scherr, Jerome A., T/Sgt. (& 11 OLC)
Schleeh, Russell E., Capt. (& 3 OLC)
Schnier, Robert F., Lieut.
Schrom, James R., Lieut.
Scigliano, Frank J., Sgt.
Seeley, Harvey M., Lieut.
Sells, William D., Lieut.
Sharpe, Allen A., Sgt. (& OLC)
Shelton, Charles E., Maj.
Shoup, James F., T/Sgt.
Smith, Carl G., Lieut.
Smith, George P., T/Sgt.
Smith, Max E., Lieut. (& OLC)
Smith, Roy Q., T/Sgt. (& 3 OLC)
Sparger, Henry M., Lieut.
Spear, Peter H., Lieut.
Steininger, Albert F., S/Sgt.
Stephen, Willard W., S/Sgt. (& 3 OLC)
Stephens, Roger W., T/Sgt.
Stevens, Milton A., T/Sgt. (& 3 OLC)
Stokes, Robert E., Jr., Cpl.
Storer, Charles B., S/Sgt. (& OLC)
Stouse, Harold L., Capt. (& 2 OLC)
Straus, John, S/Sgt.
Stream, Charles T., S/Sgt. (& 11 OLC)

(Continued on next page)

Lt. Joseph Sarnoski

Capt. W. E. Jacobs

Lt. Andrew Kundrat

Lt. Edwin J. Field

Lt. P. V. Williams

Brig. Gen. B. F. Giles

Roll of Honor

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

Strickland, Joseph M., Capt. (& 2 OLC)
Stupka, Raymond J., M/Sgt.
Suchs, Ray G., Lieut. (& OLC)
Sullivan, James F., Jr., Lieut.
Sykes, Victor G., Sgt.
Sylvester, Robert B., M/Sgt.
Taibl, Howard A., S/Sgt.
Talbot, Thomas J., Lieut.
Tappan, Robert E., Lieut.
Tedford, Thomas E., S/Sgt.
*Teinowitz, Norman P., T/Sgt. (& 3 OLC)
Terry, Derwin D., S/Sgt.
Terwilliger, Paul E., Lieut.
Thomas, Henry M., Cpl.
Thorpe, Gordon Albert, Sgt. (& 3 OLC)
Thurston, Bernays K., Lieut. (& 2 OLC)
Toluse, Joseph A., T/Sgt.
Tressel, Robert E., Lieut.
Tupper, Therson S., T/Sgt. (& 3 OLC)
Van Hoose, Leigh, S/Sgt.
Varn, William C., T/Sgt.
Veith, Pierce L., Lieut. (& OLC)
Vlahakes, Peter L., Lieut.
Wachs, Vincent F., S/Sgt.
Waits, Oscar L., T/Sgt.
Wall, Hardy A., Cpl.
Walsh, James H., Col.
Warminski, Zygmund C., S/Sgt. (& OLC)
Weaver, Sam E., T/Sgt.
Weinfurther, Regis D., Sgt.
Werner, Crowell B., Lieut. (& OLC)
West, Leonard A., Lieut.
Wichner, Glen O., S/Sgt.
Wilder, Donald M., Lieut.
Willard, Harlow E., Capt. (& OLC)
Williams, Paul V., Lieut. (& 3 OLC)
Williams, Robert L., Lieut.
Wilson, John B., Capt.
Witt, Macon B., S/Sgt.
Wolfe, Merritt C., Lieut.
Wright, James Smith, Capt. (& OLC)
Wu Chu, Lieut.
Yakimovicz, Frank G., T/Sgt.
Yarbrough, Daniel E., Lieut. (& OLC)
Youngblood, Rufus W., Sgt.
Zehrer, Carl J., T/Sgt.

OAK LEAF CLUSTER TO AIR MEDAL

Adams, William B., Lieut. (3rd)
Agee, James R., Sgt. (4th)
Alexander, Ralph, S/Sgt.
Alifano, Elmer J., S/Sgt.
Allen, Chester M., Sgt.
Anderson, Roland V., Sgt. (3rd)
Anesi, Roy J., T/Sgt.
Applee, Frank H., S/Sgt. (3rd)
Ascol, Holiel, S/Sgt.
Auger, Clifford M., Pvt.
Austin, Wayne F., S/Sgt.
Avdevich, Fillmore, Lieut.
Baker, Francis W., T/Sgt.
Baker, William E., S/Sgt. (3rd)
Baldassare, Walter E., Sgt.
Bargdill, Donald C., Sgt.
Barnes, Cecil G., Sgt.
Barnes, Charley, Sgt.
Barnes, Roger T., S/Sgt. (3rd)
Barton, James D., S/Sgt.
Batterson, Frank L., S/Sgt.
Baur, Jack C., Lieut.
Beane, Walter O., Jr., Lieut.
Bearden, R. T., S/Sgt.
Beckham, William A., Sgt.
Behr, Thomas S., Lieut.
Benham, Lenwood E., Pfc.
Bennett, Alexander S., S/Sgt.
Benson, Bernard E., Lieut. (2nd)
Benson, Kennedy, B., Capt. (2nd)
Bertsch, Forest W., S/Sgt. (3rd)
Bickett, George L., Jr., Sgt.
Billman, Robert J., T/Sgt.
Bixby, Carl, Sgt.
Blair, Alfred D., Lieut. (2nd)
Blair, Floyd R., Sgt. (2nd)
Blakeslee, Donald J. M., Maj. (3rd)
Blue, Maxwell A., Sgt. (4th)
Bober, Nick, Sgt. (3rd)
Bobinski, Henry P., Sgt. (2nd)
Bolle, Norman N. V., Lieut. (2nd)
Borostowski, Benedict B., T/Sgt. (3rd)
Boucher, Raymond, Gerald, Sgt. (3rd)
Boughton, Edwin M., Lieut. (5th)
Boyte, George Bryan, S/Sgt.
Bradford, William B., S/Sgt.
Bragg, Kendrick R., Jr., Lieut. (4th)
Braun, George T., S/Sgt.
Broadwell, Walter J., Capt. (2nd)
Brock, John Q., Pfc.
Browe, Robert E., Sgt. (3rd)
Brown, Addison L., Lieut. (2nd)
Brown, George R., S/Sgt.
Brown, Richard C., Lieut. (2nd)
Brown, Therman D., Capt.
Brown, Vance, S/Sgt.
Brum, Herbert L., T/Sgt. (2nd)
Brunnell, George A., S/Sgt.
Bryant, Norman, Lieut. (3rd)
Bull, Charlie, Lieut.
Bullard, Nolan K., T/Sgt. (2nd)
Burchard, Eugene, Pfc.
Burger, John R., Lieut.
Burkholder, Lloyd A., Sgt. (3rd)
Bush, Edwin R., Lieut. (2nd)
Butler, William E., T/Sgt. (3rd)
Byrne, Joseph J., S/Sgt.
Carignan, Richard C., S/Sgt. (3rd)
Carr, Joseph P., Lieut. (3rd)
Carter, Joseph W., Capt. (2nd)
Casey, William J., Capt. (3rd)
Castellotti, Julio G., S/Sgt.
Champion, John Homer, Lieut. (2nd)
Chapel, Norva C., Cpl. (2nd)
Chappell, Eldon A., Lieut.
Chenoweth, Robert N., Lieut.
Chrisler, Charles W., Jr., Lieut.
Christmas, Charles, Capt. (2nd)
Clark, Ernest B., Sgt. (3rd)
Clark, James A., Lieut.
Clark, James C., T/Sgt.
Clarke, Howard A., S/Sgt. (9th)
Cliburn, Charles, Lieut. (3rd)
Cockrell, Claude E., Sgt. (3rd)
Colpitts, Keith F., S/Sgt. (2nd)
Conchiglio, Joseph F., Sgt. (2nd)
Coulter, Robert E., Major (3rd)
Cronkhite, John L., Lieut. (2nd)
Cummings, Joseph F., Sgt. (3rd)
Cundick, Beryl R., Sgt. (3rd)
Darelius, Roderick G., Capt. (2nd)
Davenport, John D., Lieut.
David, Herman W., Sgt. (2nd)
Davis, Jimmie N., Sgt. (2nd)
Dawson, Ralph F., Capt.
Decker, Kenneth R., Sgt. (3rd)
Dillon, Stephen P., Lieut. (3rd)
Dimuzio, Carmen C., Sgt. (2nd)
Disalvo, Joseph F., Lieut. (3rd)
Dixon, James V., Sgt.
Dodson, Joe E., Lieut. (2nd)
Dowd, William H., Lieut. (2nd)
Dewnswell, John R., Lieut. (3rd)
Drake, Clarence H., Lieut.
Duke, Paul L., Sgt.
Dunham, Howard M., Lieut.
Eaton, Henry R., S/Sgt. (2nd)
Ehrenreich, Abraham A., Sgt.
Ehrhardt, Clark A., S/Sgt. (3rd)
Eisenbrown, Walter Thomas, Lieut. (3rd)
Elfrink, Theodore J., Sgt. (2nd)
Epperley, Isaac L., Jr., Lieut. (2nd)
Evans, Roy W., Capt. (2nd)
Ewing, Warren J., Sgt. (3rd)
Ezzard, Richard F., Capt.
Ferebee, Thomas W., Lieut. (3rd)
Fischer, Philip S., Lieut. (2nd)
Fitzgerald, James P., Jr., Sgt.
Flack, Rudolph E., Maj. (3rd)
Flint, Richard Q., Sgt.
Freligh, Gerald C., Sgt.
Fry, George, Sgt. (3rd)
Gallup, John A., Lieut.
Garner, Henry H., Sgt.
Gates, James F., S/Sgt.
Gemmill, Zane A., Sgt. (3rd)
Gibson, Roy H., S/Sgt. (3rd)
Goldstein, Daniel, T/Sgt. (3rd)
Goldstein, Harry, T/Sgt. (3rd)
Goldstein, Otto, Lieut. (2nd)
Gorton, Theodore H., Capt. (2nd)
Gowan, Zackie T., Jr., Sgt. (3rd)
Graham, George R., Cpl.
Granoff, John H., Sgt. (2nd)
Haas, Theodore T., Sgt. (3rd)
Hall, Jarvis E., T/Sgt. (3rd)
Halsey, Gilbert O., Capt.
Hammond, George R., T/Sgt. (2nd)
Hardwick, James W., Lieut. (3rd)
Harris, Willis D., Sgt. (3rd)
Harverson, Wilmer J., Sgt. (3rd)
Hawkins, Robert E., Sgt. (2nd)
Hazleton, Walter L., S/Sgt. (3rd)
Hector, William D., Lieut.
Hendry, Leonard L., Sgt.
Hillard, Lawrence B., Sgt. (3rd)
Hoffman, Carl David, Capt.
Hoffman, Francis P., Sgt. (2nd)
Holland, Edward W., Cpl.
Holstrom, Everett W., Capt.
Hooks, Claude D., Sgt. (2nd)
Hudson, Edward C., Sgt.
Huggins, Harry W., Sgt. (3rd)
Hughes, Aquilla B., Jr., Capt.
Hughes, Warren K., Sgt. (2nd)
Hunter, William, Lieut. (2nd)
Ijams, John H., Jr., Lieut. (3rd)
Jackman, Robert J., S/Sgt. (2nd)
Jacobs, Willis E., Capt.
Johnson, Jerry D., Sgt. (3rd)
Johnston, Joseph P., Lieut. (2nd)
Jones, Garret J., Lieut.
Jordan, George W., Lieut.
Justice, Glen E., S/Sgt.
Kehoe, Nicholas B., Jr., Lieut.
Kellams, Albert W., Lieut. (2nd)
Kemble, Donald W., Sgt. (2nd)
King, Clarence V., T/Sgt. (2nd)
Klimazepski, Thomas M., Sgt. (3rd)
Kundrat, Andrew, Lieut.
Kurtz, Raymond N., Lieut. (3rd)
Lancaster, Jason C., Sgt. (3rd)
Leary, Edward J., Sgt. (3rd)
Leland, Glen V., Jr., Lieut.
Littlewolf, Fred J., Pvt. (2nd)
Locke, Sumner E., Lieut.
Loudermilk, William A., Lieut. (2nd)
Ludolph, George L., Lieut. (2nd)
Lundy, James T., Lieut. (3rd)
Lupica, Peter G., Sgt.
MacTaggart, Irving Paul, Capt. (2nd)
McCauley, Anthony C., S/Sgt. (2nd)
McCorkle, Howell P., Lieut. (3rd)
McDaniel, Abner O., Lieut.
McKeown, Glen E., Lieut. (2nd)
Mahan, Lloyd J., S/Sgt. (3rd)
Mansell, Morris E., Jr., Lieut. (3rd)
Markle, Andrew, S/Sgt. (3rd)
Masters, Karl L., T/Sgt. (2nd)
May, Otis W., Lieut.
Moffitt, Robert M., Sgt. (3rd)
Moore, Horace E., Sgt.
Moore, James W., Lieut.
Mullane, Vincent C., Sgt. (2nd)
Murray, Gilbert A., S/Sgt. (3rd)
Nardine, Howard H., S/Sgt. (3rd)
Nastal, Theodore J., Sgt. (2nd)
Nease, Charles M., Sgt. (2nd)
Neff, Edward R., Lieut. (3rd)
Nelson, Carl C., Sgt. (3rd)
Nissen, John C., Capt.
Nixon, John L., Sgt. (2nd)
Ogle, Kenneth L., Jr., Lieut.
Ojala, Russell L., Sgt. (2nd)
Oliver, Chester H., Sgt. (2nd)
Oliveros, Charles Gard, Lieut. (2nd)
Olson, Carl E., Sgt. (2nd)
O'Neill, Ralph, Sgt.
Ott, Lawrence R., Lieut. (3rd)
Owen, John E., S/Sgt. (2nd)
Padgett, Charles A., Lieut.
Palmer, Philip T., Lieut. (2nd)
Parker, Guy E., Sgt.
Pawlick, Frank J., Sgt.
Pepe, Jan, Lieut. (2nd)
Perri, Steven, S/Sgt. (2nd)
Pitts, John Lee, Jr., Lieut. (3rd)
Pollock, Eugene J., Lieut. (3rd)
Prata, Pasquale, Sgt. (3rd)
Price, Paul E., Sgt. (3rd)
Price, Philip A., Sgt.
Quate, Morris T., Sgt.
Ray, Levon L., Lieut. (3rd)
Rebello, Francisco, Sgt. (2nd)
Remmell, Eugene J., T/Sgt. (3rd)
Rex, John L., Jr., Lieut.
Ribeck, Joseph, Sgt. (3rd)
Richards, Glenn C., Pfc. (2nd)
Roberts, Mark E., Cpl.
Roberts, Thomas B., Sgt. (3rd)
Rogers, James P., Lieut.
Rose, John F., Sgt. (2nd)
Roviaro, Ermando P., S/Sgt. (3rd)
Ryan, William J., Lieut.
Schierholz, Charles C., T/Sgt.
Schmoldt, Harold D., Capt.
Schnorr, Richard F., Sgt. (2nd)
Schu, Matt., S/Sgt.
Schultz, Carl E., Lieut. (13th)
Sedore, Richard S., Sgt. (3rd)
Seed, Andrew M., Sgt.
Senteney, Robert W., S/Sgt. (2nd)
Siboski, William R., S/Sgt. (2nd)
Sierks, Richard J., Capt.
Skipp, Francis E., Jr., Lieut.
Slocum, Paul J., Capt. (2nd)
Smartt, Clare M., Capt. (8th)
Smiley, Charlie O., S/Sgt.
Smith, Douglas H., S/Sgt. (2nd)
Smith, Edward H., Sgt. (3rd)
Smith, Edwin G., S/Sgt.
Smith, Wilfred L., Lieut. (3rd)
Sparks, Frederick H., T/Sgt.
Spears, Vance H., S/Sgt.
Spellman, Elwood E., Sgt. (2nd)
Stolzer, Bill M., Sgt. (3rd)
Stone, Benjamin J., Jr., Lieut. (2nd)
Summers, John C., Lieut. (3rd)
Sutin, Nathan, Lieut. (2nd)
Swedo, Edward W., Sgt. (2nd)
Taylor, Thomas K., Lieut. (3rd)
Teague, Howard K., Capt.
Teufel, Harry M., Sgt.
Thew, Chester F., T/Sgt.
Thom, Albert N., Lieut.
Thomas, Jack P., Sgt. (2nd)
Thompson, Charles S., Jr., Capt.
Thompson, Clyde A., Capt.
Thompson, Howard R., Sgt.
Thompson, John A., Sgt.
Thompson, Woodford R., Jr., Lieut. (2nd)
Tittsworth, John G., Sgt. (3rd)
Townsend, George H., Sgt. (3rd)
Turnbull, John I., Capt.
Tyler, B. Pierce, Sgt. (2nd)
Uhle, Richard B., Capt. (2nd)
Underwood, Aloysius S., Sgt.
Val Preda, Peter, Lieut.
Van Ausdal, James F., Lieut.
Van Kirk, Theodore J., Lieut. (3rd)
Velan, Robert C., Lieut. (3rd)
Vincent, Ralph L., Lieut. (3rd)
Wallence, Thaddeus J., Sgt.
Wallick, Kenneth K., Capt. (3rd)
Ward, Harold E., Lieut. (2nd)
West, Kent R., Sgt. (4th)
White, William T., Lieut. (2nd)
Wikle, Jess O., Jr., Lieut. (3rd)
Wiley, Charles R., Lieut. (3rd)
Wilkin, Russell S., Lieut.
Wilks, Rayburn A., Lieut.
Williams, Paul I., Lieut.
Williams, Paul R., Cpl.
Williams, Richard A., Sgt. (4th)
Willis, Robert H., Lieut.
Wills, Milton E., Jr., Lieut.
Wisnowaty, Edward B., Sgt.
Witt, Hinton C., Sgt. (2nd)
Wojciechowski, Henry, Sgt. (3rd) ☆

Lt. Carle H. Esmay

Lt. Pierce L. Vieth

Capt. Andrew J. Bing

Lt. Paul Pestel

Lt. Jess F. Baker

S/Sgt. A. A. Rockafellow

AAF

ARMY AIR FORCES

PEN & PENCIL PILOTS

By Lieut. Wm. T. Lent

Pencil Pilot Adams works in the registrar's office at base hospital. His missions range from routine flights over Form 52-A (hospital register) to more complicated sorties with Form 72-A (consolidated morning report of wards). At the moment he is being strafed by a sergeant's wife seeking her new baby's birth certificate.

Sergeant Smith of the unit personnel office has hung up more than 100,000 hours with a Dixon No. 2 (medium lead). A late POM order finds this veteran of the Pen and Pencil Corps on a night flight over mountains of service records to help prepare case histories which must be completed before a squadron can move overseas.

At an advance base somewhere in the South Pacific, Squadron Clerk Riley encounters some of pencil aviation's toughest problems. With make-shift equipment, this squadron clerk does a vital job while the boys "upstairs" get all the headlines. Right now the CO is chewing him out for failing to give him credit for twelve hours' flying time last month.

Sergeant Barnes of the finance office flies the pencil "milk run," being charged with bringing enlisted payrolls up to date month in and month out. This job usually involves strong fighter interception in the form of departing GIs seeking travel pay and partial payments, and it's a major victory each month just to get over the target and out again.

Corporal Cohen of the base administrative inspector's office pauses between check-flights over squadron funds and a bull session with a transient bombardier to receive the office's version of the Purple Heart. The corporal qualified for the award by suffering a broken fingernail while piloting the heavy Monroe adding machine.

Mrs. Barney M. Giles, 1st V.P.

Mrs. Carl A. Spaatz, 2nd V.P.

Mrs. J. T. McNarney, 3rd V.P.

THE NATIONAL ASSOCIATION OF

Women's volunteer groups in the AAF unite to formulate a present and post-war welfare program on a national scale.

WOMEN'S volunteer groups will play an increasingly important role in the present and post-war welfare program for the men of the Army Air Forces and their families. This is borne out in the announcement that the hundreds of women volunteers now serving at almost every AAF station are to be united in a national organization known as the National Association of Air Forces Women, with headquarters in Washington, D. C. Mrs. H. H. Arnold is president.

Wives, mothers and daughters of AAF officers can now retain membership in their own national group, regardless of the usual pillar-to-post transfers that punctuate the existence of Army families. Membership in the new organization, the first of its kind in the AAF on a national scale, is extended to women of immediate families of officers on active duty with the Air Forces; to women of immediate families of retired or deceased officers and, according to the policy at each base, to the women officers of the AAF.

Women who can qualify for membership and who are not now members of organized women's clubs of AAF stations may become members-at-large of the NAAFW. Membership information can be obtained by writing to the Secretary, National Association of Air Forces Women, Box 23, Fort Myer, Va. Annual dues are $1.00.

The association was formed to provide a medium through which all volunteer activities of the women in the Air Forces could be coordinated. Included in the National Council of the new organization are AAF women representing the Red Cross, Army Emergency Relief, Spotters, and AAF commands and Air Forces, including those overseas. This group will serve as an advisory board to train its members in a unified system of volunteer work and direct the standardization of major activities undertaken.

Officers elected to serve on the association's executive board are Mrs. Barney M. Giles, Mrs. Carl Spaatz and Mrs. J. T. McNarney, vice-presidents; Mrs. Harold M. McClelland, treasurer; Mrs. B. C. Nowland, secretary; Mrs. B. F. Giles, Mrs. J. M. Bevans and Mrs. Millard Libby, assistant secretaries, and the following directors: Mrs. C. B. B. Bubb, Red Cross; Mrs. Barney M. Giles, AER; Mrs. H. W. Bowman, Spotters, and Mrs. Harold W. Grant, public relations.

ONE of the chief responsibilities of the new group will be to assist in the rehabilitation of Air Forces personnel. In some hospitals volunteers are already working in close cooperation with the AAF's convalescent training program, teaching languages and other specialized subjects to hospitalized men. There will be greater demand for their services in this field as the rehabilitation program expands.

To Air Force women the group also has an obligation. Families arriving at a new station must be located, welcomed to the base and encouraged to serve the AAF and local community in the best possible way. Many branches of the Spotters organization which, as the name implies, are responsible for "spotting all AAF women and helping to find a spot for them," have served as personnel agencies or clearing houses for AAF women in many sections of the country. Their files list personal qualifications, training and experience of the women enrolled, making it possible for groups such as AER, Red Cross and other departments to fill specific jobs with qualified volunteers—whether it's rolling bandages or playing the organ for the post chaplain—at a moment's notice. Or frequently if the soldier's wife is in need of financial assistance, the AER placement division finds her a paid job on or off the post.

Expanding and coordinating this work of the Spotters, AER, Red Cross and the scores of additional local projects now undertaken by AAF women's clubs will be the major function of the NAAFW.

"Although the organization is new," explains Mrs. Arnold, "much of the work being done by our clubs throughout the country dates from long before the war. Many AAF women's clubs have been in operation since the earliest beginnings of army aviation. Therefore it is logical to have the women's clubs act as the hub of the wheel around which all women's activities in the AAF should rotate. The national association will merely draw them together in mutual aims and interests.

"One of the outstanding examples of the contribution that can be made by these groups is that of the Hickam Field Woman's Club. Within minutes of the Jap attack on that field, our women were in the hospitals caring for the wounded, collecting all the blankets they could round up anywhere on the island, evacuating children from danger zones and caring for them until distressed parents could

Mrs. B. C. Nowland, Secretary

Mrs. H. M. McClelland, Treasurer

AIR FORCES WOMEN

Mrs. H. H. Arnold, President

NATIONAL ASSOCIATION OF AIR FORCES WOMEN

Executive Board ☆ Advisory Board

WOMEN'S CLUB OF AAF STATION (Member of National Association)

Major Responsibilities of Women's Groups

A.E.R.

Rehabilitation.

Provide hospitalization and medical care.

Provide layettes.

Housing problems.

Chaplain's aides.

Personal calls on bereaved families.

Staff assistants to work with Personal Affairs Division in carrying out functions of its Relief, Advice and Claims, and Placement and Education Branches.

SPOTTERS

Send questionnaires to all new members. Keep personal files of past experience and special qualifications of women enrolled.

Supply upon request trained personnel to other departments.

PUBLIC RELATIONS

Collect and release locally all information on volunteer activities.

Work in coordination with national public relations director.

RED CROSS

Coordinate with Red Cross field director and local Red Cross chapter in furnishing volunteer workers and organizing Red Cross study courses.

Day nurseries.

Mending for hospitals.

Motor transport.

Production: bandages, knitting, etc.

Canteen work.

Junior Red Cross.

SUGGESTED ACTIVITIES

Sponsoring:

- NCO wives' clubs.
- Aviation Cadet wives' clubs.
- Social activities.
- Study clubs.
- Flower committees for hospitals.
- Garden clubs.
- Lending libraries.
- Junior dances.
- Entertainment for post children.
- Post Christmas trees.
- Sunday schools.
- Boy and Girl Scout troops.
- Athletics for club members.
- "Music for the Services."

take over, driving cars and trucks rushed to emergency aid, preparing hot food and drinks in record time, and generally helping to bring order out of the chaos that was Hickam Field. What they accomplished was almost miraculous, but they were able to do it only because they were foresighted Air Force women who had already been trained along these emergency lines.

"It is not the intention of the National Association of Air Forces Women to restrict in any way the varied projects now under way at our station. Rather, we want merely to be helpful to the different groups and to give suggestions when they are requested. The many women's clubs *must* remain flexible if they are to solve local problems. We do hope, however, to give direction to the activities of these thousands of volunteers in such a way that *our* obligations to our men and the families of our men in the Air Forces are fully met at every station in the AAF." ☆

PREPARE FOR INSPECTION

TIMELY ADVICE FROM THE AIR INSPECTOR

Administrative Communication ☆ Technical Tactical

Matters presented here are informative only and are not to be considered as directives.

▶ *Prepare for the Worst in Combat:* War is no picnic. It does not mean taking off leisurely from long, well-lighted runways in good weather, flying to a target and dropping bombs, stifling a yawn, and then flying back to an effortless landing at a big base where all maintenance facilities are available.

We honestly don't believe anyone has such a conception of aerial warfare, but we mention it to emphasize the importance of tactical inspections to determine whether organizations going overseas are prepared for the worst. Following are some questions which fighter and fighter-bomber units should be able to answer with a strong affirmative before leaving the States:

Can a squadron "scramble" from dispersed positions in a minimum time, take off, assemble quickly while climbing and still maintain combat formation?

Have pilots practiced rapid take-off, assembly and landing under conditions of minimum lighting?

Have pilots received practice in operating out of small fields?

Have all pilots demonstrated their ability to fly without radio aids to a predetermined point at the limit of the radius of action of the airplane with which equipped, arriving at a predetermined time?

Are pilots adequately trained in operating aircraft under conditions where difficulties might be encountered due to icing?

Do the radio mechanics CNS (SSN-759) understand the problems of operation and maintenance of radio and power equipment under extreme conditions of mud, rain, dust, heat and cold?

Do the maintenance crews understand problems of maintenance under extreme conditions?

Are maintenance crews lost without complete equipment, or are their leaders resourceful?

Can ground crews "bomb up" in dispersed positions quickly and efficiently when given action orders without prior warning?

Has adequate instruction been given in woodsmanship to the end that crews forced down in jungle, desert or arctic territory will be capable of making the best use of all means available to care for themselves and return to the base?

▶ *Beat the Mosquito to the Draw:* When a B-17 tail gunner on a South Pacific island was asked the "recipe" for living to be an old man in the Army Air Forces, he grinned and said, "Think faster than a Jap," then added, "—and think faster than a skeeter."

By "skeeter" the gunner meant the *Anopheles* mosquito, which packs a knockout wallop of malaria. And he wasn't kidding about thinking faster than a mosquito. The malaria-carrying mosquito is out for blood, and each individual soldier should do everything he can to outwit his foe—use sleeping nets, protective clothing and repellents, stay out of malarious villages and get behind screens at night.

Some crew members believed they were safe when they slept inside their bomber one night without nets, but the mosquitoes thought faster than they did and invaded the ship. Ten days later the Japs could cross off some more Yanks as casualties without having fired a shot.

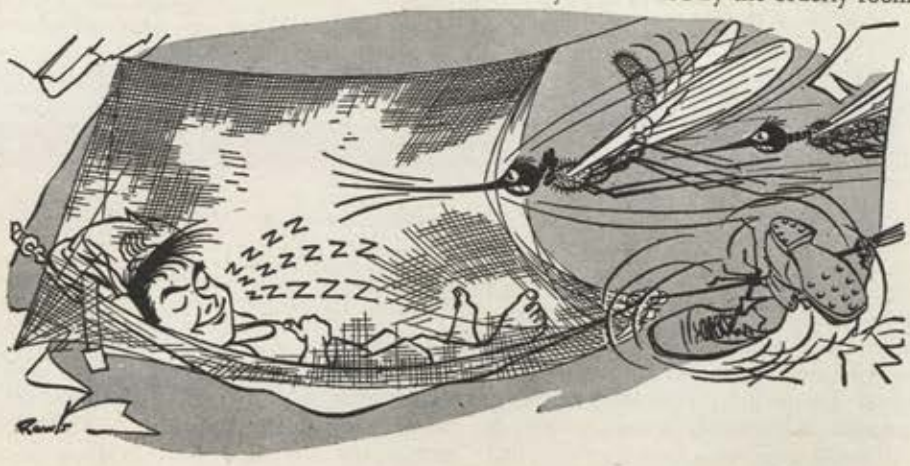
Malaria control is important—just as important as having ammunition in your guns when you meet the enemy. We are not fighting this war in health resorts, but in some of the most malarious regions of the world. North Africa, southern Europe, Burma and the islands of the southwest Pacific are all dangerous endemic areas.

The subject of malaria control is thoroughly discussed in WD Cir. 223,-1943, and Training Circular 108 21 September 1943. We mention it here to help make as many individuals as possible—both officers and enlisted men—conscious of it, and to remind especially the inspectors checking personnel destined for overseas duty to look into malaria control training.

▶ *Hit Kits:* One of the major forms of entertainment in many isolated areas overseas is group singing—the old American barbershop quartet multiplied. But too many stations in the United States apparently have the idea that troops have to go overseas before they can start singing and be provided with Army Hit Kits for stimulating this form of recreation. A recent survey in the continental United States indicates that although a majority of the enlisted men contacted desired to sing, 76 percent had never seen a copy of the Hit Kit.

Distribution of the Army Hit Kit each month should be accomplished immediately upon receipt by the post, camp or station special service officers. The commanding officers of posts, camps and stations, isolated detachments, and units not receiving copies of the Hit Kit should advise the Director, Special Services Division, Washington 25, D. C., indicating the number of packages required. Each Hit Kit package, containing 50 lyric folders and one music book, is designed to service a complete unit of from 150 to 250 men. Units of less than company strength should base their requests on one lyric folder for each four men. (ASF Cir. 126, 19 November 1943.)

▶ *Cross Checking Records:* POM inspectors, checking organizations bound overseas, note as one of the most common deficiencies the failure of organizations to provide for a final cross check where all records are assembled and compared. The records should include those normally maintained by the orderly room,



operations and medical sections. All personnel records should be checked with the individuals concerned.

▸ *More Tips on Food Conservation:* Conservation of food has been discussed in these columns before, but some interesting points brought out in a conference of 1st Air Force mess officers are good reason for bringing up the subject again.

These officers stressed the following facts:

Failure to prepare food the way men like it is a direct cause of waste.

Failure to consume first the oldest issue of food results in spoilage.

Preparing meats at too high a temperature and too far in advance causes shrinkage as high as thirty percent. Improper preparation of meats also causes men to complain that they are not getting enough. Using a fork to turn meats causes bleeding, with consequent loss of juice, shrinkage and loss of flavor.

Failure to use a fruit juice extractor in squeezing citrus fruits results in the loss of more than fifty percent of the juice. It was pointed out that although extractors were not a quartermaster issue they could be purchased from unit funds.

▸ *Keep the Ball Bearings Rolling:* The Army's policy on conservation is to save on everything, but right now some extra effort is required on ball and roller bearings. There is a serious shortage in practically all types. The shortage is being greatly aggravated by lack of adequate cleaning and lubrication, and improper handling, inspections and adjustments. (Letter AG 412.5 (4 November 43) OB-P-SP-MNT-MB-A, 12 November 43.)

▸ *Technical Order Index:* Numerous reports from the field indicate that maintenance personnel are not always familiar with the existence and use of TO 00-1 (Technical Order Index). This publication, issued every other month, is the foundation of all Technical Order files, and thorough knowledge of its use is necessary for adequate maintenance of AAF equipment. ☆

INSPECTING THE INSPECTOR

How many of you technical inspectors—and other inspectors, too—have read Par. 18, Sec. V of TO 00-15-1? It contains some excellent philosophy on inspection.

Are you checking to see if there is over-ordering of vital equipment?

Administrative inspectors, are you overlooking inspection of the activities of special service officers?

When investigating a complaint by an individual do you check on the matter only with the individual, or do you question others in similar circumstances to obtain a cross-section or overall picture?

What is the status of the dental treatment of the men in your organization? Many units still have a number of men with serious dental defects on the day that movement orders are received.

HERE ARE THE ANSWERS

Q. How many distinctive sleeve patches are authorized for issue to men in job classifications of armament, communications, engineering, photography and weather?

A. Six. Par. 1, AAF Reg. 35-12, 23 July 1943, authorizes distinctive sleeve patches for wear on the coat, field jacket, shirt (when worn without the coat) and fatigue uniforms. Enlisted men are issued one coat, one field jacket, two fatigue uniforms, and are therefore entitled to six sleeve patches. Also see AAF Ltr. 35-16, 26 November 1943.

☆

Q. Is the size of the gas mask still required in the service record?

A. The entry of the size of the gas mask in the service record (WD AGO Form No. 24) serves no useful purpose and will be discontinued (except for gas mask spectacle type, which entry is required by WD Cir. 282, 1943). (WD Cir. 287, 1943.)

☆

Q. It has been noted that little effort is being taken to insure that all open lines and fittings on demountable engine sections are taped or plugged to prevent the entrance of foreign matter. Par. 5, TO 01-1-22 does not completely cover the situation. What TO does?

A. TO 04-1-14, dated 18 November 1943, Subject: "General—Use of Boss, Cap, and Tubing Seals," contains specific information on the proper sealing of all lines, fittings and tubing.

☆

Q. To whom are indorsements made in service records of personnel assigned to Overseas Replacement Depots?

A. Headquarters, Army Air Forces, has informed AAF overseas replacement depots that indorsements of service records to overseas replacement depots will read that personnel is assigned to the shipment number and not to the commanding general or commanding officer of the port, unless personnel is sent to a port replacement pool, in which event, the indorsement will read that the personnel is assigned to the replacement pool of the particular port of embarkation.

Q. Is there a requirement that exchange coupon books be available for sale?

A. No. Par. 13 c (1), AR 210-65 authorizes the sale of coupon books, but sale of them is not mandatory.

☆

Q. What insignia is authorized to be embroidered upon uniform clothing?

A. The insignia of grade worn on the shoulder loops may be embroidered. (Par. 22g, AR 600-35.)

Q. What are the provisions for awarding of the Good Conduct Medal?

A. The medal may be awarded for exemplary behavior, efficiency and fidelity to each enlisted man of the Army of the United States who on or after 27 August 1940 had or shall have completed three years of active Federal military service, or after 7 December 1941 has or shall have completed one year of continuous active Federal military service while the United States is at war. This 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. A recommendation for the award ordinarily will originate with the company commander. (AR 600-68, 4 May 1943.)

TECHNIQUE

A Review of Technical Developments in the Army Air Forces

The "Hamp" at Wright Field.

INSPECTING THE

Jap 'Hamp'

On the flying line at Wright Field is a Jap fighter plane, the "Hamp," a late model of the Zero family. It came from Australia where a group of Yank mechanics assembled it from parts of five Zeros shot down in the battle for the Buna airstrip. It crossed the Pacific by boat, and was rebuilt at Oakland, Calif., where Col. J. M. Hayward, chief of the Technical Data Laboratory, Materiel Command, took it over for the Army and flew it to Wright Field for flight tests and evaluation reports.

Army tests pilots will soon take it up to find out how good it actually is. The test plans calls for "air duels" with American fighter planes and bombers, to learn its combat tricks, advantages and weaknesses so American pilots battling other Zeros can know where to hit first and hardest. Once the flight routine is finished and reports are checked the plane probably will be broken up in structure tests to reveal its construction secrets.

Outwardly it has some marked differences from the Zeke, earlier model Zero: Squared-off wing tips (like the P-51) give it a three-foot shorter wing span; the cowling which circles its engine is smaller in diameter; the airscoop which cools the engine is atop the cowling instead of below; the ailerons are shorter; and 100 horsepower has been added to its engine. The "Hamp" has a maximum speed of 350 mph at an altitude of 17,000 feet.

Used widely in the South and Southwest Pacific as a land-based and carrier-based plane, the "Hamp's" all metal structure is light and fragile. The construction is generally the same as our own but the skin covering is much thinner. This is evidenced in flight when the wings wrinkle and scare most pilots who fly the ship for the first time. Yet the wing covering is tough. Apparently the Japs are using a new kind of aluminum-alloy for this purpose.

Colonel Hayward and his staff have discovered that the plane has very low wing loading which means extremely high maneuverability. The brakes are ineffective, and regardless of how much pressure is applied, the ship keeps on rolling. It has a hook for carrier operation.

There are no warning lights in the cockpit to tell the pilot when he should switch over to auxiliary gasoline tanks, but it is easy to get pressure in the tanks which injects fuel through carburetors and into engine for easy pick-up. The pilot permits the main tanks to run dry then snaps on auxiliaries.

"A bit risky, maybe," Colonel Hayward points out, "but a highly maneuverable fighting plane."

The ship carries four tanks, a belly tank, fuselage tank and two wing tanks. It has a range of about 1,200 miles.

The landing gear and flap levers are located in the right and to the rear of the cockpit, differing from ours which are on the left. The throttle is conventional, although the mixture handle works in the direction opposite that in American-built aircraft and pilots find it harder to manipulate. The cockpit is very uncomfortable since it was built for a small person. Everything is in easy reach, but the outstanding feature is a structural difference. The wing and cockpit are all one structure with the fuselage tail section and engine mounts joined onto it. Experts can't say how good the idea may be until they run the break down tests.

Also inside the cockpit is a hook adjacent to the pilot's seat for attachment of a static line which automatically operates the pilot's parachute in bail outs. There is no emergency release for the canopy cover although it can be opened manually without much effort.

The "Hamp's" Nakajimia Sakae radial, 14-cylinder engine looks like our Pratt & Whitney engines, from which it probably was copied. Everything now on the airplane is Japanese-built except the radio set, oxygen installations, air speed indicator and altimeter which were installed to replace inferior equipment, and make flight testing safer and easier.

The "Hamp" has no armor protection but is armed with two 20 mm cannons in each wing and two 7.7 caliber guns firing forward through the propeller. It has no leak-proof fuel tanks.— **Sgt. Douglas Ingells, AIR FORCE Staff Correspondent, Wright Field.**

Armored Helmets for Bomber Crews

Armored helmets for our bomber crews have been introduced in the 8th Air Force as added face protection against flak fragments.

Two new helmets have been designed by the clothing branch, Materiel Command, to supplement the bullet-proof vests introduced several months ago by Brig. Gen. Malcom Crow, air surgeon for the 8th Air Force. Their need was evidenced by the number of facial burns and injuries suffered by our airmen on raids over heavily concentrated anti-aircraft areas of Berlin and other Nazi cities. Also, a decrease in flak wounds since crew members began wearing the armor suits indicated that further face protection would be helpful.

Design of the helmets grew from the standard M-1 model steel helmet used by all our armed forces, a development of the Ordnance Department. The standard helmet in use, however, did not offer sufficient protection to the neck and face of airmen. Consequently, a new design was needed and representatives of the clothing branch, Wright Field, Maj. John W. Schenck, W. W. Moore and Dr. J. L. Clark, worked in conjunction with Col. Renee Studler and Maj. J. R. Byrd, an assistant of the Ordnance Technical Division, to get a new and better helmet which offered maximum protection.

For several months various shapes, sizes and thicknesses were tried, and resultant tests proved that the new AAF helmet could take considerable abuse. Designers also made certain that the helmet, in addition to its protective qualities, would be comfortable and provide freedom for movement.

Officially designated as the T-2 and the T-3 helmets, the protectors will fit over all standard head-dress and equipment worn by both our Army and Navy flyers.

The T-2 covers a pilot's earphones, microphone, oxygen mask, goggles and head covering. It features a "suspended design" which makes it rest firmly and comfortably high on the head so it doesn't interfere with the wearer's other equipment. An adjustable system of straps and buckles makes it easy to get a proper fit.

The T-2 is a "square design" and resembles a football player's helmet with flaps. It covers the crewman's head, forehead, neck and ears and will resist shell fragments caused by

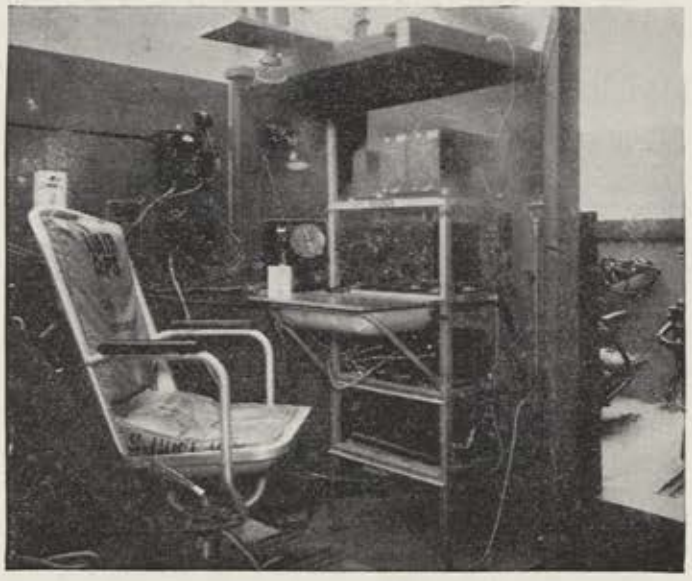
One version of the new helmet is similar to the GI with earflaps, while the other is for compact quarters.

explosive flak shells. The T-3 is more rounded and fits like a skull cap. It is used in limited-space positions in a bomber, such as top and ball turrets where it is practically impossible to wear the larger T-2 type.

The T-3 helmet weighs about two pounds, compared with an approximate three-and-one-half-pounds, weight of the T-2 design. Both helmets are exceedingly tough for their weight. **—Materiel Command, Wright Field.**

Radio Trainer Developed in North Africa

What amounts to a Link trainer for instruction in radio procedure and maintenance has been developed at a North African airbase by Capt. Farno L. Green, communications officer of a B-26 squadron. Capt. Green found that most radio operators knew how to handle separate sets but that they needed additional training in the actual use of the sets as interconnected in a bomber. Since aircraft were too scarce to be used in training he made a model cockpit and radio operator's compartment, installed the same radio equipment and arranged it as in a B-26.



Capt. Green's radio trainer, showing the operator's section (left), the radio apparatus and the cockpit in the background.

The trainer was made from scrap equipment, except for the radio sets, and the job was completed in less than a month, including the higher echelon wiring done by Sgts. Harvey S. Huffer, Jesse Stewart, John Seliga and Thomas T. Tucker.

Subsequent use of the trainer has shown that it cuts training time in half and permits explanation of procedure while the pupil is confronted with exactly the same equipment as in an airplane. After each explanation the pupil benefits from actual practice. In fact, the trainer has several features which

make it superior to an actual airplane for instruction, Captain Green said. It has an interphone jackbox, permitting an instructor to listen in on the two-way conversations between the pupil and a mock control tower. Demonstrations can be observed by eight men at a time, and wiring is left exposed or accessible for tracing by operators and maintenance personnel.

In using the trainer Captain Green found that trained, but inexperienced men often were confused over the operation of the liaison set's trailing wire. Such a wire not being feasible in a ground model, he installed a dummy antenna so that controls had to be set the same as for a trailing wire in order to make contact with the base ground station.

The trainer gives operators practice in hooking up the command set as a substitute for interphone, in event the latter goes out, and Captain Green has familiarized operators with cockpit procedure to enable them to help the pilot or co-pilot when necessary. He also has used the trainer to give pilots and co-pilots more experience, and hence more confidence, in the use of their equipment. The equipment has also been used to train navigators further in the employment of the radio compass, using small transmitters and frequency meters for bearing shooting and plotting fixes.

Captain Green particularly stresses emergency procedure and believes that, since an airplane normally is not in distress and since radio procedure is easily forgotten, each crew member should be run through the trainer at least once a month to keep him prepared for a possible crisis. He explained that an experienced operator sometimes forgets that his liaison set can be set up for voice in case of emergency, unless he receives refresher sessions in such procedure.

The trainer is portable and can be packed easily in three sections and carried in a two and a half ton truck. **— Lieut. William B. Monroe, Jr., Mediterranean Theatre.**

'Magic' Quilt for the AAF

A "magic" quilt which rivals the magic carpet of story book fame has been developed at the Materiel Command Equipment Laboratory, Wright Field.

The Army's "magic" quilt is made of water repellent material, weighs 2 4/5 pounds and is stuffed with chicken feathers. In addition to their warmth, the feathers give the quilt enough buoyancy to serve as a life preserver. When the quilt is folded lengthwise and tied around the wearer's waist, it will sustain a man in water indefinitely. It is now part of Parachute Emergency Kit, Type B-4.

Tie-straps along the edges of the quilt enable it to be set up as a pup tent or hammock, and it also makes a cozy sleeping bag. It can be worn as a coat or poncho by utilizing a slit in the center.

Among the uses of the flotation quilt is the poncho effect when worn as a garment against weather . . .

. . . and as a sleeping bag to protect the lower body.

The quilt when packed makes a bundle only fourteen by twelve inches square and when opened, it measures about four by six. It is olive drab on one side and brilliant orange on the other. The OD makes the quilt inconspicuous when concealment is necessary and the orange makes it valuable for signalling purposes.

The quilt is packed in a water-proof, non-toxic carrying case made of light-weight material and a strap permits the user to sling the unit over his shoulders and carry it easily. The case itself can be used for storing water. **— T. A. Berchtold, Wright Field.**

Tire Press in India

Instead of the three hours formerly required for the mounting of a B-24 nose wheel tire, the job can be done in twenty minutes with a homemade device put together by Staff Sgt. Emil Martinelli (right in photo) and Cpl. Virgil Peoples at an air depot in central India. The tire press has saved the AAF hundreds of man hours in the mounting and demounting of all types of airplane tires.

With this device a B-25 tire can be broken from the wheel in less than seven minutes. With flanged pipe lever bars, also designed by these men, the tire can be removed from the wheel in less than six minutes.

The vertical screw assembly is anchored under the tire with a horizontal bar; the four legs hinge on a bolt joint at the top; a cable fastened around the four legs prevents them from spreading out as the screw assembly is turned to force the legs down on the tire bead to break it away from the wheel rim. **— Air Force staff correspondent in India.** ☆

'OIL BURNER' COMES HOME

This remarkable photograph of a crippled B-26, limping along on one engine but still keeping in formation after a hectic raid on German lines in Italy, was snapped by an AAF photographer in the wing plane. When an enemy 88 mm shell knocked out the engine of the Marauder, "Uden Uden's Oil Burner," the pilot feathered the prop and ordered the crew to jettison all equipment possible. The camera caught an ammunition belt (arrow) just as it was tossed from a gun port of the crippled bomber.

But back of this action is another story. It begins at Barksdale Field, La., nearly a year ago when Lieuts. R. R. Bennett and Tilman Beardon, now pilot and co-pilot of "Uden Uden's Oil Burner," talked of what they would name their first bomber. They decided on "Uden Uden," the nickname of their instructor, Lieut. James Aden, who was killed in a training accident just before their graduation. They added "Oil Burner" because that was what Lieutenant Aden had intended calling his ship if he ever reached combat. It was an affectionate term he had for his wife. When Bennett and Beardon left Barksdale they promised Mrs. Aden they would name their bomber after her and her husband.

This was their first combat mission and the lieutenants were determined to bring "Uden Uden's Oil Burner" home. She made it, wheels down, a grand job of piloting from the pupils of a fine instructor.

ON THE LINE

WHAT'S WRONG WITH THIS PICTURE?

Thanks a lot, Sergeants, for coming out on a cold day to run up this engine in the wrong way. Some snooping around will reveal plenty of pet boners during and after preflight testing. So this picture was posed for March to remind everyone: Better whip up a little precaution during run-up—or the prop blast will whip you up.

The crew chief in the cockpit is Staff Sgt. Harry Horner; kneeling on the ground is Staff Sgt. Albert P. Clouse, and on the wing wearing an unusual sarong is Tech. Sgt. Robert Ross. All three mechs are attached to Headquarters Squadron, Air Service Command Headquarters, Patterson Field, Ohio.

Sergeant Ross can point out seven mistakes in this collection of boners. These are listed on Page 64. We can't offer cigars for any more you may find, so for spotting any additional errors you'll have to take your reward in the feeling of self-satisfaction which comes from knowing proper maintenance practices.

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

Flutter . . .

Excessive play in the tab system is an ideal condition for wing and tail flutter—which is not an ideal condition for flight. This excessive play is often the result of loose bolts in aileron, rudder and elevator trim tabs. Keep an eye out for this situation.

Tips on Storage . . .

Sometimes engines installed in aircraft in temporary and extended storage are not being properly treated for storage. For illustration, examples have been discovered of dehydrator plugs not installed in spark plug holes; all engine openings such as distributor vents, breathers, exhaust outlets and *all* other engine openings not sealed with tape and engine covers not installed. This neglect results in excessive corrosion and rust in engine cylinder walls and piston rings. See Sec. 4, TO 02-1-1.

Tie It Down . . .

When miscellaneous equipment such as tool and mooring kits, engine covers, sandbags and the like is stowed in the tail section of aircraft it must be tied down. If it isn't it is apt to jostle around and foul the controls. See TO 01-1-109.

Right Motor . . .

Instances have been reported of the installation of 12-volt motors in a 24-volt system, such as a propeller feathering motor and a fuel booster pump motor. This results in the failure of the electrical system. A closer examination of the data plates and proper tagging of the units will prevent this error.

Prop Wash . . .

The careless starting and running of engines without regard to other aircraft causes needless damage and much extra work. Revving engines around other planes that are undergoing inspection, especially with the rocker box covers removed, is a sure way to blow dirt, grit and other foreign particles into the engines. And tell the boys also to look out for flying ring cowls.

Incidentally crew chiefs should avoid running up engines on loose gravel or sandy surfaces as much as possible because it causes propeller damage.

Be careful of towing or taxiing very light planes behind big ones that are being warmed up. Recently the pilot of an L-4 taxied carelessly past the rear of a B-17 whose engines were turning over slowly. Much to his surprise his ship suddenly went into a violent ground loop which landed him upside down. Crawling out bruised and shaken, he found that the mechs of the B-17 had revved up the engines and the gust caused his "preflight crack-up." Yep, next time he'll be more careful.

Service with a Smile . . .

With summer just around the corner transient aircraft personnel should be alert to clean windshields of insects. Otherwise, the pilot's vision can be severely hampered.

According to AAF Reg. 65-22 transient aircraft crews are required to accomplish daily and preflight inspections. This regulation places the responsibility for the accomplishment of such inspections on the base commander concerned.

Interchangeability Chart Is An Aladdin's Lamp . . .

If fifty airplanes are grounded at an airfield for lack of particular parts, it is highly probably that a large percentage of those planes could be kept aloft by supplying the necessary parts through interchangeability. The old rule was that you had to put back into the plane the identical part of the one lacking, but TO 00-25-29 changes the rule and indicates that mechs are instructed to substitute a *like* part.

Here's how it works, men. Suppose you have a B-17F grounded for want of a power driven fuel pump (class 03-1) and you find none available in the stockpile. Take a look at TO 00-25-29 and you'll find that you are authorized to substitute any one of eighteen, all the same yet made by different manufacturers. And that isn't all. You can see that same pump as listed for 71 different airplanes! All in all that gives you a choice of finding one of 88 pumps to get that airplane off the ground.

The simplified chart lists parts in vertical columns according to the airplane. Lists running horizontally are the parts according to the manufacturer.

More than likely a part is on hand that will fill the bill, yet you don't know it. This remarkable TO will tell you so. For example, if the pump you need for the B17F can be substituted by an A-20C or P-38E pump, well, you just saunter over to that particular stockpile and get what you need.

Further, TO 00-25-29 advises activities when to dispose of obsolete drawings and obsolete parts. Also, the use of interchangeability reduces to a minimum the requisitioning of spare parts.

'Cannibalism, within limits, is standard AAF practice.'

Cannibalism, within limits, is standard AAF practice. If you lack a part to get a B-24 off the ground and can lift it from a badly wrecked P-40 lying out on the field, do so. Your interchangeability chart will reveal at a glance if the dilapidated airplane has the part you need. *Never, never filch a part from a healthy, flyable airplane,* however.

The whole story of interchangeability of parts is not contained entirely in TO 00-25-29. The parts list of an individual TO for a particular airplane is also your interchangeability guide.

Now that the maintenance shortcut of interchangeability has been worked out, make the most of it! When 1,500 airplanes in one week are reported grounded throughout our Air Service Commands for lack of parts, it is probable that a large percentage of these would have flown had a little thought been given to interchangeability of parts. ☆

A Report on Army Air Forces Training Devices

A Terrain Projector for Navigators

A new device for navigation students has been developed to enable them to learn pilotage (map reading) and the principles of dead reckoning navigation without subjecting them to the hazards of getting lost in unknown terrain.

The gadget known as the terrain projector, consists of a vertical projection screen provided with a silhouette of a miniature airplane, nose pointed upward, in the center. A positive plate in black and white of a portion of the earth's surface as seen from an airplane is projected on the screen to cause this image to move from the top toward the bottom of the screen. The students who sit in chairs in front of the screen thus have a view of the movements of the terrain with respect to the airplane in which they are assumed to be flying.

An instrument panel may be projected upon the screen in conjunction with use of the trainer informing the students of the air speed and heading at which the plane is flying. The students have with them maps of the terrain whose image is being projected upon the screen and one of their primary duties is to view the location of the plane with respect to the terrain below, as seen upon the screen, and then by a reference to their maps determine the exact assumed geographical location of the plane. Thus valuable training in map reading is secured. Furthermore, since they know the point of departure and heading and air speed at which the plane has been flying, by employing well-known principles of dead reckoning navigation they may then be required to ascertain the assumed wind speed and direction. With position and wind conditions known, the instructor may then require the students to indicate what their heading should be to fly to the next destination.

The terrain trainer also includes a large circular rail, known as the azimuth, which lies flat on the floor. It is graduated in degrees from 0 to 360. Rotatably mounted upon the framework is a projection carriage on which is mounted a second smaller carriage known as the plate carriage. The plate carriage holds the projection plate which is a diapositive reproduction in black and white of a section of the earth's surface as seen from above.

Requirements requests for the terrain projector have been made of all training commands and their needs are being ascertained by the Training Aids Division.

Hand Blinkers for Signal Training

As the war continues it becomes increasingly obvious that air warfare in many respects is following the pattern of naval warfare. Formations and tactics closely follow the same pattern in each case. The relationship between a formation of heavy bombers escorted by fighter aircraft, and heavy battleships flanked by protective destroyers, is too apparent to escape the eye.

Strangely, or logically enough, the pattern continues down the scale and manifests itself in surprising ways.

Communications, as an example, poses the same problems in either case. Whether battleships or bombers are involved, radios may be destroyed by enemy action or it may be inadvisable to use radio as a means of communication inasmuch as position may be revealed to the enemy. The Navy long ago solved the problem of "intimate communication" by means of signal flags and blinkers. Obviously, speedy aircraft cannot communicate with other aircraft or ground sources by means of flag signals. They can, however, receive and transmit messages by using the blinker.

The Navy blinker, a familiar sight to all of us, is that big round device with shutters that blink off and on, sending out the dots and dashes of the Morse Code by means of powerful light flashes. When the AAF turned to the blinker as a means of emergency signalling, actual blinkers for training were scarce, and it wasn't until a simple cardboard gadget was developed that we were able to set up a real training campaign in the use of the blinker.

The cardboard blinker devices are being turned out by the thousands at a very nominal cost. Their operation is simple, involving merely the press of a finger, and the International Morse Code printed on the back of the device enables each trainee to "blink" out his messages long before he has committed the entire code to memory.—***Capt. Albert Hailparn, AFTAD***

Reverse side of the device (above)

Slight pressure of the fingers creates blinker effect.

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.

The Gunner's Information File

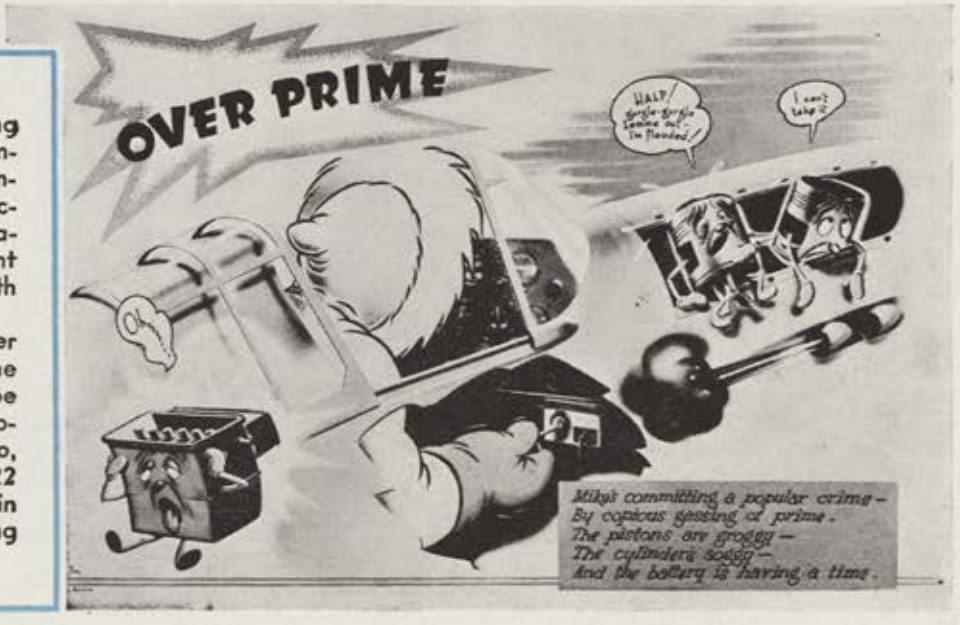
A manual covering all phases of flexible gunnery, to be known as a Gunner's Information File, is now being prepared at AAF Training Aids Division. Although much of the material to be included has been published in widely scattered publications, many of which may not be available, the file will bring together all the pertinent information that applies to either the student or combat flexible gunner.

The file will treat in detail the operational maintenance of the turrets in common use, sights and the "position firing" system of aiming now being taught throughout the AAF. Other sections will cover basic information about aircraft, the duties of the gunner and of the other members of the crew, recognition of aircraft, vessels and terrain features, and emergency measures including the proper use of parachutes, ditching procedures, survival in the arctic, desert or at sea, first aid, fire fighting and signalling. Proper methods in the use of oxygen and interphone communications will also be stressed. Combat tactics will be covered to aid the gunner in recognizing what is going on in the air about him.

The manual will be looseleaf to permit amendments from time to time as tactics change and conditions warrant. It will be fully illustrated, simple, straight-forward in presentation and will be published in compact letter size.

The sections on weapons, turrets, sights and sighting are expected to be distributed within a few weeks. These sections will be followed at short intervals by other sections on operational matters.

The Manual is being prepared under the supervision of Headquarters, AAF flexible gunnery training section, AAF Training Aids Division and the Central Instructors School (Flexible Gunnery) of the Training Command, at Buckingham Army Air Field, Fort Myers, Fla.☆



An Arctic Poster Series

A new air poster series, featuring "Frigid Freddie," a cold weather gremlin, is now being produced by the Training Aids Division to illustrate the servicing of equipment in sub-zero temperatures. The posters are designed to point out the hazards of cold weather to both ground and air crew members.

"Frigid Freddie" shares the poster illustrations with "Mukluk Mike," the dopey mechanic who can always be trusted to do the wrong thing, and "Slipstream Sam," the pilot wonder who, too, is not without a fault. The posters, 22 by 32 inches, are to be assembled in the standard AFTAD binder for training convenience.

The 7th Air Force

(Continued from page 13)

must be hit squarely. A single pin-point in the European theatre might be a factory; here it would cover an entire island. For us each installation on an island is an objective and must be carefully knocked out. Therefore, each plane makes its own run with each bombardier doing his own bombing. The target must be directly hit. The difference of forty feet one way or the other can mean that the bombs land either in the lagoon on one side of an island or the ocean on the other. And we don't fly 2,000 miles to kill fish.

We do not fly in tight formation because of the weather. Constantly, bad weather lies between us and our targets like a huge wall especially constructed by the enemy. Just as bad is the fact that the weather comes out of the enemy's direction—and the Jap takes due advantage of it. In order for our planes to get through these turbulent fronts they have to break up into small elements and fly through it as best they can.

With a problem of great distances and few bases, supply and personnel are major operations factors. The problems of supply are being brilliantly met by Air Service Command. They have made many innovations designed to meet the peculiarities of this theatre. One of these is the ASSRON which is our abbreviation for Air Service Support Squadron. Roughly it is an adaptation of the service center streamlined and designed to meet the needs of the small island bases from which we operate.

Fighter units during the present phase of operations are serving the important function of air defense on the islands we seize. That they are ready to perform and will perform is witnessed by the fact that at various times they have flown hundreds of miles over water to new bases. But the bombers are carrying the ball. Each member of a bomber crew must know his job perfectly. If a plane is damaged or fails on a mission there is little opportunity to put it down on land or to bail out. Ditching is almost invariably the sole answer, and the ocean is mighty large when you're sitting on it in a rubber raft. We do our best to keep out of those rafts.

Each step we make across the Pacific shortens the distance to our ultimate target, the mainland of Japan. Our medium bombers are ready to swing into action. As we draw nearer we will bring more and more weight to bear on the enemy, and all our aircraft—heavy bombers, mediums and fighters—will be in operation as we sweep across the Central Pacific to bomb the economic strongholds of the enemy and land our forces in Japan. ☆

These 7th Air Force heavy bomber crewmen have just arrived at an advance operations base in the Central Pacific. They are bringing the most modern training to this primitive outpost. That rodeo shirt, at first glance, makes it look something like Pendleton Roundup—with palms.

Two natives on an advance base in the Central Pacific watch with modified interest as Aerial Gunners Staff Sgt. Dan Marquette of Toledo, Ohio, and Staff Sgt. Winfred Armstrong of Erlanger, Ky., clean their dismantled machine guns following a bombing mission over enemy territory.

LIFE ON A CORAL ATOLL

SELF-SUFFICIENCY is the keynote of existence on the pin-point coral atolls of the Central Pacific, now being used as operational bases by 7th Army Air Force units. Far from being the dream spots which are often pictured in musical comedies and movies, these tiny outposts offer little more in the way of natural resources than barren soil and a stand of palm trees.

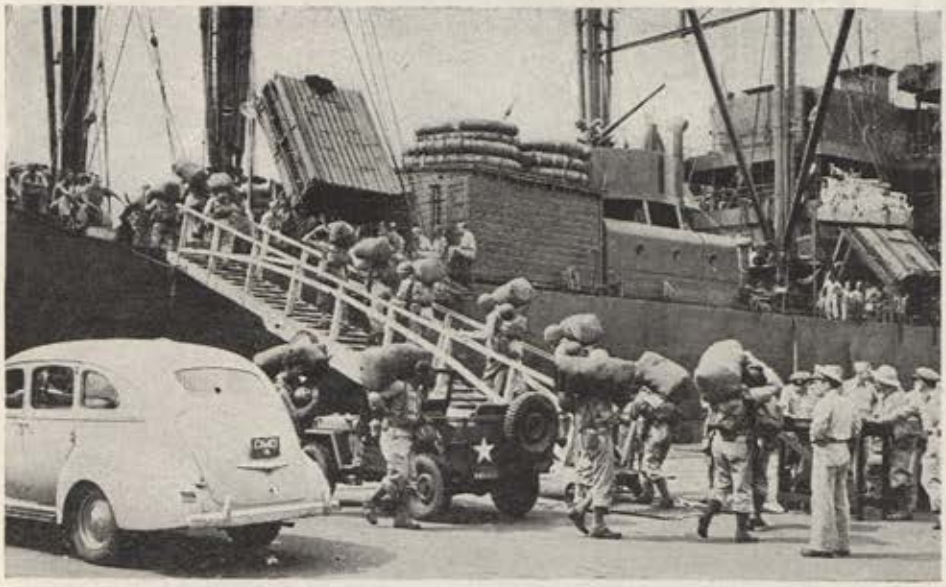
Nevertheless, Yankee resourcefulness has made some of the atolls quite livable. The inevitable and indispensable fox-hole is often lined and outfitted so that it becomes relatively comfortable. Scrap materials are ingeniously converted into hospitals, field kitchens, post exchanges and living quarters. Before the war these specks on the ocean, passed over without conscious notice by the casual map reader, were sparsely inhabited by natives who even then found life none too idyllic. Where Americans have taken over they have sought to segregate or evacuate the natives to protect them from war's harm. The tricky Japanese, however, have taken no such precaution, often building fortifications within hut villages. On some of the coral posts which have not been subjected to enemy attack, GI landscape artists have done freelancing among the native trees and shrubs, and while there is no report available on their productivity, there are now Victory Gardens in the Central Pacific.

Chaplain Lawrence J. Mitchell of Seattle, Wash., greets the fellow-members of his congregation following church services at an island airbase. The chapel has been dedicated to Wilbur L. Casady, a fighter pilot who was killed in a plane crash while his squadron was based on the island.

At first, living conditions can be described briefly as outdoorsy and a bit rugged. Cpl. Harold (Pete) Prior of Council Bluffs, Iowa, (right) prepares to remove his beard.

One of the first things each man does when he arrives on an atoll is dig himself a foxhole.

This isn't Radio City Music Hall, but the enlisted men and officers gather early at the squadron's open air theater. Quite a place to see caterwauling jungle pictures, or some Hollywood ideas on romantic island life, isn't it?



An Air Service Support Squadron is on the move in the Central Pacific.

ASSRON IN ACTION

THE Air Service Support Squadron, abbreviated to ASSRON, is composed of specially trained amphibious troops who follow closely the assault forces on a beachhead and, when the necessity for supporting these forces is over, begin their primary duty of preparing facilities necessary for tactical air force units to operate from the new positions.

The ASSRON of the 7th Air Force is designed for Central Pacific island warfare. It includes about half as many officers and men as a service center. The reduction is accomplished by eliminating such detachments as the quartermaster truck company which would serve no purpose on the small atolls of the Pacific. On the other hand, such units as engineers and signal sections are enlarged to speed the constructions of runways or other installations.

In addition to installing communications, repairing or constructing runways, and preparing normal utilities, ASSRON does a little bit of everything from first to fourth echelon maintenance. For example, ASSRON may patch up a heavy bomber so it can be flown safely to a major base for complete repairs.

The great value of ASSRON is its fluidity. Supplies and stores are kept on barges to eliminate losses in movement and save on labor. When a new base is completed and ASSRON is ready to move on, the floating supplies are ready to go, too.

The ASSRONs are continually refreshed. When a tactical outfit advances to a new base, the ASSRON at the old base returns to Hawaii for rehabilitation and reorganization. It is then ready to leap-frog over the other ASSRONs and move into the next base that is taken.

ASSRONs are operated under Brig. Gen. Walter Reed, commanding general of the ASC in this theatre. The idea of an air service support squadron was conceived in November, 1942, by Col. K. E. Tibbetts after he made a study of the needs and requirements of the 13th Air Force in the South Pacific.

Colonel Tibbetts and A-4 personnel later worked out a plan for an air service support unit adapted to the Central Pacific theatre. Its primary purpose was to avoid having tactical units bogged down with the necessity of clearing their own airfields and performing other jobs which would prevent full attention to combat air operations. That ASSRON has been successful is witnessed by the rapidity with which the tactical organizations of the 7th Air Force have moved on to the newly won islands in the Central Pacific without loss of operational time and strength. ☆

TACTICAL WEATHER IN THE CENTRAL PACIFIC

By Lieut. Col. Richard Arnold

Staff Weather Officer, 7th Air Force

A PERMANENT weather front in the vicinity of our bases must be confronted by the majority of the land-based aircraft operating in the Central Pacific. It is known as the inter-tropical front and is generally found in the doldrum belt. From November to March it moves southward. Then it turns and moves north.

The width of the belt varies due to synoptic variations. Now and then it is narrow and well-defined; at other times, it is wide and diffused. Various parts of the belt have greater movement than other parts. Due to the lack of historical data in terms of present day analysis, it is difficult to type systems in this area or to find correlations in apparent periodicity such as are found in the Aleutians. However, it is believed that the weather here is released by systems farther north and south of this zone.

The description of the belt varies. In its less intense form there is scattered cloudiness, and it is showery. Or it is narrow and it intensifies to a solid wall of thunderstorms with extreme turbulence, heavy rainfall, decreased visibility and strong winds. The continuity of movement and intensification is not well defined. The belt is erratic and hard to tie down. From one 24-hour period to the next it may vary within extreme limits. From weak intensification it may build up to extreme turbulence and then drop back to its former status.

In this area one of the great difficulties is that there is no distinction between air mass. The air is practically all homogeneous. In other theatres the weather, due to air masses, is sufficiently well marked to track and forecast storm areas accurately. In the Central Pacific there is a zone of convergence always potentially ready to intensify.

The tropical front can be recognized by the marked increase of showers, convective activity and increased cloud forms. The approach and penetration of this frontal zone remains the same as for all well developed fronts—normal to the axis of the front using the usual precautions.

While it is frequently possible to penetrate the inter-tropical front at medium altitude when intense, it is generally impossible to top the weather. However, it may be penetrated at minimum altitude. The form of the tropical front restricts the type of planes that can fly through it as well as the number that can fly through it in formation.

Since the inter-tropical front represents a continuous barrier in this area to land-based aircraft and their objectives, a constant check must be made on all latest weather information. Search planes give the most up-to-the-minute coverage.

Due to the sudden intensification of these centers every source of information must be utilized and immediately relayed to all weather units. The accuracy of weather forecasting resolves itself to a matter of accurate and speedy communications. In this, the Army Airways Communications System is doing a remarkable job in this theatre. ☆

Illustration by Capt. Raymond Creekmore.

CONQUERORS OF THE HUMP

Capt. Robert V. Guelich
Air Force Staff Correspondent

When the Air Transport Command's India-China Wing won the Presidential citation for its achievements, the shroud of secrecy that for two years enveloped details of the successful struggle to fly supplies to American and Chinese forces in China was lifted.

The facts revealed in January were these: At the close of 1943 the Wing was flying more tons per month of military supplies to China than ever were delivered over the Burma Road. More tons of cargo were being transported than all of the American airlines hauled prior to December, 1941, and the India-China Wing was operating more airplanes than America's three largest civilian airlines.

During the year of intensified operations, airdrome facilities were more than doubled in Assam, the number of cargo-carrying planes was tripled, maintenance and repair efficiency was increased fifty percent, inauguration of night flying doubled the number of possible cargo flights. As a result of these measures, the amount of cargo carried on the military supply lifeline over the "Hump" to China was increased tenfold in twelve months, dwarfing the achievements of any commercial airline in history.

Behind these facts are the stories of flights over the world's highest mountain ranges, in part over Japanese-held territory, of battling 100-mile-an-hour-winds, of flights as high as 30,000 feet, of flying through monsoon weather, of carrying on ground maintenance and supply at bases deluged by the heaviest rainfall in the world, and of meeting Japanese fighter interception in unarmed planes. It is no wonder that crews count their time officially as combat flying in their continuous battle to reinforce the fighting forces in China.

The increasing tempo of 14th Air Force operations tells the success story of ATC's India-China Wing.

Originally with C-47s, now with C-46s, C-87s and B-24s retired from combat, the ATC is transporting jeeps, six-by-six trucks, ambulances, sedans, P-40 wing panels, primary trainers, aircraft engines, gasoline, bombs, ammunition, Chinese and American troops, PX supplies, mail, tents, clothing and rations not available in China.

The importance of these supplies to our 14th Air Force and to the Chinese air and ground forces is immeasurable. The best yardstick of the military importance of this high-pressure pipe line is the increasing tempo of operations against the Japanese by Maj. Gen. Claire Chennault's fighters and bombers.

Despite the potential dangers, the typical Hump run is an uneventful flight of only a few hours. Day and night, before engines have had a chance to cool, cargo is loaded into planes at different airdromes; each plane with its crew of pilot, co-pilot, engineer and radio operator taxis out with its heavy load of war cargo and takes off from its base in the valley of the Brahmaputra. Once airborne, the plane must spiral up to altitudes varying from two to five miles before setting its course toward China. Mountain peaks rise to 16,500 feet along the run and to greater heights away from the usual course. Weather almost as high as Mt. Everest frequently must be topped to avoid fierce wind storms and severe icing conditions on the route over the Himalaya ranges in northern Burma.

Once on course, the heavily loaded plane cruises over the rugged and rocky white-capped mountains, sometimes within range of Jap fighter planes, until it is

precisely the right time to let down on a Chinese airdrome more than 6,000 feet above sea level and squeezed between mountains 8,000 to 10,000 feet high. Losing altitude fast after getting over these ranges, the pilot touches his wheels on the runway of crushed rock bound with mud, and chalks off another successful mission on the plane's Form 1. It's as easy as that if you don't have engine trouble, if you don't get caught in windstorms, if you don't encounter icing, if you don't get blown off course while flying instrument, and if you don't meet any Jap planes. Skillful piloting, sturdy ships and fighter patrols are your protection.

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

During late 1943, the India-China Wing accomplished miracles in guiding its forced-down crews back to safety, and the record is improving steadily. In the early days of the Hump run, practically nothing was known about most of the territory over which the cargo planes were flying. However, in the spring of 1943, as the Wing was being expanded, ATC intelligence officers concentrated on the accumulation of scattered details about the terrain, the paths, the native tribes, the food, Jap patrol positions and other information that could aid crews lost in the mountainous jungles.

During the summer, several airmen who had been forced down succeeded in communicating with American aircraft flying overhead and with Allied ground patrols. Their rescue resulted in the compilation of much valuable information concerning the hitherto uncharted country. Maps soon were revised and given to each crew; information about inhabitants, friendly and unfriendly, about American and British and Chinese outposts, and about river and overland routes was made available to all flying personnel of the Wing. This actually marked the beginning of the "discovery" and mapping of the hitherto uncharted country. A briefing system for crews and an intelligence query of rescued personnel made possible the compilation of facts about the country that later proved vital in the rescue of other crews.

The rescue and search work of all branches of the Wing were consolidated in October as the Air Search and Rescue Unit. With several planes at their disposal, air crews of the unit take off as soon as word is received that a plane is missing; the search missions they fly are long ones, scanning from high altitudes and scouring at tree-top level between mountain ranges. When a missing plane

A Northern Burma tribesman.

or crew is located, signal panels and medical supplies, if needed, are dropped with food and instructions. In emergencies, medical personnel have parachuted into the mountains to assist wounded crew members during the long walk back. As many as thirty survivors at a time have been supplied from the air during their treks back to civilization.

During the entire year of 1943, the record of returns to safety is primarily a tribute to the work of Capt. John L. Porter (lost while flying a rescue mission) who headed the Air Rescue Unit, and to his successor, Lieut. William M. Powell, and to the diligent work of intelligence officers, Maj. Robert L. Wright, Capt. John G. Nesbitt and Capt. H. M. Smith.

Anything can happen on the Hump run. One C-47 accomplished the impossible and flew a two-ton load over the Hump at 24,400 feet; Lieut. Fred K. Darragh was the pilot. Maj. James E. Laubaugh dragged his loaded C-87 up to 27,000 feet to escape unflyable weather at lower altitudes. Capt. K. J. Breitskopf did a half loop with a C-46 when his plane suddenly was flipped on its back in the midst of a severe storm. He came out of the loop far below the mountain peaks but climbed back to altitude and safely returned to his airdrome. C-46s have flown at 22,000 feet to avoid icing while some planes have staggered over the Hump at 95 miles an hour, landing with warped and bent wings—but the supplies have reached China in ever-increasing quantities. The return trip to India presents its problems, too. Loaded with raw materials, engines for overhaul, personnel, mail and hog bristles, the planes must take off with heavy gas loads at 6,000 feet altitude — no easy task for any heavily loaded plane. Between flights, crews hardly have time to order eggs and tea and purchase peanut candy at the familiar Chinese cafeteria before taking off for India, because ATC has a rule that planes shall not remain on the ground in China for more than one hour. After this brief rest, the crews start their return trip to Assam where more supplies and new crews are waiting to fly the Hump. Occasionally, some planes fly three round trips a day, hardly letting their motors cool until ground crews make their 100-hour inspections.

Such continuous flying would not be possible without competent mechanics. Their rapid and efficient maintenance and repair have increased the percentage of flyable planes from 50 to 75 percent. In the month of December, they made more than 100 engine changes; it wasn't a record, simply normal operations. A plane that is grounded may be robbed of parts to put another plane in the air, but when its turn comes to fly, a newly-grounded plane contributes the missing parts. To obtain supplies of replacement parts, Capt. L. E. Hubbard, engineering officer, has flown as many as 110 hours a month, scouring India's airdromes and depots for scarce but vitally needed accessories, rather than delay operations by sending planes back to depots for engine changes and heavy maintenance. The ground crews improvised equipment and proved they could successfully change landing-gear struts and replace gasoline tanks—even though it meant taking the wings off the planes—and at the same time build their own engine hoists, slings and crew chief stands out of steel hangers and bamboo.

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

Emergency shipments from the United States to the opposite side of the world can be made in as little as four and one-half days from Air Service Command headquarters at Patterson Field. Four flights leave Patterson every week with capacity loads of urgently needed parts and supplies. Less than one week later, the C-87 cargo planes of the fastest and longest air express service in history unload their cargo in Assam to help keep ATC planes flying. Today's expeditious handling of thousands of tons of war cargo by air reflects many months of hard labor by ATC personnel; the India-China Wing didn't just grow like Topsy, it pulled itself up by its own bootstraps.

It was in March, 1942, that the Commander-in-Chief promised China that aid would reach her despite Japanese penetrations that were closing off the last supply routes from the outside world. One month later, Lieut. Col. (now Brig. Gen.) William D. Old flew the first load of supplies over the Himalayas to China. His ship represented a large fraction of

the total air cargo strength at that time—a handful of DC-3 planes. Brig. Gen. (then Col.) Caleb V. Haynes was commanding officer of the new unit; General Old was his executive officer. Twenty-five more planes soon were requisitioned from commercial airlines in the States, but not all of them reached India. Some were needed to supply the forces attempting to stop Rommel's push to Cairo.

A few Pan American planes, which had been operating on African routes, were flown to India with crews who joined the Wing. With this small transport organization, pilots flew from a single airdrome in Assam. Without modern navigational aids, they braved the monsoon storms to fly supplies to China. Four fighters borrowed from the AVG and the China Air Force constituted the complete protection for the lumbering planes that were flying at altitudes far above their theoretical design limitations. During these days, Burma was being evacuated, so the transports would carry their bombs and gasoline into China and then pick up evacuees in Burma on the return trip. One of these planes exceeded its normal load capacity 300 percent when it jammed 75 people in and safely flew them to India.

With the initial problems bested, the organization was placed under the command of Maj. Gen. Clayton L. Bissell (then Brig. Gen.), commanding officer of the newly organized 10th Air Force in India. Under General Bissell, additional airdromes were constructed and more planes were assigned to the Hump run. After four months of operation as part of the 10th Air Force, the Air Transport Command adopted the unit as the India-China Wing. Brig. Gen. E. H. Alexander (then Col.) commanded the new Wing for the ensuing ten months. During these months the scope of operations by the Wing steadily increased. There were difficulties, such as supervising operations at several airdromes when highway transportation was impossible because of rains, and when remaining communications hinged on the maintenance of two telephone lines. Two of the fields practically washed away in the rains, but the major difficulty of getting more cargo to China made other problems seem trivial.

This sketch by Sgt. Leonard Besser of the India-China Wing of the ATC portrays a parachute jump by a medical officer who was summoned to aid surviving crew members of a C-46 which had been shot down by a Jap Zero while flying the Hump. Medical supplies also go down by parachute.

To increase the pay load of flights, the new Curtiss Commando was drafted into service on the Hump run in early 1943. Being a brand new plane, it developed the usual series of ailments but our GI mechanics, with few tools and fewer spare parts, devised many rough modifications at their advanced bases to keep the planes flying. To increase cargo capacity further, C-87s were assigned to India for the run. Their increased altitude performance contributed greatly to the steady increase in the number of flights into China.

Actual loading and tying down of freight, and other functions performed by attached service units, were taken over by ATC personnel during the expansion spurt that followed a late summer inspection tour by Maj. Gen. Harold L. George, commanding general of the Air Transport Command. By October, 1943, the India-China Wing had grown so large that it was subdivided. The eastern sector in Assam was assigned all Hump problems; the western sector, administration of air traffic throughout the rest of India.

With the return of General Alexander to the command of another wing in America in late September, Brig. Gen. Earl S. Hoag, who had commanded the Africa-Middle East Wing of ATC during the North African campaign, was assigned as commanding general of the India-China Wing. Col. T. O. Hardin, who supervised the operation of formerly German-operated airlines in South America after their banishment, now commands the Hump sector. Col. Kenneth C. McGregor heads the Western sector.

Under the aggressive leadership of these men, figures of tonnage being flown over the Hump began to rise. The many months of war-supply famine have been alleviated and our forces in China are more firmly entrenched than at any time since the outbreak of war with Japan.

In the words of the Commander-in-Chief to General Hoag: "I have been informed that . . . your command transported . . . tons of vital supplies over the Hump into China for the month of December. This represents an exceptionally outstanding performance and is a source of great gratification to me. The goal has been high, the air route exceedingly dangerous, both as to mountains and enemy action, and the weather treacherous. Only teamwork and outstanding devotion to duty by the entire personnel could have made this accomplishment possible.

"I have directed the citation of the Wing and desire that my personal thanks be communicated to every officer and man concerned." ☆

These action photos depict enemy fighter plane interception in two far-removed theatres of our air operations. The Jap Oscar (left) makes a futile pass at a low-flying B-25. Both planes broke away without damage. Not so with the B-17 in the photo at the right. A FW-190 moves in for the kill as flames trail from one engine of the crippled bomber.

THIS IS YOUR ENEMY

TOW BOMBS. Towing a bomb, suspended by a cable below and behind a fighter plane, is one of the Nazis' latest tricks used in attempts to break up our bomber formations. This one hasn't worked very well thus far.

When the Germans try it in daylight, they usually put a large bomb at the end of a long cable. Such a bomb could do a lot of damage to a tight bomber formation. The plane towing the bomb normally attempts to get in front of and above the bombers under attack.

For night fighting the Germans have been using a shorter cable and a considerably smaller bomb. The pilot of the towing plane merely flies near a bomber formation and apparently hopes something will happen.

On one raid, a cable suspended from an enemy fighter became tangled with a B-17 and the right bomb bay door was blown in and torn off.

THROW UP VIOLENTLY. The Japanese have a new mortar with which they put up an anti-aircraft barrage. It has a range of from 3,000 to 4,000 feet, and the Japs call it the "Throw Up (Violently) Delay Barrage Mortar."

It is a 70 mm, smooth bore mortar, four feet long and mounted on a wooden base plate to which is attached an iron rod about eighteen inches long and an inch thick. The weapon is directed by the manner in which the rod is stuck in the ground. There is no way of transversing or elevating the weapon. When the men firing the mortar wish to lay it in another direction, they have to pull up the iron stake and start over.

The ammunition is fired after it is dropped into the mortar. The projectile consists of seven cannisters and two sections of the projectile case, which, when they reach a set altitude, are carried away on small parachutes. The cannisters, in turn, eject high explosive shrapnel tubes which detonate violently.

In all, a total of sixteen different elements are obtained from one projectile, and a total of fifteen explosions may be seen from one shot.

The shrapnel tubes are the major hazard of the weapon since they are the only parts containing high explosives. The fragments are so small, however, that they are relatively ineffective. It is estimated that the blast is effective at a maximum radius of ten yards.

DELAY. The Japs have begun using a delayed action bomb. One of them, recovered in the Southwest Pacific area, was 8 inches in diameter and 44 inches long. It weighed 138.6 pounds.

The fuze on this bomb had worked, but it hadn't been screwed into the booster tight enough to cause the bomb to explode. This type of bomb has been known to have a delay of up to 127 hours. When an unexploded bomb is found in an area, unit COs should evacuate all personnel until bomb disposal officers pronounce the locality safe.

MORE ON ROCKETS. An ME-109-G-6, abandoned in Italy, had two rocket projectors, one under each wing outboard of the wheel recesses. The "guns" were of quite simple construction. Each consisted of a large tube made from 3/32-inch steel. The tube is open at each end and suspended from a heavy steel hook attached to the main wing spar.

The rocket is prevented from slipping out of the tube when the plane is in flight by a bolt projecting inside the rear of the tube and by two springs at the sides. The projectors can be jettisoned at will by a detonator fired electrically from

a switch inside the cockpit. The projector complete with rocket can be dropped.

The rocket itself also is fired electrically by pressing a button on the control column. Normally, only one rocket is fired at a time. The projectile is fairly heavy and has a standard fuze, adjustable on the ground only. This is likely to give the rocket a range well beyond our .50 caliber guns. The rocket has no fins. Its propelling venturi tubes are offset at an angle so that the rocket rotates in flight and has stability.

The Germans probably won't get much accuracy with this weapon because, for the safety of the carrying plane, it must drop a short distance before its propelling charge starts to fire.

The Germans, however, are reported to contend that it is not necessary to hit or even damage individual planes with the rocket; what they wish to accomplish principally is break up formations and make our bombers vulnerable to fighter attack.

The projector can easily be adapted for other aircraft. Single engine fighters can carry two, and twin engine fighter-bombers can carry four of the tubes.

BLURB. Japan's War Ministry recently distributed some information about some of its new planes. The publicity hand-out printed in a Jap-controlled paper contains a few gems about the Shoki (Tojo) and the Donryu (Sally Mk II). This is a translation:

"The Shoki fighters have a brilliant record of having shot down the best American and British planes. Their inspiring shapes can now be seen over the Burmese front and over the American bases in China. They take pride in their supreme performance both in ascending, circling and other points.

"Whereas American or British bombers cannot enter a zone of Japanese airpower in daylight without being escorted by fighters, the Donryu bombers majestically appear over enemy positions unescorted in broad daylight and release deadly missiles on the panic-stricken enemy. This is something only Japanese airmen can do and only the Donryus can attempt. The Americans are vaunting the prowess of their Dragon bombers but as their name implies the Donryus can swallow even Dragons. In the Malay campaign, while enemy bombers were attacking Japanese convoys under escort of fighters, the Donryus singly or in groups of only a few planes thrust into the midst of the huge mass of enemy bombers and scattered them and succeeded in protecting the convoys. It is these Donryus that are so frequently pounding Port Darwin. The Donryus look something like some of our Navy planes and the enemy often found it difficult to make the distinction. Their distinguishing feature is the split tail through which machine guns may be fired. The well known cartoonist, Ippei Okamoto, has donated to the Army a picture in which the legendary demi-god Shoki is grasping Roosevelt by the nape of his neck and trampling Churchill under foot to symbolize the triumph of the Shoki fighters over British and American planes, a pun being made on the words 'ki,' planes and 'ki,' devils."

Editor's Note: The "Dragon" is the Jap nickname for our B-17. The Shoki (Tojo) is relatively new, the Donryu (Sally, Mark II) relatively old. The Buffalo fighter hasn't been in general use since the early months of the war. The Malay campaign is now two years old. The Japs haven't "pounded" Port Darwin in many a moon. The Japs must be hard up for propaganda editors.

AIRCRAFT NOTES. The Germans are using a jettisonable fuel tank made of paper produced from kraft pulp. The inner layer of the material is made of woven paper yarns, laminated on both sides with crepe paper of the sort used by Germans for paper anti-gas capes. The coating adhesive between the three-ply wall is thought to be a cellulose nitrate lacquer. This is another instance of the Germans using cellulose and derivatives to get sufficiently strong materials with minimum weight.

The new Jap Tojo fighter looks considerably like a P-47, although more like a P-43. A Zeke examined recently had a de-icing arrangement for the propeller. It worked by use of a priming pump; a stroke forces a de-icing fluid from the pump to slinger rings on the propeller hub which distribute the fluid along the leading edge of each blade. The pump is hand operated.

BEAUTIFUL THOUGHTS. Following an ancient custom, one Jap soldier celebrated his 25th birthday by writing a poem. It might be explained that Japanese poems are peculiar gadgets, being short and designed to give a fleeting, single picture. This Jap told his diary:

I vow an oath
Walking on danger,
I have crossed over flower
beds and cliffs.

Eventually the writer's pen was stilled by some American machine gun slugs. The last entry in his diary was this list of admonitions from his commander:

1. Must die beneath the battle flag.
2. Must positively die desperately in battle.
3. Must fearlessly carry out orders in battle.
4. Be sure to name the important duties of the commander. Improve determination.
5. Do not ease mind at night. ☆

This giant German Wurzburg radio detection device, set up in Western Europe, registers the presence of aircraft within a radius of eighty kilometres. It also is employed in plotting fighter interception of Allied bombers.

CROSS COUNTRY

Continued from Page 5

and over the tape they wrapped a gauze bandage. Their Marauder, Old Ironsides, made a normal landing at its North African base.

Circulation

Those persons charged with the distribution of AIR FORCE to our squadrons all over the earth, perplexed with unit changes and continually striving to get the magazine to as many men as possible, and in the quickest time, may find a sad kinship with the Australian counterpart. The circulation department of "Wings," the RAAF magazine, received this note from one of its far-flung squadrons which had just received its parcel of that journal:

"Never have so many waited so long for so few."

Pulling Strings

Among the booby traps encountered in the Italian campaign was an airfield building, the cellar of which was stacked with cases of gin and Scotch whiskey. This stock of superb drinking liquor had been so thoroughly booby-trapped by the Germans, however, that the entire building had to be demolished—but not until the engineers had determined that they could not avert the catastrophe. The booby trap was first discovered by a private of a Highland regiment who emerged from the cellar flushed and happy. He wore the expression of a man who had found contentment in the world, and in his hands he proudly waved two bottles of Vat 69. When accosted by engineers, the Highlander explained: "Ye know, I could na' understand why a' the bottles were tied up wi' bits o' string."

Now We Know

Several chaplains quite properly have called our attention to an inaccuracy in the quiz feature of a recent issue of AIR FORCE. The question: "A chaplain with the rank of major can properly be addressed as either Major Jones or Chaplain Jones. True or False?" We inaccurately gave the answer that the chaplain may be addressed by his military rank. Army Regulation 60-5, paragraph 5, states that the uniform designation of a chaplain in official address is Chaplain.

Aloof Little Thing

In Aden, Arabia, one of our far-flung reporters came upon an interesting notice of general information addressed to all transient personnel. It was signed by Lieut. Philip A. House, assistant station traffic officer. Seven points of the information follow:

1. This is Aden, Arabia, situated on the southwestern tip of Arabia. You are now half way around the world. Aden is not in Africa.

2. The natives are friendly in the immediate vicinity.

3. The temperature seldom rises above 100 degrees F. The heat you feel today is attributable to the high humidity.

4. Money used in Aden is the same as that circulated in India. The monetary basis is the Indian rupee evaluated at 3.3 rupees to the American dollar.

5. There are no harems open to the public. The Mohammedan religion also prohibits Americans from buying wives.

6. The latrine is about 100 yards directly in front of the gate to the field. It's the little grey building standing by itself. You can't miss it. Don't, please!

7. Permanent personnel will be glad to answer any questions not covered by information posted here. Permanent personnel can be identified by the small red blotches on their bodies. They do not have the measles. It is prickly heat; it itches like hell, and we would get rid of it if we could.

Prayer Meeting

The story about all atheists being AWOL from the foxholes has been told in other words by the crew of a B-26 which ran into a particularly bad time over a strongly protected German airdrome. The group attacked successfully but the flak was so intense that some flyers thought it contained even the sauerkraut barrels. Naturally some of the planes were badly hit, these including the Marauder piloted by Lieut. Richard H. Lightfine. The plane returned to base, one crew member said, only because Providence had assisted them when it seemed as though nothing else would help. "The Reverend Lightfine held church services while we were over the target," the gunner explained.

Colonel Gregory Honored

Col. Hollingsworth F. Gregory has been chosen as the first recipient of the Thurman H. Bane award, given annually to the officer or civilian of the AAF Materiel Command for an outstanding achievement in aeronautical development during the year. Colonel Gregory, project officer on helicopters, was selected "for his contribution to the military and commercial development and use of the helicopter."

Crew Saves Dinghy!

George B. Alfke, now assigned to instruct heavy bombardment pilots, has doubtless been sorely tried in his day, but by nothing worse than an annoyance which befell him while serving with the Eagle Squadron early in the war. He was flying a Wellington back from Crete when Italian destroyers shot up his oil lines. About twenty miles out from El Daub, then held by the Germans, an engine froze and one of the propellers sheared off. Lieutenant Alfke brought his plane down on the water at 75 miles an hour and the crew started to get out. The first hitch came when the rubber dinghy which was supposed to release automatically through reaction with salt water failed to function. With the aircraft sinking rapidly, the crew tried to pry the rubber boat loose with the manual switch but that was

—J. T. RAWLS AND PFC. R. R. RIEKER

"This week I knocked down four Nakajimas and two ducks!"

no good either. Just before the Wellington went under, however, they managed to break out the dinghy—only to find that it was not inflated.

The big plane swirled under and the crew treaded water for nearly two hours, holding the dinghy above their heads as they pumped it with a hand bellows. Just as they got it inflated and climbed aboard a rescue plane came into sight and they fired a roman candle to attract attention. The plane failed to see the signal but a spark from the candle burned a hole in the dinghy and it collapsed. The men began pumping again and continued for eight hours until they were located by a British amphibian plane. When they were finally aboard the aircraft, the sea was too rough for a take-off. They taxied for three hours in broad daylight, and through German controlled waters, back to base.

No More Box Cars

After the last war the thing that our fathers seemed to cling to with a venomous affection as a symbol of their toil and trouble in France was the four-wheeled freight car—the 40 and 8—quarante hommes et huit chevaux. On to this car, marked to carry forty men and eight horses, they attached all their memories of mud and glory, of good times and bad.

"So what are we going to have?" writes a captain from Africa. "What AAF symbol in the years to come will satisfy the aging Liberator pilot, the communications sergeant who has begun to add stomach, the balding mechanic? What symbol will serve to bring back painful and enchanted memories to the GI and the general alike?"

Our correspondent seems to think that bucket seats may be a contender for the immortal honor. At least he submits that as a start. AIR FORCE is open to suggestions and will be glad to report the modern interpretation of the old 40 and 8.

Veterans' Benefits

Delay between the time a soldier is discharged for physical disability and the time he begins to receive a pension or other benefits will be eliminated by a joint undertaking of the War Department and the Veterans Administration. Authorization was made recently to assign Veterans Administration personnel to Army installations in order to speed up the filing of claims for veterans' benefits, the War Department has announced. Such administration is already operating at Walter Reed General Hospital, Washington, D. C., and lessons learned from this experiment will be extended to other military installations where disabled soldiers are being discharged. Consequently, before a soldier actually leaves the Army he may receive competent advice on the merits of his claims and also a decision on them.

An arrangement has already been worked out whereby mentally ill persons, who require further treatment in Veterans' Facilities, are discharged by the War Department into this care by one contemporaneous action.

Blinded personnel will be retained in the Army in order to complete their social adjustment even though no further hospitalization is required. This social adjustment training is coordinated with the Veterans Administration so that the vocational training will continue without serious interruption. At present there are other proposals under consideration, one of these being a booklet which will explain in simple language to the enlisted man his rights as a veteran.

It is the purpose of the War Department to see that as many service connected pension claims as possible are adjudicated before the person is discharged from the Army. However, there is no way that a soldier can be compelled to file a claim for pension benefits, although his rights in this regard are brought to his attention by the War Department. In this connection, each disabled soldier who does not desire to file such claim is required to file a statement to that effect. Such a statement is not a waiver in any respect of his right to file such a claim at a later date. Where it is the soldier's desire to file such a claim, the War Department cooperates in every way practicable to perfect the establishment of his eligibility.

'Superior Efficiency'

The 480th Antisubmarine Group, AAF, has been cited for outstanding performance of duty in action with the enemy during the period from Nov. 10, 1942, to Oct. 28, 1943, in the European and North African theatres of operations. The 480th Group was the pioneer organization in the AAF offensive antisubmarine operations in the Eastern hemisphere and, from the beginning of the AAF Antisubmarine Command (activated Oct. 15, 1942), it led AAF forces in the fight against the U-boat, carrying this action to the home waters of the enemy. This action contributed significantly to the success of United Nations operations in North Africa and to the invasion of Europe.

"The group participated in all phases of the Battle of the Atlantic and defeated the enemy above, on and below the surface of the sea," the citation states. "Its activities reached a climax in the second week of July, 1943, when the enemy made every effort to thwart the supply and reinforcement of our forces then undertaking the invasion of Sicily. In the nine days between July 6 and 14, inclusive, airplanes of this organization made twelve attacks on enemy submarines, eight of which resulted in the destruction of, or probable damage to, the enemy. The authorized airplane strength of the Group was 24 B-24 type bombers. Over a period of twelve months this small force sent its airplanes out over the convoy and shipping lanes leading to Europe and North Africa on missions extending as far as 1,250 miles from base and lasting as long as seventeen hours. Flying alone and often heavily outnumbered, the 480th Antisubmarine Group's airplanes encountered prowling JU-88s and FW-200s, and attacked and defeated them in air battles over convoys and when on patrol. Although outnumbered in these battles in the average ratio of one to three they destroyed two enemy airplanes for each one of their own aircraft lost. Its killed and missing personnel number 101 officers and men, nearly fifty percent of its authorized strength (240). The 480th Antisubmarine Group has contributed with heroism and superior efficiency to the winning of the Battle of the Atlantic. Its

Parachutes: Lost and Found

Lost:

No. 42-326214, seat type. Return to Sgt. David A. Nelson, ASN 20720923, 479th Bomb Sq., 336th Bomb Gp., Lake Charles Army Air Field, Lake Charles, La.

Nos. 42-397109, 42-304755, Type S-1; return to Station Operations, Strother Field, Winfield, Kan.

No. 42-209232, seat type; return to Parachute Department, 505th Fighter Bomber Sq., 339th Fighter Bomber Gp., APO 182, Unit No. 2, Los Angeles, Calif.

No. 42-429986; return to Office of the Base Operations Officer, Army Air Base, Drew Field, Tampa, Fla.

No. 42-221019 and one B-4 type bag and contents. Return to Lieut. James Frey, Kingman Army Air Field, Kingman, Ariz.

Nos. 41-12325, turned in at Romulus, Mich., and 41-12320, turned in at Congaree AAF, Congaree, S. C. Return to Base Operations Officer, Key Field Army Air Base, Meridian, Miss.

Found:

Nos. 41-30164, 42-235748, 42-239178, 42-245266, 42-246153, 42-270809, 42-272562, 42-299142, 42-333583, 42-398731, 42-406771, 42-441492, 42-626934, 42-649044, 42-735955, all Type S-1; 39-2230, 42-466540, 42-85838, all Type S-2; 42-574415, Type QAC, AN6513-1; 42-540429, Type QAC, AN6513-1A. Communicate with Air Inspector Technical, Headquarters Salt Lake Army Air Base, Salt Lake City, Utah.

No. AN-42-329953, communicate with Office of the AAF Representative, AAF Materiel Command, Boeing Aircraft Co., Plant 2, Seattle 14, Wash. Attention: Lieut. Duncan S. Coombs, Property Responsible Officer.

PICTURE CREDITS

SECOND COVER: 7th Air Force. FOURTH COVER: T/Sgt. Roger Coster, AIR FORCE Staff Photographer. 12-13: U. S. Navy. 40: Silvers, Shreveport, La. 42: Bachrach. 43: Harris and Ewing. 52-53: AFTAD. All other illustrations secured through official Army Air Forces sources.

Requests for prints of photographs appearing in AIR FORCE should be directed to the AAF Photographic Library, Headquarters, Army Air Forces, Washington, D. C.

record is inspiring and worthy of emulation." The citation was signed by General G. C. Marshall, Chief of Staff.

Merely Conspicuous

At ten o'clock that morning the entire bomb squadron stood at formation to witness the unmasking of a soldier, a painful and impressive ceremony to behold. A member of the squadron had been picked up while wearing eight medals and a pair of wings—all of them unearned. The arrest had been made in Spokane while the young man was on pass from Geiger Field, Wash. He had been returned to the squadron to be shorn of his adornments, the air medal, the wings, the Distinguished Flying Cross, the Pearl Harbor Medal and others.

Even before this unhappy occasion many of the boy's comrades had heard him tell of enlisting in 1937, of his heroic presence at Pearl Harbor, of his combat exploits in the Solomons. Yes, they had even heard him speak bravely of old wounds and make modest mention of the Purple Heart. The squadron clerks knew him as a technical sergeant since his mail came addressed that way. Under these auspicious circumstances the youth was brought before his squadron and revealed as a private, first class, who had been in the army less than a year and had seen no combat.

After the true facts had been described, the commanding officer slowly itemized the medals upon the crest-fallen chest, and a master sergeant removed the decorations one by one. A week before this soldier was unmasked, a staff sergeant from the public relations office had approached him and suggested an interview.

"Oh, let others have their cheap publicity," the decorated one shrugged. "I want none of it myself!"

Parting Shots

A B-24, attacked by two Zeros, crashed into the water during a Paramushiru-Shimushu bombing mission. As the big plane landed the tail section broke completely away from the wreckage and remained afloat for a few seconds. When strafers swept the scene, the tail gunner continued a steady stream of fire at the Japs as his compartment sank out of sight.

Staff Sgt. Ben B. Colecchi of New Castle, Pa., is now listed as missing in action. Orders proclaim his courage and fighting spirit in keeping with the finest combat traditions of the AAF.

—The Editor.

Answers to Quiz on Page 19

1. (d) North of the Philippines
2. (d) Drop zone
3. (a) The vacuum caused by whirling propeller blades
4. (c) 41 feet
5. (c) Houston, Texas
6. (c) Maj. Gen. Nathan Twining
7. (d) Ten minutes after the hour set for an attack.
8. (b) False. Approximately a half of the noise comes from the whirring propellers.
9. (c) An air route between India and China
10. (a) Constellation
11. (b) Green
12. Red and White
13. (b) A maneuver in flight
14. (c) Officer Candidate Jones
15. (c) In front of the middle of the ear
16. (b) Anti-personnel bombs
17. (a) New Britain
18. (c) New Delhi

Mistakes in 'On the Line' Picture on Page 50

1. What, no chocks? It would be too bad if one wheel locked and the other didn't. The brakes are supposed to hold, but it could be the parking brake might slip. Find all the facts in TOs 19-1-50 and 01-1-50 as well as AAF Reg. 62-10.

2. That piece of cowling on the ground may be caught up in the air scoop. And Form One, lying in the snow, *must* be in the cockpit! Warm-up can blow it away. And in the same breath, Sergeant, this is no time to retrieve a stray screwdriver — you're dangerously close to the rotating prop. Refer to AAF Reg. 15-1.

3. Although it appears to be a very cold day the crew chief must be a super-fresh-air fiend because he has left the cockpit door open. This boner can break the canopy besides endangering the equipment from the air blast.

4. Say, Sergeant, did you mistake an airplane wing for a park bench? That's no place to sit during an engine warm-up. And by the way, if you must look like a mighty warrior, get a Sam Browne belt or something, but don't sling cartridges over your shoulder in such a dangerous spot. Reference: Common sense.

5. The elevators are down when they should be neutral. Blast from the prop may nose you over, or force the nose of the plane down causing the prop to hit the cement. Check up with TO 01-1-29.

6. This above all: Remember to set the airplane at least fifty feet away from the hangar for a warm-up. If you don't lots of damage may be done, such as the prop blast injuring or destroying property or the sudden blast from 1,500 rpm demolishing a Piper cub unexpectedly going in or out of the hangar door.

7. Only a yardbird would miss this one. There is no fire extinguisher evident. Men, this is really important. It is a grim hazard to run up an engine without the standard precaution of having a fire extinguisher close by.

OUR JET PROPELLED FIGHTER

Continued from Page 8

Since the compression ratios are lower than in reciprocating engines, special high octane fuels are not needed because no detonation problems exist. Anything that burns, from kerosene to Napoleon brandy, can be used. We will not give performance figures, but we can report that we are satisfied—as satisfied, that is, as any engineers ever are with a new device. It opens up a new field of high propulsion. Engineers are working on improvements and will do so as long as there are any airplanes.

The jet propelled engine presents no new problems to the pilot except how to fly a simpler airplane. While the turbine operates at a cherry-red heat similar to a turbo-supercharger, the gases are not flaming as they leave the nozzle. (You shouldn't stand directly behind the nozzle, however, any more than you should walk into a propeller). The number of gadgets and dials in the cockpit are cut down considerably from the number in the conventional fighter plane. One throttle does all the work, forward to go, further forward for greater speed, back to slow down or stop. The aircraft is built low to the ground because there is no ground clearance to provide for the propeller and it is therefore much easier to work on than normal aircraft.

In flight, the plane makes a weird noise. When at some distance away, it sounds not unlike a train rumbling along, far away at night. Some people say it wails like a tired banshee. It does not make as much noise when it approaches as do propeller-driven planes. You seldom hear a jet propelled plane until it is almost past you. As it goes away you hear the roar of the jet.

There has been idle talk that the intakes of the engine might create such suction that a person passing too close might likely be pulled in and shot out the jet looking like a loaf of Spam. This is not so. However, it has been reported from England that hats and coats have gone through the engine when mechanics moved right up against the intake while the engine was screaming its warning during ground runs at high rpm. Another little legend about the "Squirt" started in England. It was that birds flying into the intakes emerged dressed and skewered, suitable for serving. The plane, which doesn't announce itself, *could* sneak up on a goose heading north, but that is not considered a problem since the intake ducts are designed so that miscellaneous objects are not attracted into them.

In the jet propulsion plane, which is now in production for training purposes, we have something we want—a fighting plane for high speeds and for high altitudes. We have a *jet propelled fighter plane* and it doesn't look a thing like that rocket ship with which we are going to wander off to Mars. ☆

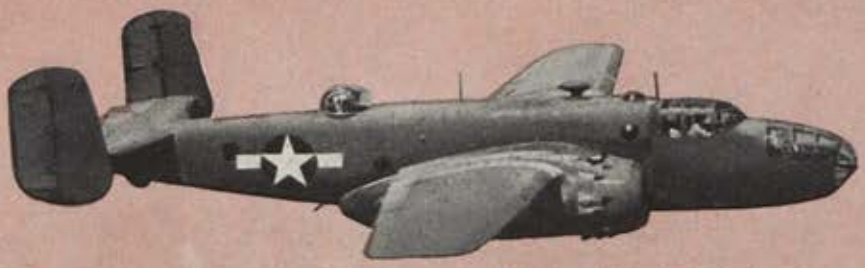
Printed in U. S. A.

OUR BOMBING OFFENSIVE FROM ITALY

The crumpled aqueduct over which the B-17s in this photo are flying once carried water to Caesar's Rome. Now, 2,000 years later, the remains are sightseeing curiosities for crews of the heavy bombers of the 15th Air Force as they spring from Italian bases to blast targets in German-dominated southern Europe.

The 15th Air Force made its debut on November 2 in a raid on the Messerschmitt factory at Weiner Neustadt. The factory was severely damaged and fifty enemy planes were destroyed in the air. By January 11, the 15th had flown 78 missions and dropped 8,489 tons of bombs on strategic targets in southern Germany, Austria, Italy, Yugoslavia, Bulgaria and Greece. Among the targets which it had blasted effectively were ball-bearing factories, aircraft factories, submarine pens and other naval installations, railroad lines and marshalling yards.

Commanded by Maj. Gen. Nathan Twining, the 15th is the strategic air force of the Mediterranean theatre. Its operations are coordinated closely with the tactical 12th Air Force, headed by Maj. Gen. John K. Cannon. In charge of all allied air activities in this theatre is Lieut. Gen. Ira C. Eaker. ☆



A WAR ON WINGS AND WHEELS . . .

WAR DEPARTMENT
HEADQUARTERS ARMY AIR FORCES
WASHINGTON

MEN AND WOMEN OF THE ARMY OF THE UNITED STATES:

Americans are fighting a war on wings and wheels in every part of the world. To keep our global Army at peak performance, we need the men and machines of motor transport as never before.

Truck wheels are rolling up the world's last frontiers.

In 1918, motor transport was crude, but its only maintenance problem was the mud of French battlefields. Today, mechanized giants must blast new Overland Trails through jungles, cross high mountain ranges, and haul food, bombs and fuel across blistering deserts, in order that our fighters can attack the enemy by land and air.

The details of preventive maintenance have been prescribed to you. Any additional information you may need is available for the asking. For success in every theatre, we must depend upon trucks and must have responsible men to keep them rolling. That is your *stake* in victory.

H. H. ARNOLD
General, U. S. Army,
Commanding General, Army Air Forces