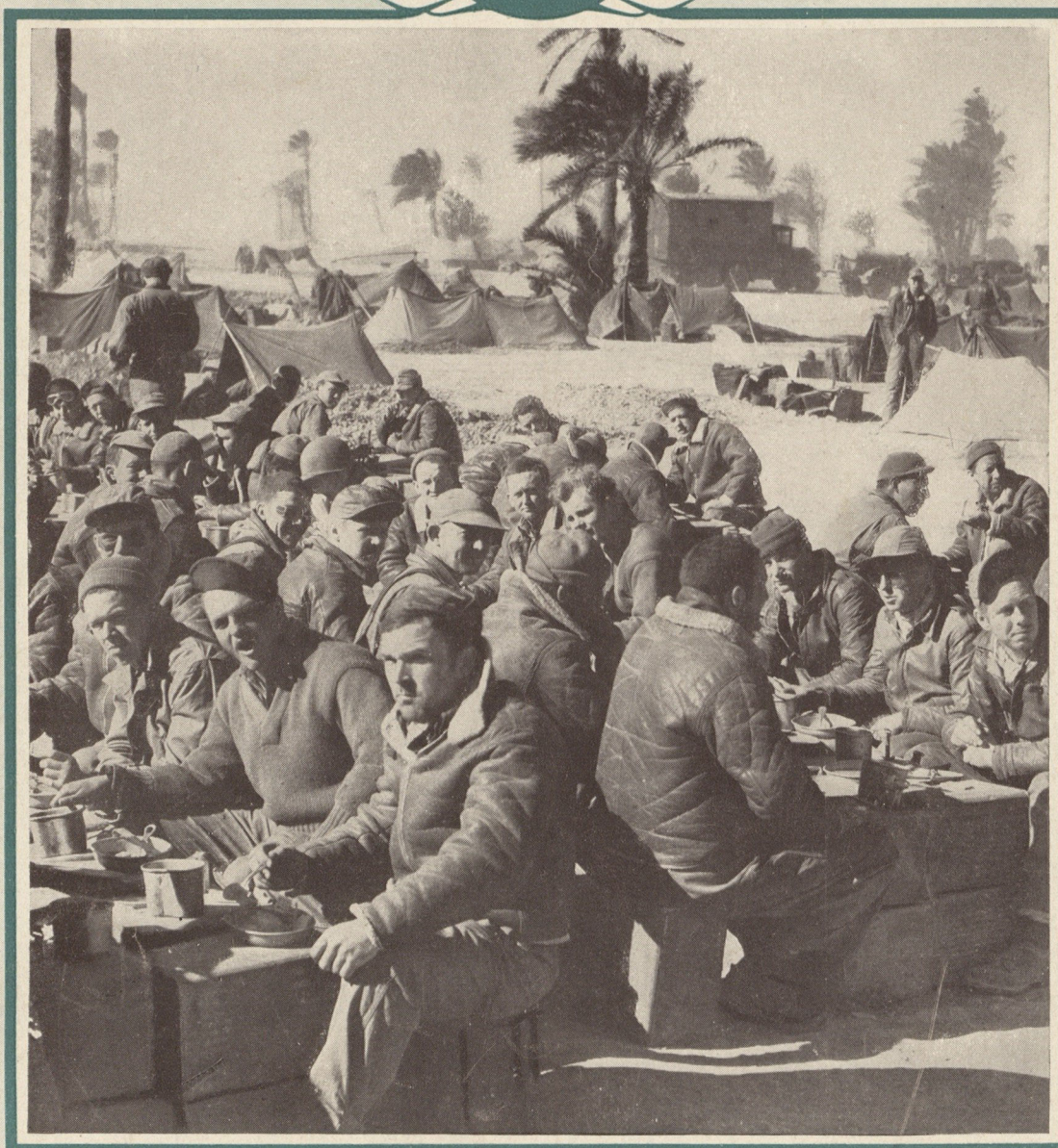


AIR FORCE

OFFICIAL SERVICE JOURNAL

OF THE U. S. ARMY AIR FORCES



JULY 1943

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July Brief

AS THIS ISSUE of AIR FORCE goes to press, the British Air Ministry announces formation of a tactical air force for all home-based aircraft of the RAF. The new command, which has absorbed the RAF Army Cooperation Command, is a direct outgrowth of the highly successful role played by the Northwest African Tactical Air Force in driving the Axis forces out of Africa. This role is described fully by Brigadier General Laurence S. Kuter, who served as American Deputy Commander of the Northwest African Tactical Air Force, in the article, "Air-Ground Cooperation in North Africa," appearing on Page 4. General Kuter formerly was Deputy Chief of the Air Staff. He prepared this article while in Washington on temporary duty following the surrender of the last remnants of the Axis forces in Tunisia.

THREE OTHER FEATURES in this issue of the service journal reflect additional phases of AAF participation in the North African campaign. The co-pilot of a heavy bomber describes his thoughts and experiences during the first AAF raid on Naples in an article on Page 7. The story of how ground crewmen of a B-26 Group had to use every stunt in the book and then some to keep their planes in the air during the early days in Tunisia is told on Page 12 in an article by Lieutenant Gordon H. Coe. This month's cover, showing men at chow in North Africa, is augmented by two pages of pictures (19 and 20) depicting the life of AAF personnel at our airdromes and bases in that theatre.

WHILE THE CLEAN-UP of the Axis forces in North Africa has permitted a decided increase in Allied air attacks on southern Europe, there has been an even greater acceleration of American and British raids on the continent from bases in the British Isles. Aircrew members who may be picked for the assignment to Britain will be particularly interested in "Have the Best Crew of Them All," on Page 14. In this article five members of a B-17 crew—pilot, navigator, bombardier, radio operator and top turret gunner discuss their specialties based on experience gained in bombing raids over Europe. The co-authors, members of the first bomber crew returned as a unit from the European theatre, completed OTU at Walla Walla, Washington, last summer.

THE GLOBE-CIRCLING civilian pilots of the Air Transport Command are described on Page 9 in

an article by Colonel Harold R. Harris, Commanding Officer of ATC's Domestic Transportation Division. The author reports that their uniforms aren't well enough known by AAF personnel and suggests that these carrier contract airmen be recognized as veterans who probably have "forgotten more about flying than you'll ever know." Colonel Harris, a pilot officer in the first World War and former test pilot, tells of sample experiences ATC pilots have had in the months they have been operating the round-the-world service. When Colonel Harris was recalled to active duty with the ATC he had been associated with long-range commercial air transport since 1928. Several years earlier, he had been chief of the flight test section of the Air Corps Experimental Field at Dayton, Ohio. In 1926 he held thirteen world aircraft records at one time.

BUT, of course, civilian ATC pilots aren't the only airmen flying the oceans these days. AAF officers and men are ferrying planes daily to the combat theatres all over the world. One of the most vital of these ferry routes is that across the South Atlantic, and one of the most important phases of the trip is the briefing pilots and their crews get at Morrison Field, the "Grand Central" of this southern run. A description of briefing at Morrison has been written for AIR FORCE by Captain T. W. Finnie, Group S-2 officer at the field. His article appears on Page 28.

WILD AND WOOLLY tales of terror in the jungle with its ferocious beasts, deadly snakes and man-eating plant life are considerably debunked by the Arctic, Desert and Tropic Information Center this month in the article, "Exploding the Jungle Myth," on Page 22. The ADTIC experts advise men who are headed for the jungle country to visit their local zoo before departing and take a good look at what probably will be the only animals and other jungle critters they will see before they return home.

FURTHER standardization of the AAF flying training program and greater uniformity in cadet instruction is anticipated in the establishment of the Central Instructors' School at Randolph Field. The work of this new school is described in the article, "Taking the Kinks Out of Training," appearing on Page 34. The author is Colonel Edward H. Underhill, director of training at the school.

AIR FORCE is primarily a medium for the exchange of ideas and information among Army Air Forces personnel. Opinions expressed by individual contributors do not necessarily express the official attitude of the Army Air Forces or the War Department.

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CROSS COUNTRY

Changes in the gunnery program, and other developments of the month within the Army Air Forces.

AERIAL gunnery occupies a top spot on the Air Forces "check list." Combat experience has definitely linked shooting ability to the success of missions, and has resulted in some significant changes in our gunnery program.

One interesting change eliminates the "career gunner"—the man who knows only gunnery and goes straight to combat without first acquiring a technical skill.

This doesn't affect the status of the "career boys" who have already learned their gunnery, many of whom are now shooting it out with the enemy, but hereafter gunnery training will always follow technical training. Until recently you could take gunnery training before or after the technical.

It has been found that a gunner, like a ball player, must have continual practice to maintain his shooting eye. This shift in the training schedule will enable trainees to start gunnery after other training has been completed and then continue to practice through OTU and on into the combat area.

Back in December gunnery was made mandatory for radio-operator mechanics, airplane mechanics and airplane armorers. Other changes now taking place are designed to increase the practicability of training. Instead of the five or six weeks' course, for instance, a seven weeks' course is being instituted. It will include four solid weeks of firing from ground and air at all conceivable types of targets.

In addition, schools are practically abandoning written examinations in favor of actual demonstrations of ability, the reason being that men with academic proficiency were not always found to have an equivalent manual dexterity. Increasing stress is being placed on manual ability, although thorough knowledge of an academic type is still necessary. The manner in which you flip your hands around is rather important when

you're being tested on your ability to correct malfunctions at 25,000 feet with mittens on.

Here are a few of the more important accomplishments demanded of students of the Flying Training Command's flexible gunnery schools before graduation and assignment to OTU and RTU:

Detail strip the gun, blindfolded, without special tools, and, after the instructor has mixed up the parts, accomplish the following while reassembling the gun: pick out the part, name it and describe what is broken on two or three broken parts, intentionally placed with other parts by the instructor.

While blindfolded: enter and leave the turret correctly, quickly and with minimum physical exertion; locate all switches, turn them on in proper sequence and start the turret without delay.

Show ability to estimate range at 300, 600 and 1,000 yards for all enemy aircraft taught in Aircraft Recognition.

dress he gave was near by. Upon arrival the lieutenant lined up his men outside, each with towel in hand, and went in to make the necessary arrangements. It didn't take him long to discover that the establishment was a *maison de joie*. We understand an orderly retreat was accomplished, and the original objective attained. (For this one we are indebted to Lieut. D. R. McGoldrick, APO 520, New York City.)

THE ENEMY WILL REGRET

We have just received a report on Staff Sergeant Shorty Gordon, hero of the article "Angels Don't Shoot Guns" in the June issue of AIR FORCE. As you may remember, a postscript to that article stated that Shorty was missing from a raid on Germany and believed to have bailed out over enemy territory.

It has now been definitely established that Shorty is a German prisoner of war.

WASHOUT

One of our favorite little stories concerns a lieutenant in a heavy bombardment group in North Africa who took a truckload of enlisted men into town for a dip in the public bath. Being a bit vague about its location, the lieutenant stopped a native and asked for directions. But the Frenchman knew no English and the American knew no French. So the lieutenant did a pantomime, going through all the motions of removing his clothes and taking a bath. The Frenchman watched the act closely, glanced at the eager faces of the men, then smiled broadly in perfect understanding. The ad-





Nose, engine cowlings, fuselage and rudder of planes used by Domestic Transportation Division, ATC, now have identifying bands of yellow.

NEW TRANSPORT COMMAND MARKINGS

Certain yellow plane markings have been adopted by the Domestic Transportation Division of the Air Transport Command to make their planes engaged in training and cargo operations more easily recognizable from the air and ground. (See cut above.)

All planes of the Command used in transition transport training, as well as those ships in the United States and on domestic routes from Brownsville to Panama engaged in cargo operations, will have their vertical tail rudder painted yellow with eighteen-inch-high black figures giving the ship number. Girdling the fuselage just behind the cargo or loading door will be a 42-inch yellow band, with the circular insignia of the Air Transport Command painted in the center of the stripe on both sides of the plane. Between this yellow stripe and the tail assembly will be the white and blue circular star insignia of the AAF.

The engine cowlings on all ATC planes in this category will be painted yellow and each ship will have a yellow diamond on the nose, approximately twenty by forty inches in size with four-inch-high black figures. In the case of twin-tailed types both tail rudders will be painted yellow. For general information, the various types of training planes common to Air Transport Command operations are the C-53, C-49, C-48, B-25 and AT-17.

These markings, the Air Transport Command points out, are not to be confused with the yellow identification markers in use by the Troop Carrier Command. The outstanding differences are that on Troop Carrier Command planes the stripe girdling their planes is farther back on the fuselage and the wing tips are painted yellow.

THE WINNAH

The somewhat popular opinion that war-time expansion of flying had led to a relatively large number of training accidents within the Army Air Forces got a solid kick in the teeth last month when the Air Forces received the safety award of the National Safety Council.

The Safety Council, 32 years old and con-

sidered the top authority on such matters, had made eleven previous awards but this was the first time a military organization copped the honors. All the others had gone to industrial firms.

The award is based on maximum production with minimum loss of manpower. In this case, it meant the maximum production of pilots with the minimum loss of life. The clincher was the fact that 95 percent of Army Air Forces trainees complete the training*phase of the program without an injury.

THE EYES OF TEXAS

It requires no provocation at all for a Texan to leap to his feet, clear his throat, and burst forth into what he considers the national anthem, "The Eyes of Texas Are Upon You." This is a little tale about two such eyes, and rather sharp eyes at that. Our hero is Staff Sergeant Raymond C.

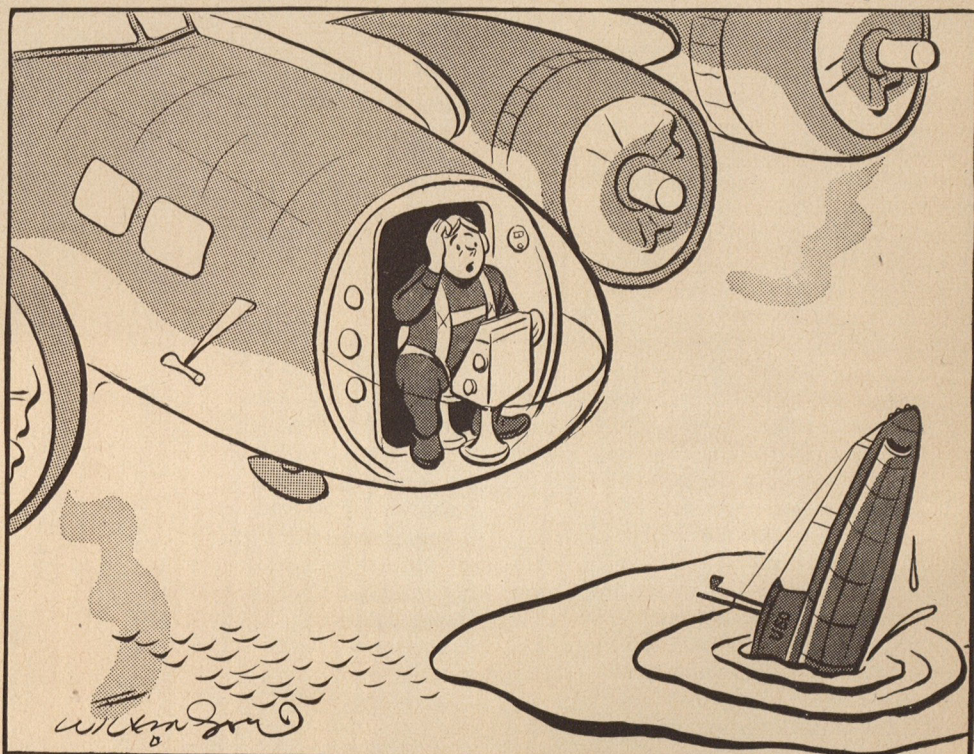
Matthews, Jr., of the 404th Base Headquarters and Air Base Squadron, at Texas' Fort Worth Army Air Field.

The story begins with a jangling telephone in the office of Captain R. E. Dysart, former Fort Worth Chief of Police, now Civilian Chairman of the Office of Civilian Defense in that city. The caller identified himself as Sergeant Matthews, home on a three-day pass from Tarrant Field (at that time the name of the Fort Worth Army Air Field), and said he had spotted an Italian Savoia-Marchetti 81 bomber over the city at about 1,000 feet.

Dysart then checked with the post intelligence officer at Tarrant Field and Matthews was identified by that office from personnel records and reached by telephone at his home. He substantiated the report to Intelligence that he had given to Civilian Defense, describing precisely the recognition features of the plane—three engines, low wing monoplane, tapered leading and trailing edges, rounded wing tips and peculiar bracing of the tail. Matthews said he had worked in the aircraft recognition section of the ground school at the station and, despite the improbability involved, was positive of his identification of the foreign aircraft. In fact, he became downright insistent.

Well, as you might have guessed by now, Matthews really knew his stuff. It was definitely established, through higher Civilian Defense Control sources, that a Savoia-Marchetti 81 had actually been over Fort Worth. A checkup revealed that the ship had taken off from Brownsville, Texas, for Meacham Field, Fort Worth, developed landing wheel trouble and could not land at Fort Worth but later made a successful landing at Dallas.

Just what mission the Italian plane was



"Now to think of something clever — like 'Saw sub, sank same!'"

—FRITZ WILKINSON

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performing was not announced, but it's no secret that captured enemy aircraft are being brought in from the combat areas for purposes of study.

Anyway, we have added Sergeant Matthews to our personal heroes file and hope there are more like him.

SKIRTS

We're not so sure about this one, but anyway it's Technical Sergeant Joseph F. Marling's story, not ours. By way of introduction, he served as engineer on the B-17 "Yankee Doodle" and has more than fifty combat missions to his credit in the Asiatic Theatre. On a certain overwater mission, reports Sergeant Marling, they flew low over friendly natives in canoes. The girls in the canoes wore only grass skirts, and there was such enthusiastic handwaving both from the air and water that a return run was made. Enthusiasm mounted on all sides, but the girls stole the show by removing their skirts and waving them high in the air at the boys. How low can you fly a B-17, anyway?

"HOW OUR ARMY GREW WINGS"

Our Army grew its wings the hard way. A detailed account of the struggles, disappointments, tragedies and triumphs of that small band of enthusiasts who were willing to risk their necks for the future of military air power is contained in a new book, "How Our Army Grew Wings." The authors are Charles de Forest Chandler, late Colonel, U. S. A., and Frank Purdy Lahm, Brigadier General, U. S. A., retired.

The authors are well qualified to write of airmen and aircraft before 1914, which is the period of military aviation covered in the book. Colonel Chandler was the first Chief of the Aeronautics Division of the Signal Corps. General Lahm was the Army's first airship pilot, and Major General in command of the Gulf Coast Training Center at the time of his retirement in 1941. Both were members of the board which tested and accepted the Army's first airplane.

The book (\$3.75) is published by the Ronald Press Company, New York City.

FOR PILOTS OF WORLD WAR I

We've been asked to tell old-timers that membership rolls are now open in the Order of Daedalians, an organization composed exclusively of commissioned World War I Army heavier-than-air pilots. Anyone who held the "R.M.A." or "J.M.A." rating with its silver wings prior to the armistice on November 11, 1918, is eligible for membership. Pilots who remained on active duty pioneered the fraternity under the leadership of the late Brigadier General Harold L. George, who assembled the original charter members constituting Flight No. 1 at Maxwell Field in March of 1934. However, the movement is now open to all who have the above qualifications. Anyone interested can obtain additional information by writing its Wing Headquarters, Room 4C 870, Pentagon Building, Washington, D. C. — THE EDITOR.

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TIPS FROM THE ARCTIC, DESERT AND TROPIC INFORMATION CENTER

DESERT NOTE. It happened on a sand-waste of Cyrenaica. Under a rare, cloudy sky, a Tommy struck up a conversation with an old Bedouin and his middle-aged son. "Looks like rain," he observed. The old man smiled skeptically: "I think not, but I hope so, *for my son's sake*. I have seen it rain . . ."

PACIFIC 'CHASER.' Some of our fighting men in New Guinea have discovered that a certain species of crab carries under his shell a small pouch filled with pure, distilled water. The exact species of the crab isn't known to us at the present time, but an appropriate name might be the "Oasis Crab."

HOT STRATEGY. Americans stationed in Iraq, the great "land bridge" between Europe and India, have discovered that strategy applies to more than warfare in Moslem countries. For example, they've found out that when they are offered a third cup of coffee by their host, it's not a gross display of wealth or sheer disregard of the rationing system, but a polite Moslem way of pointing out that the visit has definitely come to an end.

ARCTIC BOMBERS. In the summer, mosquitoes are thicker above the Arctic circle than anywhere south of it, the tropics included—thicker and hungrier. Even in warm weather fighting men have to dress completely for protection against the assault of this impressive and harassing air force. Men go about completely clothed, down to gloves and headnets, and that means sweating under the 24-hour summer sun. But it's either sweat or be 'et!

JUNGLE JITTERS. Landing in jungle rivers has given many a pilot a pain in the neck. When looking from one bank of a river to the other, a mirror-image of the foliage and sky may be so perfect that the waterline can't be discovered. This phenomenon of dead calm is common. It's tough to judge your altitude when landing; you don't know whether you're fifty feet or fifty inches above the water surface. Ripples caused by boats break the mirror-like image and may help the pilot gauge the surface. Pilots can also buzz down and let the prop-wash create a ripple.

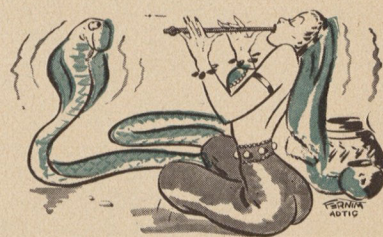
COLOR SCHEME. In many parts of the Arctic—such as treeless regions, sea areas or inland ice—distinctive landmarks are few. Man-made landmarks are therefore often of special importance; one color in particular has been selected as the most effective for recognition purposes. It is called "Flame Scarlet" and it was developed by the Bureau of Standards for the first Byrd Antarctic expedition. To the

average eye, it looks like a bright orange color. It shows up better on snow and green surfaces than any other shade. Signalling devices, markers, etc., used in Arctic regions should be "flame scarlet" in color. Bright orange crepe paper, the kind you can get at any five-and-dime store, makes a good temporary signal when stretched out; it packs away tightly, is light and easy to tote along.

DRINKING HABIT. Coral absorbs water like a sponge. The deeper layers are saturated with salt sea-water, but the upper surfaces are fresh with absorbed rainwater. Sip from the surface, say South Seas natives.

STAR GAZING. Here's the ABC of desert navigation as practiced by the Arabs: When travelling at night, they take their directions from the pole star, selecting another star in the direction in which they desire to travel. At intervals, they pick another star in the same general direction, since all stars move westward. Sometimes a guide will doze while walking and follow one star too long. It's a sure way of getting lost.

SNAKE-LORE. The movements of "trained" cobras, supposedly in response to the strains of seductive music, are not the result of the music at all, but of the Li'l Egypt movements of the snake-charmer. The cobra can't hear airborne sounds, but it watches and moves with the motions of the charmer.



SKY MAPS. With experience, a pilot can tell from the color reflection on an overcast Arctic sky the general type of country lying ahead and beneath him. Dark patches on the overcast indicate open water, bare or snow-free ground. Often, on ocean flights, islands will reveal themselves in reflections on the overcast.

GAS DOPE. In desert operations, extreme care is taken with high octane fuel at temperatures of 110 degrees or more in the shade. To avoid sparks, gas drums often are opened with bronze or other non-sparking tools. Also, the plane is grounded, as are the refueling funnel and nozzle.

The Arctic, Desert and Tropic Information Center welcomes contributions from all Army personnel with knowledge of the non-temperate theatres of operation. Submit to: Arctic, Desert and Tropic Information Center, Eglin Field, Fla.

AIR-GROUND COOPERATION IN NORTH AFRICA



By Brig. General Laurence S. Kuter

AMERICAN DEPUTY COMMANDER, NORTHWEST AFRICAN TACTICAL AIR FORCE
NORTH AFRICAN CAMPAIGN

WHEN the campaign in North Africa came to a close, with thousands of Germans and Italians voluntarily streaming through the dust toward our prisoner cages, the Allies had won a victory marked by the highest type of coordination in manpower and weapons.

There had been complete unison among British, American and French fighting elements.

There had been concerted action by all air, ground and sea forces.

There had been, particularly, an effective teaming of air and ground strength right in the battle area—with air power providing infantry and armored divisions with a measure of aid and support probably never before attained.

To officers and men of the Army Air Forces, this air-ground cooperation was among the most significant developments of the war to date. It was achieved by the introduction of a new type of air combat unit—the tactical air force.

Established during the campaign itself, this organization allowed for the employment of air power in a concentrated mass, striking at such time and at such points and with such speed as to be most valuable in the over-all operation. It prevented the misuse of air power, the scattered, inefficient employment of planes and personnel so likely to occur under old conceptions of air support.

It is intended that the lessons learned and the successful methods developed in air-ground cooperation shall be translated into the broad American air effort as quickly as possible.

During the Tunisian Campaign, Air

Marshal Tedder, under General Eisenhower, commanded the Air Forces in the Middle East, in Malta and in Northwest Africa.

Lieutenant General Spaatz commanded all of the Northwest African Air Forces, the fighting elements of which were the Strategical Air Force under Major General Doolittle, the Coastal Air Force under Air Vice Marshal Lloyd, a Photographic Wing under Colonel Roosevelt and the Northwest African Tactical Air Force under Air Marshal Coningham.

This discussion concerns the *air-ground cooperation* between the top air unit in the battle area, the Tactical Air Force, and the top ground unit in the battle area, the 18th Army Group. Because this discussion concerns *only* the Northwest African Tactical Air Force in the battle area, it should not be inferred that the magnificent work of the Northwest African Strategical Air Force on the ships, ports, docks and distant air bases on which the Axis forces in Tunisia depended was not appreciated by our battle area air and ground forces.

MOST certainly, our victory was directly influenced by the Strategical Air Forces' shattering blows on more distant links in the Axis armor and on the Northwest African Coastal Air Forces' effective protection of our ports and coasts and, naturally, on extraordinary efforts by Major General Dunton's Air Service Command and Colonel Ray Dunn's Troop Carriers. Our battle area air force is only one of several air forces which can claim a portion of General Eisenhower's Allied Force victory.

The Tactical Air Force is a completely new idea in the organization of an air force

fighting in the field alongside of an army. The idea was not evolved from book study or by theorists. Its conception, together with the details of its organization, grew gradually and as a direct result of long and bitter battles stemming back to the air-ground efforts of the British crossing the Western Desert. During the years of that fighting, a series of failures illustrated errors in air-ground cooperation and a series of successes indicated effective methods. In the Tactical Air Force we combined the desirable features learned in the Western Desert, and we believe we have eliminated the errors that had previously been made.

The concept of air-ground organization in the Tactical Air Force and in the 18th Army Group can be traced back to June, 1940, when the RAF could oppose a large, powerful and more modern Italian Air Force in Libya with only a handful of obsolete aircraft. This tiny RAF force not only held its own but eventually swept to complete victory when General Wavell, now a Field Marshal, advanced for the first time across Cyrenaica.

In that operation the Italian Air Force in Libya operated under the direct command of the Italian Ground Forces. The Italian Air Force consequently was used in penny packets at the order of local army commanders to give protection to their own local sectors. In contrast, the RAF, employed as a true air force and in concentrated mass, completely destroyed some 1100 Italian aircraft.

By the campaign of 1941-1942, the British had a large and efficient air force in the desert, this time opposed by the Luftwaffe. Several factors, principally the drain on

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the British ground forces resulting from their requirements to move large units to the Far East, resulted in the long and now famous retreat to Alamein. Even though Rommel was continually pressing the ground forces back at this time, the air was largely controlled by the RAF in the Western Desert. The RAF was responsible to a great degree for the fact that Rommel did not annihilate the British Army at this time and was finally halted at Alamein.

During the lull that followed at Alamein, Air Vice Marshal Coningham, then commanding the RAF units in the Western Desert, put the final touch to his training and tactics and rebuilt his numerical and qualitative strength. The air force which was launched against Rommel in connection with the success of the 8th Army at Alamein and which pursued the defeated enemies across the desert to Tunis was in effect the first full flowering of a tactical air force, although at that time it didn't hold that name.

On February 18, when the Northwest African Air Force was formed, Air Marshal Coningham, promoted and knighted after Alamein, was placed in command of all air forces fighting in the battle area alongside the armies. Our Tactical Air Force, therefore, composed of both British and American units of fighters and bombers, was the first expression in actual practice of the years of experience gained by the RAF in the only theatre in which allied air units have fought the enemy alongside the ground units in the field. It was the quintessence of battle experience, the result of many mistakes, many trials and at last resounding success.

It was something far superior, as proved by results, in organization to anything which the Germans had ever evolved. It is an example on a big scale of the encouraging fact that the Allied commanders are clearly able to utilize the experience gained by hard fighting in this way. It is the pattern of the future, the way in which air power in collaboration with armies in the field will beat the enemy and win the war.

Doubtless, in the course of time and future experience, changes will be made, but the basic conception of a Tactical Air Force as the air power in the actual battle area will probably remain until the end of the war as tried and proved.

The function of the tactical air force is one of working in partnership with other components of air power, with the strategic bombing force which uses the longest range bombers on relatively long-term targets, such as munitions establishments, supply ports, and the like. The tactical air force works with the coastal air force which is intent on cutting the enemy's supply route by sea and in protecting our own. The tactical air force is concerned with the battle itself immediately in the battlefield.

It is easy to say that such an air force gives air support to the army, but the word "support" has now so many old-fashioned and wrong implications in the public mind

How the Tactical Air Force functioned in the North African campaign, and its potential influence on future operations

that it is much better not to use it. The word "support" always makes people think of air power used as an ancillary weapon of the army or navy; in operations which are primarily land or sea. It brings to mind a picture of bombing to extend the range of artillery, and particularly of squadrons of fighters at the immediate imperative call from ground commanders of relatively small sectors to attack enemy troops immediately in front of them or to defend their own troops from enemy bombers.

The local ground commanders obviously cannot have any knowledge of what is happening over the wide area of the land battle and of the air battle. So this conception obscures the inevitable two phases of the modern battle—the air phase and the combined air-ground phase. The narrow conception of air support is firmly imbedded in the public mind and particularly in the mind of the inexperienced soldier who is having his first taste of enemy bombing or strafing. That method is precisely the method by which the Italians threw away their air force with no gain in Libya. Although it is the method by which the Germans advanced through France, when air opposition was very scant, it is surely the method which was found to be totally obsolete and leading more toward defeat than victory in operations against a well-trained army and a well-trained air force in Africa.

It is much better to speak of *collaboration* between the army and the tactical air force. The army strikes from the ground, the tac-

tical air force strikes from the air. The method by which this coordinated air-ground effort is applied is best illustrated by the workings in the combined air-ground headquarters in the battle area in Tunisia.

In a tent camp in the Tunisian mountains, the air and ground commanders lived and worked side by side. One was General Alexander, controlling and coordinating the 18th Army Group which consisted of the 8th Army, the 1st Army, 2nd U. S. Corps and the 19th French Corps. The other commander was Air Marshal Coningham, controlling and coordinating the Tactical Air Force which consisted of the Western Desert Air Force in the South and two fighter forces in the West which were backed up by a tactical bomber force. General Alexander controlled the land forces in the battle area. Air Marshal Coningham controlled the air forces in the battle area.

THE two commanders lived together in intimate daily consultation. They made their plans together, each stating what his force could contribute toward the general victory. They worked in complete harmony. They both knew that only the long reach of air power could achieve the quickest triumph in Tunisia, which was a destruction of the enemy rather than pushing him out of Africa. So General Alexander on his part moved his ground units steadily forward to capture and protect the air fields needed to tie down and then drive forward to capture the enemy.

Air Marshal Coningham's effort was in two distinct phases. First, the requirement that he reduce the enemy air to practical impotence, and after that to throw the full weight of his air force against the enemy army. The importance of those two commanders of land and air forces living side by side in the same camp, eating in the same mess and planning and operating daily on equal terms in close collaboration, cannot be overstressed.

The successful stages of the Tunisian battles follow much the same pattern. First came the 8th Army push through the Mareth positions. The Mareth battle actu-

Stuck in the mud! This is a problem whose solution requires plenty of elbow grease.



Loading bombs on a P-40 of a Fighter Group in North Africa. Note daisies in the field.



ally began with an air blitz on enemy airdromes. Prior to the attack of the 8th Army, Air Marshal Coningham concentrated his entire air force on the enemy airdromes. After the strength of the German air force had been materially reduced by this blitz, he kept the northern and central air units operating exclusively against the German Air Force which relieved the Western Desert Air Force and the 8th Army of any concern over German opposition in the air. This left the Western Desert Air Force free by day and by night to employ hundreds of bombers and many squadrons of fighter bombers to search out individual enemy concentrations and divisions and operate with great effectiveness in the immediate front of the ground units of the 8th Army.

At the crisis of the battle in front of El Hamma, the Hurricane tank-busters were thrown in. The enemy broke and retreated. In this particular operation, the 146th Panzer Grenadiers Division was caught moving on a road and rendered completely ineffective by air attack alone.

After a short pause the 8th Army attacked at Wadi Akarit. Again the air units in the north and center were concentrated on the German air establishment. Once more the Western Desert Air Force was free to work at a maximum intensity on the German forces in the Wadi Akarit position. Again the enemy retreated, this time more quickly than was expected, to a semi-circle position from Bizerte to Enfidaville.

At this point it was the turn of the Western Desert Air Force to draw away what was left of enemy air power while the Tactical Bomber Force lent their strength to the attack by the First Army and the Second U. S. Corps.

The battle for the capture of German forces in Tunisia began, not on April 22, on which date the ground forces pushed off, but on the night of April 18-19 when we employed ninety night bombers against German airdromes. We had guaranteed to reduce the German air force to relative impotency by dawn of the 22nd. Our operations for the next three days are already well-known in the American press. It was during these days, of course, that the JU-52s and many of the escorts were destroyed. Our total efforts destroyed 112 German airplanes those two days.

The spectacular destruction of the 20 ME-323 6-engine transports on April 22, which incidentally were carrying the equivalent of a German regiment into Tunisia, was the continuation of our plan to knock the Luftwaffe down and keep it down during the period of the ground movement forward. During this period there were terrific, spectacular and important air victories which, however, in the long run, were not so important as the steady weight of air attack that the Tactical Air Force was turning on the enemy troops in front of the 1st Army. On the 22nd and from then on we had free fighter squadrons sit-

ting over the German airdromes during the German to get up. On the 22nd and 23rd he did try to get up and was knocked back down. During this period, he was kept down by a small proportion of our fighters. The great balance of our force at this time was steadily in front of the main effort of the 1st Army.

The weight of daily attack during this period increased each day and was heavier than any air force had ever delivered in battle in collaboration with an attacking army. Our air units were placing in front of the main effort of the 1st Army a heavier concentration than had been employed at Alamein. This air effort increased to a crescendo on May 6 on the final drive from Medjez el Bab to Tunis. On that day we delivered 2,146 individual airplane sorties, the great majority of which were bomber, fighter-bomber or strafing missions on a 6,000-yard front before the main effort of the 1st Army. This continual rain of bombs in front of the advancing divisions had the effect of blasting a channel from Medjez el Bab to Tunis. You know the result of that drive. General Alexander's view of the effectiveness of that effort is expressed in a single sentence of his on May 8 to the Tactical Air Force: "Without your support this drive would just not have been possible."

THE fact that each step in this battle was a carefully planned one and that the results of each step were exactly the results that we expected to accomplish, both in the air and on the ground, is most reassuring. There were no accidents. None of the results came from chance happenings. This battle is clearly the result of carefully detailed and coordinated air and ground planning and execution.

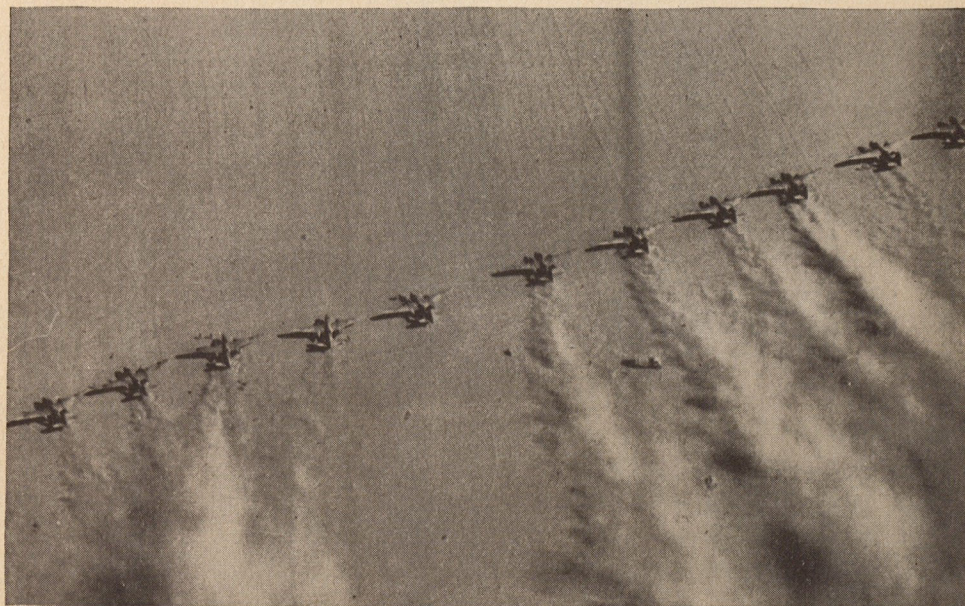
One result of this particular battle is believed to be of great significance for the future. That result is briefly stated in the fact that the first 25,000 German prisoners, whom we saw in our 2nd Corps Cage on

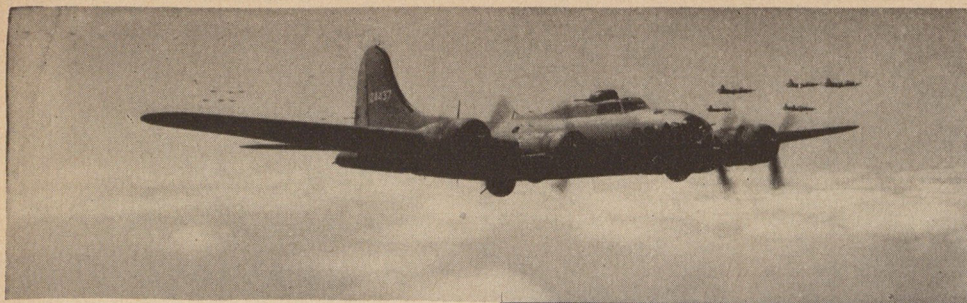
May 9, consisted of selected Nazis from two S S Divisions, the Manteuffel and Hermann Goering, and German soldiers of the highest state of training from one Panzer Division. If these men were not the cream of the German armed forces they were surely well above the average Nazi. They apparently had been ordered to fight to the last man, to eat the last biscuit and fire the last round for the glory of Hitler and the Fatherland. They did fight well and bitterly. However, when it became clear to them that they would lose that battle, they immediately surrendered without further ado. They surrendered great quantities of food. They had much ammunition still remaining. Although their units had disintegrated their individual morale was high.

As prisoners arrived for admission to the 2nd Corps Cage, many of them driving up in their own motor transport or moving in enormous columns where there was no effective guard at all, they were assembled in groups of one hundred by German officers, and marched off like guardsmen, singing German marching songs, into the cage. Surely if this picked bunch of Nazis hauled down the flag and surrendered after it had become clear to them that they had lost the battle, our course toward defeat of Germany is assured.

The effectiveness of our bombing was graphically illustrated in Ferryville, in Bizerte, in Tunisia and particularly on the road from Bizerte to Tunis. Bizerte was a town and port full of establishments being used effectively by the Germans. We attacked Bizerte with the intention of blotting it off the map. On May 9 when General Alexander, Air Marshal Coningham, General Bradley and I drove through Bizerte, we drove around for over an hour and found not one single inhabitant of the city. We saw no single building, however small, which was unscathed. On the other hand, the town of Ferryville was one which we knew to (Continued on Page 33)

A flight of bombers sets up a flurry of sand during take-off.





FLIGHT TO NAPLES

By Lt. John H. Namle

U. S. ARMY AIR FORCES

FOR a long time we had been anxious to get a kick at the shin of the Italian boot. From our secret airfield in French North Africa our B-17 Group had bombed targets in Tunis, Sardinia and Sicily, but we had been looking forward to our first visit to Italy as a memorable landmark in the Mediterranean campaign.

Awakened at seven o'clock on a Sunday morning, we were told to eat breakfast quickly as there was an early briefing. For breakfast we had pancakes, fresh eggs, cereal and coffee. We then piled into trucks for the ride to the old granary which had been taken over as the Group's headquarters.

We knew that the planes had been loaded with fragmentation bombs so speculation ran high as to whether the target was an airdrome or a troop concentration.

The intelligence officer in charge of the briefing stepped on the platform and picked up the pointer. Somewhere in the room a news cameraman's photo bulb flashed.

"The target for today is the Capodichino Airdrome several miles Northeast of Naples . . ."

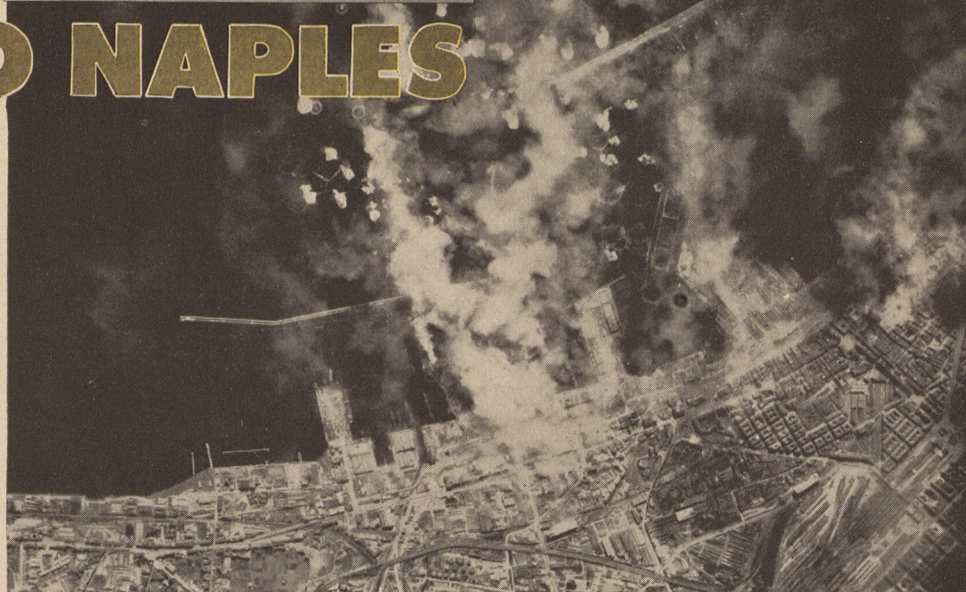
This was it—the target we had been waiting for. The briefing officer went on:

" . . . flying over Capri . . . Mount Vesuvius . . ."

THERE was little sound in the room while the target information, the amount and position of anti-aircraft batteries, and the number of enemy fighters we would probably encounter were revealed. The navigators checked on routes. The weather man gave his report on the weather out, the weather to be expected over the target and on our return trip. We synchronized our watches. The briefing was over.

After we had drawn our maps, trucks drove us out to the dispersal area where our planes were warmed up and ready to take off. Since it was to be a long mission the mess hall had sent out a box of food for each crew and a candy bar for each man.

At 8:45 we took off, circling the field several times while other groups joined us, making a total of about a hundred planes. The sky seemed full of grey B-17s. Then the swarm of planes assembled in formation and headed toward the coast.



A flight of B-17s (above) returns after inflicting this damage on the Naples harbor.

Captain L. V. Casey was the pilot of "The Gremlin." I was co-pilot and we were to fly on the squadron commander's left wing.

The sky was clear although there was a slight ground haze. We passed over the north coast of Africa at about 4,500 feet. Directly below was a small fishing village clustered at the foot of a mountain. The Mediterranean was calm, clear, and the most remarkable blue I have ever seen. Near the coast, it was easy to distinguish the shallow water covering the reefs and bars.

Once clear of the land we tested our guns. The sharp rat-a-tat-tat of the practice shells sang out above the noise of the motors. Soon the steady drone of the engines became a part of the silence and we were unconscious of it. The bright sun was reflected on the metal of the planes.

The monotony of our crossing was broken by chatter on the interphone, Spam sandwiches, and Casey and I spelling each other at the wheel. Our course was directly

between Sicily and Sardinia. Although we were flying at only 1,000 feet the haze almost hid Sardinia and we couldn't see Sicily at all. Clouds far off in the distance marked the coast of Italy. At a signal from our group leader we started to climb.

We went on oxygen at 10,000 feet. At 20,000 we were well in sight of the coast. Below us was the Isle of Capri, a barren, rocky island with several small white villages perched on the shore. A thin spiral of smoke drifted up through the clouds. This was Vesuvius.

As we passed over the coast of Italy, we were at about 25,000 feet. In clear view below were small, neat Italian farms, then the city of Naples, the airdrome, and even the insane asylum we had been warned not to hit. Approaching the target, we stayed about 25,000 feet for a minute or two and then dived down a few hundred feet, turning towards the target and opening the bomb bay doors at the same time. We were on our bombing run.

The engines were purring smoothly. Casey was flying and I had nothing to do but look around and watch the excitement. Off to the left, I could see the other groups dropping their 500-pounders on the docks and railroad yards. Clouds of smoke rose from the explosions. The other groups were attracting quite a bit of inaccurate flak, hundreds of large black bursts.

Then I could see bomb clusters from the other two planes of our element start to drop. That meant that our bombs would be dropping too.

(Continued on Page 32)

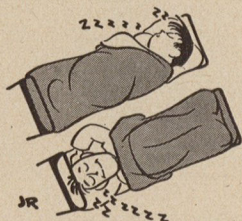


What's your AIR FORCE



1. The Army Air Forces' new A-36 is the dive bomber version of the

a. P-51
b. P-40
c. P-47
d. P-38

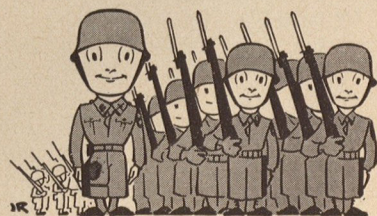


2. Beds in barracks are staggered head to foot in order to

a. Keep snorers from annoying others
b. Prevent the spread of respiratory diseases
c. Keep the barracks neat and orderly
d. Uphold an old military custom

3. The expression "Full Rich" is associated with

a. Payday
b. Gasoline
c. Bombs
d. An inebriated heiress



4. All steps in marching executed from the halt begin with the left foot.

a. True
b. False

5. Which word is inappropriate in this grouping?

a. Benzene
b. Carbon tetrachloride
c. Calcium hypochlorite
d. Warrant Officer Jones

6. When spoken to a warrant officer named Jones should be addressed as

a. Jones
b. Officer Jones
c. Mister Jones
d. Warrant Officer Jones

Here's a hot weather teaser to test your knowledge of a variety of Air Forces questions. Credit five points for each correctly answered, and if you score 100, yell for promotion. Ninety is excellent; 80 good; 70, fair, and 60 is below par. Answers are on Page 32.

7. The total weight of an airplane is divided by its wing area to calculate

a. The cargo loading
b. The wing loading
c. The bomb load
d. The gas load

8. At which of the following commands are both silence and immobility required?

a. Fall out
b. Rest
c. At ease
d. Parade rest

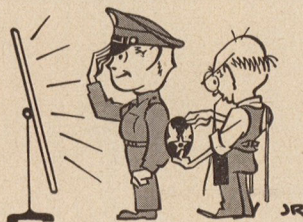


9. It is wise to drink carbonated beverages prior to high altitude flights.

a. True
b. False

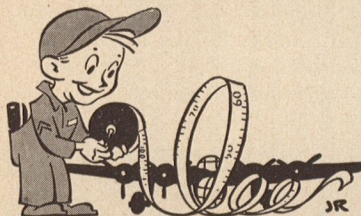
10. When presented, the Medal of Honor is usually

a. Pinned on the upper left coat pocket
b. Pinned on the upper right coat pocket
c. Hung on the recipient's neck, suspended on a ribbon
d. Pinned above the left coat pocket



11. How far below the top of the shoulder seam should the Air Forces shoulder sleeve insignia be worn

a. 1 inch
b. 1/2 inch
c. 1 1/2 inch
d. On the seam



12. The wing span of a B-24 is

a. 85 1/2 feet
b. 210 feet
c. 110 feet
d. 175 feet

13. Grease and oil must never be allowed to come in contact with oxygen equipment

a. True
b. False

14. A wind sock is

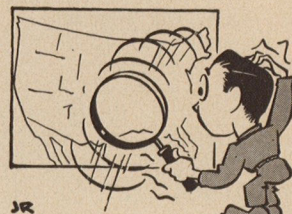
a. Worn by Arctic airmen
b. A tow target
c. A wind direction indicator
d. A pitot tube cover

15. A theodolite is used by

a. Pilots
b. Navigators
c. Meteorologists
d. Mechanics

16. A Navy flying officer with two broad gold bands on his sleeve is equivalent to an Army Air Forces

a. First Lieutenant
b. Captain
c. Major
d. Lieutenant Colonel



17. Morrison Field is located in

a. California
b. Florida
c. Texas
d. Arizona

18. A profile interrupter


a. Automatically switches from full rich to lean mixture at the proper time
b. Prevents a turret gunner from shooting into the tail, the propeller or the other surfaces of his own plane
c. Cuts off the oxygen supply on reaching the ground
d. Prevents a mechanic from putting too much air in the tires

19. What is the British name for this airplane?



20. What is the British name for this airplane?





**HE'S
REALLY
QUITE
A MAN!**

By Colonel Harold R. Harris

COMMANDING OFFICER, DOMESTIC TRANSPORTATION DIVISION, ATC

THE next time an airplane comes taxiing up to the ramp at your station and the pilot steps out wearing a uniform with stripes on the sleeves or bars on the shoulder straps of his shirt and with a cap insignia bearing the letters "ATC" don't ask him as a soldier did recently at one of our South Atlantic bases, if he is an officer in the Australian Tank Corps.

You'll be seeing this uniform a lot from now on all over the world. It is approved by the War Department for the civilian crew members employed by the commercial airlines under contract to the War Department. Together with Army crews, these men are flying cargo, mail and passengers and are training aircrews for the Army Air Forces Air Transport Command. To be technical, AAF Regulation 40-4 calls them "Air Carrier Contract Personnel."

Step up and get acquainted with one of them. You'll find he is quite a flyer, usually as good a story teller and a nice guy with it all. And although retaining his civilian status, he has earned the right to wear that uniform, just as much as any man in the Army Air Forces.

Because today the Air Transport Command is flying to places that yesterday were only names on a map—in India, the Arctic and China, over North Atlantic, South Atlantic and South Pacific, to give you a general idea. And these pilots of the Command have a personal acquaintanceship with the monsoon in the Far East, the sandstorms of the Sahara and the milky fog of the Arctic.

Remember the first time they turned you loose on cross country down there at Randolph or Ellington or Maxwell? Okay then,

The Air Carrier Contract pilot wears a different uniform, but it pays to respect him for the vital job he's doing.

just imagine how these pilots feel when the Air Transport Command has orders for a delivery of high priority material to some lonely mountain airport halfway around the world.

As one chief pilot expressed it the other day at New York's teeming La Guardia Field:

"A year and a half ago our company made its first flight from New York to Mexico City. For a month before the scheduled departure everybody in the company from the president on down was in feverish conference to iron out the details. Recently I got orders to survey a route to India for the Army. A couple of days later I went out, cranked up and took off. There weren't more than a handful of people who knew anything about it. They were all too busy sending planes to other remote spots to care about a new route that in ordinary times would have been enough to give everyone the jitters for a month of Sundays."

The next time you meet one of these pilots take a good look at him. He was probably flying the mail or barnstorming passengers off golf courses when you were reading *Boy's Life* and wondering if you could talk the old man out of fifty cents to buy some balsa wood for that new model airplane you were building.

Like most of them, he probably has a

minimum of 2,500 hours of flying time, with the average being in the vicinity of 4,000 or 5,000 hours. Stack that up against the average of 300 or 400 hours for the Army Air Forces pilot.

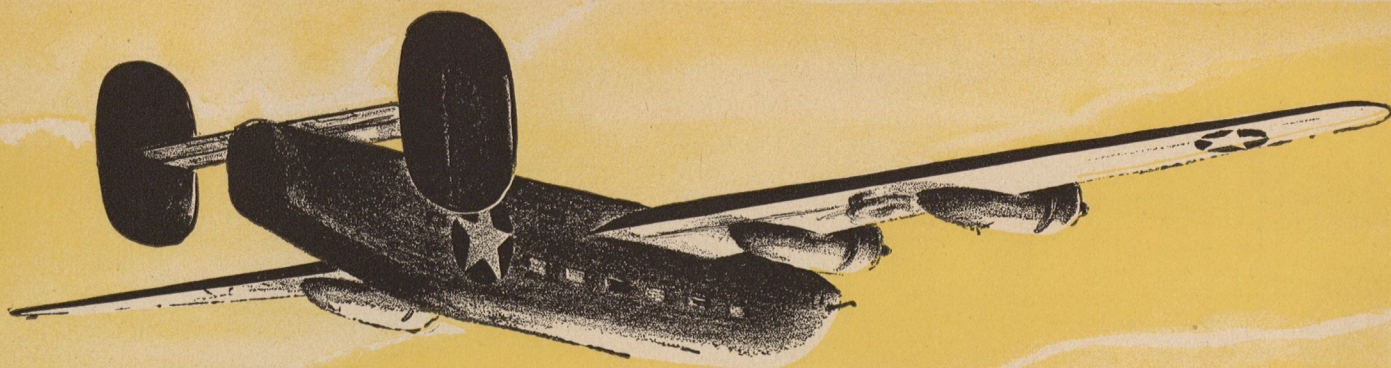
Chances are he is a reserve officer and that he graduated from Kelly and Randolph back in the twenties or early thirties, when they really braced you, mister. Nine out of ten have applied for active duty and been told by Uncle Sam to stay put. They are more valuable where they are, flying vitally needed supplies and personnel to combat areas and training new aircrews here at home.

As an ATC man he has his own status in the organizational picture of the Army Air Forces. All air carrier contract personnel are directly responsible to the Commanding General, Air Transport Command. When they are in the field they are subject to military law and in the event of capture by enemy forces air carrier contract personnel are entitled to be treated as prisoners of war. To assure this status they are being provided with official War Department Certificates of Identification.

Pilots, navigators, division managers, station managers, assistant station managers and all personnel of equivalent responsibility will be accorded the same privileges as commissioned officers with regard to accommodations, transportation and messing, both within and outside the United States.

Listen to some of the stories these men can tell as they sit around of an evening.

Like the old timer who returned recently from way above the Arctic circle. He had to make a forced landing on a frozen lake in the wilds of (Continued on Page 24)



Our Pacific Sky-Lane

Capt. C. C. C. C.

By Major Charles E. Shelton

7TH AIR FORCE

ONE blacked-out Hawaiian midnight in January of 1942, three B-17s were wheeled out of bomb-scarred hangars at Hickam Field and rolled to the edge of the mat. Flight crews, guided by dimmed flashlights, approached the ships. The feeble rays of their lights played on engine nacelles, ran up and down landing struts and across all movable parts of the huge planes.

No item of inspection was slighted. It was a thorough, last-minute check, for the planes were about to take-off on a trip that would require top-flight performance. Theirs was to be the inaugural flight of a new trans-Pacific war-time ferry route for the Army Air Forces.

One by one the Fortresses taxied to the end of the mile and a quarter strip. For a minute or two they sat there, the roar of their engines rising and falling as the pilots—Captains Hobson, Hewes, and MacPherson—warmed up the motors and checked their instrument panel. Then they turned into the wind. The first plane started its run, gathering speed. In a score of seconds the control tower clicked past the wing tip. As it reached the last hangar the Fortress lifted and moments later passed low over the ghost town of housing units that cluster alongside the Kamehameha Highway leading to nearby Pearl Harbor. Planes number two and three followed in quick succession.

They were on their way to the battlefront in Java, hopping southwestward via a string of Pacific islands and atolls most of which had never before seen a land plane. Only

Kingsford-Smith, fourteen years earlier, had ever made a similar trip. Actually, the two flight lines would differ by hundreds of miles of latitude most of the way.

Only a few Army men saw the Fortresses take off. A handful of officers—the late Major General Clarence L. Tinker, Commanding General of the Hawaiian Air Force; Colonels Albert K. B. Lyman, B. L. Robinson and Bob Fleming of the Corps of Engineers, and Colonel Gordon Blake of the Air Forces watched as the blue exhaust flames of the B-17s moved out over the cane fields, turned across a darkened, sleeping Honolulu, then out to sea across Diamond Head. After the sound of the motors died away into the night one of the men said, "Well, there go the first planes on the long road to Tokyo." Someone mentioned that "The Road to Tokyo" would be a good name for the war-baby.

General Tinker had his own thought on the subject, and since the name he offered was a good one and since he was a General, his suggestion stuck. "I believe we ought to call it The Southern Cross Airways," he said.

AND, thus, without fanfare, was born the aerial sky-lane that today rivals the North Atlantic Newfoundland-British Isles run and the South Atlantic Natal-Africa routes in strategic importance. The Pacific line has been opened more than a year, yet most of its operating details are strict military secrets. Most of the bases the planes use have never

been mentioned in public print in connection with the route; many of the alternate fields—some of them nothing more than clearings in a coconut grove, others dredged coral strips—are names that would send even a veteran beachcomber to an atlas. Most of the bases, both primary and secondary, are far out on the Pacific combat frontier. Some of the airports have been bombed, some shot at from Jap subs.

At Fiji the biggest menace seems to be mosquitoes. At one of the New Caledonia fields the native deer were so numerous they became a hazard. There's no record of a plane hitting one of them while taxiing, but the deer used to graze right at the edge of the runway. Sometimes this proved too much of a temptation for some homesick nimrod who would unlimber his .30 caliber and blaze away. It was good sport, shooting deer from a side window of a B-17 or from a parked jeep, and it made good reading in the letters back home, but it unfortunately was dangerous to the welfare of the encampment, a few eucalyptus trees to the rear of the hunting grounds. One of the squadrons, as a result, had to establish game laws, prohibiting deer hunting in camp. "Anyone wanting to shoot deer will check in with the sergeant before going out," reads the order.

Some of the South Sea airfields, except for their cane-field and coconut settings, could be a ferry station somewhere in England. P-38s sit next to ancient tow-target Vincents. RNZAF Hudsons bunk next to C-47s, De Havillands and Beaufighters mix with B-26s, and even Gypsy Moths and L-5 Grasshoppers get together.

The South Pacific route was in the planning and construction stage long before we entered the war. Early in 1941, we had one "aerial life-line" open to the Far East. It

Born of the war, this Hawaii-Australia ferry route has grown into a transport line of major importance in maintaining the long Pacific battlefront.

was the above-the-Equator Hawaii-Midway-Wake-Guam run. This route had been successfully tested by a couple of flights of B-17s that were sent to the Philippines, but it admittedly was of dubious value in case we got in a scrap with the Japs. The run was highly vulnerable, cutting across Nipponese lines of communication and surrounded by Jap-mandated bases. It didn't have much of a chance. That's why Major Roger Ramey and Captain Brooke Allen of the Hawaiian Air Force were sent below the Equator and across the date line early in 1941 to find a better lane for land planes. They traveled by PBV, steamship and fishing boat and with Dutch and Australian airmen over much of the South Seas, gathering information, maps and photos for Colonel Lyman's construction crews.

Later, another party headed by Major Gordon Blake went out from Hawaii to survey mid-Pacific islands. After the Southern Cross Airways got under operation General Tinker put Gordon Blake, now a Colonel, in operational control as his troubleshooter, passenger agent, freight manager and communications chief. Today Colonel Blake probably knows more about Allied territory in the Pacific than any other man in uniform.

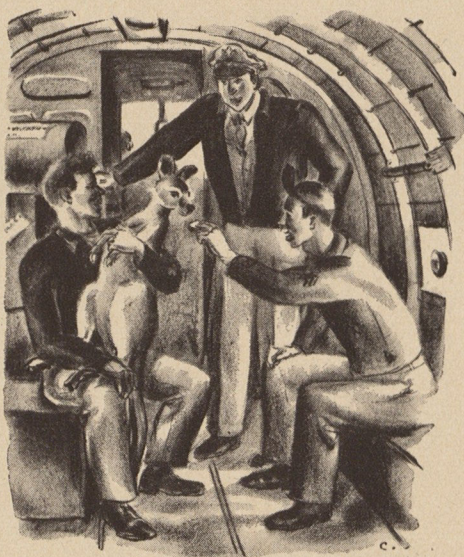
In constructing some of the bases, Colonel Lyman used British equipment and men to get the job done. The work was not scheduled for completion until mid-1942, but when the war broke out the task was rushed threefold. The pony-express air line gained operational status in record time. When the first planes went through, they refueled from 55-gallon drums and the crews slept on cots under the planes' wings. The islands were practically defenseless. The whole thing was run on a day-to-day, plane-to-plane basis in its first months. The constant threat of the advancing Japanese, the rudimentary nature of radio and technical aids for long cross-water hops, the bumpy runways, the temporary flow of supplies to the island dots, made constant personal supervision a necessity. No Army manual covered the problems that arose each time a plane took off. Yet surprisingly few planes were lost in those first days of war.

Since its rugged birth the ferry route has grown to a transport line of major importance in our successful maintenance of the long Pacific battlefront. Compared with those early trips from California to Australia, in the days when ferry pilots didn't know for sure whether the Japs would beat them to the next stop, the present traffic is doing an enormous job. Dozens of planes daily are winging over the Pacific. General Henry H. Arnold's plane holds the flight record, 35 hours and 10 minutes, from Brisbane to San Francisco. The best elapsed time during the Southern Cross Airways days

was made by Consair's Captain Ted Howe, who flew from Amberly Field to Hamilton Field in 42 hours and 31 minutes. Captain McMacon, another contract veteran, has made the round trip from the States to Australia and back in five and a half days.

Types of planes that have made the Australia run include B-17s, B-24s, C-47s, C-53s, B-25s and B-26s. P-38s have made it from Hawaii to Australia. The planes are flown not only by ferry pilots, veterans of the Atlantic route, but also by Army pilots, some of whom have never flown a body of water larger than San Francisco Bay.

In its year and a half of operations the Southern Cross Airways, now the Pacific Wing of the Air Transport Command, has carried thousands of military and government passengers. Hundreds of tons of priority war cargo have been sent "down under" to the Solomons and New Guinea



fronts via this route. Not all the space, however, has been given over to G. I. Early cargo records, for instance, list one kangaroo, transported to California from Australia by Captain Haigains. A General, needing some uniform material, had some wool yardage delivered to him via LB-30. One urgent request from a wind-blown stenographer at Hickam Field for a card of bobby pins (Honolulu's five-and-dime had sold out) was filled by Hamilton Field. Colonel (now Brigadier General) "Blondy" Saunders' cigars always received a high priority on the Solomons run. Dogs, rat poison and flit guns were on the early freight lists. A bathing suit for an Australian Colonel's wife was sent from San Francisco. Some coffee percolators made a rush trip to Australia shortly after the Americans moved in, "... because Aussie coffee just isn't

ILLUSTRATED BY
CAPTAIN RAYMOND CREEKMORE

made right." Then a second kangaroo was sent up to California to provide heart interest for the first kangaroo.

Travelers who have made the long trip recall many famous landmarks, including Hawaii's Diamond Head (which, incidentally, doesn't look like much from the air). Fiji's "Handle-bars" Carriker, an Air Forces captain and genial major domo in the land of the Bula Boys, belongs in the Airways Baedeker because of his startling waxed mustache. There is the flat coral island that has its level monotony broken by one lonesome palm tree. There are the sunsets, some of the Pacific's best, viewed from the sagging canvas chairs on the veranda of the Fiji Officers' Club.

MUCH of the credit for pioneering the Southern Cross Airways should go to civilian pilots flying under contract to the United States Government and to RAAF Ferry Command flyers. Captain Ernest W. Gray of San Diego, California, is typical of the commercial skippers who are keeping Australia closely linked to the United States. Gray was a veteran of the Pacific even before we got into the war, having twice delivered British-purchased PBVs to the Philippines. He was on his way to Wake Island the morning the Japs took their stab at us. He was delivering a plane destined for Singapore and was between Midway and Wake when he got word to turn back. He spent that night at Midway, sitting in a dugout while Jap cruisers and destroyers shelled the place. Captain Gray returned to Honolulu and the mainland, but the following March found him on his way again, this time delivering a B-25 to Dutch flyers in Australia. Today Captain Gray is taking C-87s back and forth to Australia.

Captain Stan Young, another commercial pilot who was on the South Pacific run in its early days, illustrated the type of flying that was sometimes needed to get planes through from one island to another when he flew a four-engine bomber for five hours with number one and two motors out. He had a new crew on board, but his experience brought them through, despite the fact that to keep his altitude he had to heave all loose baggage and gear into the Pacific.

The record made by the Southern Cross Airways in its day and the record the ATC is making today in moving cargo and personnel foreshadow a tremendous Pacific air transport system in post-war days. A veteran flyer of the Pacific air route pointed out what it may be like when he said:

"Even under the inconvenience and uncertainties of a war we have airfields out here in the middle of the ocean that compare favorably with many metropolitan airports in size and ability to handle traffic. After the war — after we beat the Japs — there will be so many planes flying across the Pacific that it will look like the vicinity of a training field. From the States to Australia in thirty hours or less, and to the Philippines or China in a day and half. As for Japan, she probably won't be worth flying to." ☆

IT WAS a cold gray morning in February at an American bomber base on the Tunisian front. Shivering groups of men, flying crews and ground men, lined the south edge of the field watching the sky to the east.

Tiny specks that soon grew to be planes appeared on the horizon. Anxious eyes counted them, then an excited voice shouted: "I count nine. They're all back!"

A buzz of relieved conversation and then the planes were circling to land. B-26 Marauders, coming in low and hot, like they always do.

By the time the last plane had landed, the Major who had led the flight had been picked up in a jeep and whisked back to the operations tent.

"Ran onto a big Axis convoy out there," he said to the eager crowd around the tent. "We got two ships, but they sure threw the flak at us. My wings look like a screen door."

Already the operations officer was on the phone giving a brief description of the raid to higher headquarters. Suddenly, he put the phone back in its little leather box.

"We're going back after the rest of that convoy," he announced. "This is one they've been waiting for, and it's carrying a lot of important stuff. Every one of those ships that gets through now may delay our cleaning up Tunisia by three weeks."

"We'll use different pilots and crews, but we'll have to put most of those same planes in the air again."

The operations officer called for the group engineering officer, Captain Warren S. Bradford of Kingston, Massachusetts.

"Get at least six of those ships that just landed ready to go on another mission early this afternoon," he said.

"Yes, sir," said Captain Bradford.

Bradford hurried out to the planes where squadron engineering officers, aircraft inspectors and mechanics were looking over the damage done by Axis marksmen.

He delivered the news of the new mission to Warrant Officer George O'Dell of Missouri, an engineering officer, and Master Sergeant Howard S. Scott, Jr., of Fort Worth.

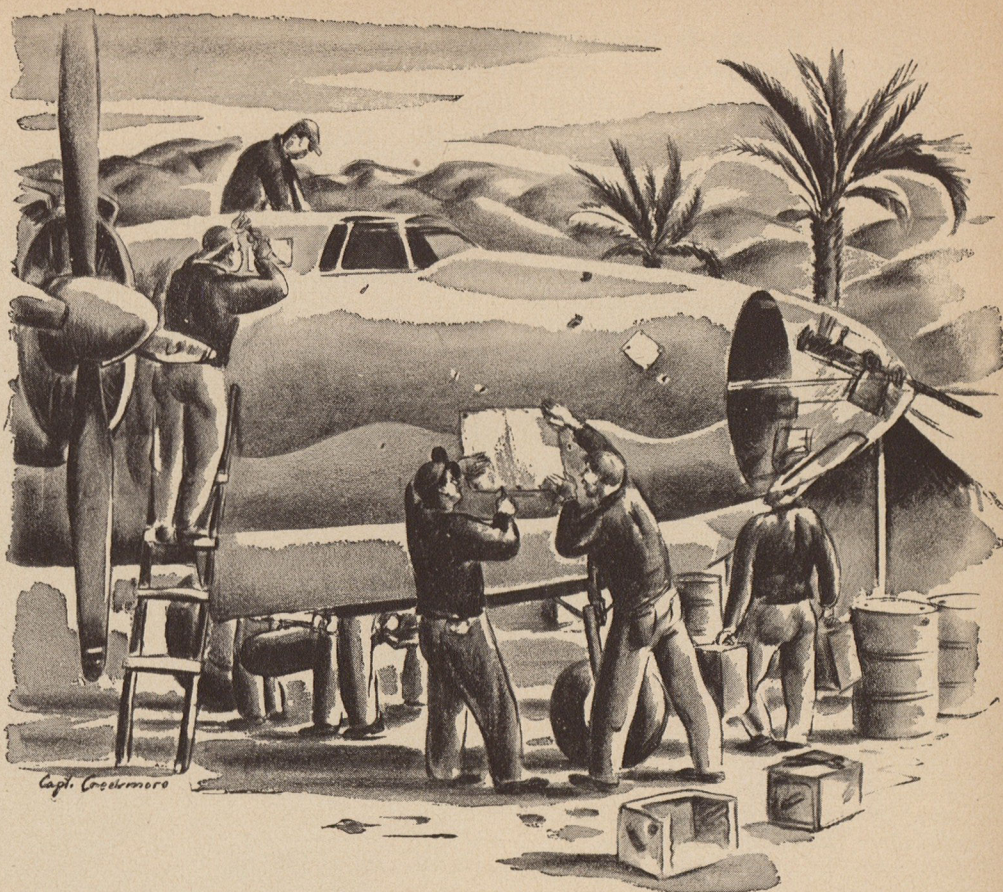
"But some of these ships have got a lot of flak holes, and we've got no metal to patch them," protested Sergeant Scott. "It's in some of that equipment we haven't been able to get shipped up here yet."

"We might put three in the air without any work, but at least three will need patching," explained O'Dell.

"Then put all your men on those three and find something to use for patching, anything you can find," said Captain Bradford.

It was several hours later when a G. I. truck loaded with flying crews, colorful in their yellow "Mae Wests" and white parachute rigging, pulled up to the planes.

Ground crews were just ending their



"GET THE JOB DONE"

By Lieutenant Gordon H. Coe

work, putting on finishing touches. A pilot walked over to a little knot of mechanics.

"Say, what did you use to patch those flak holes in this plane?" he asked.

"I patched some with the bottoms of five-gallon gas tins," said Tech. Sergeant John D. King of Fort Worth.

"I used linen patching," exclaimed Tech. Sergeant Harry C. Engle of Chicago. "It was the kind of patching they used on fabric planes before they made them of metal."

"Holy smokes," exclaimed the pilot, squinting at a patch. "Will they hold?"

"Sure," said Sergeant King. "Maybe not for months, but for a few weeks, anyway."

"I'll take your word for it," the pilot remarked as he turned away.

And in a few minutes another formation of B-26s headed for the Mediterranean "hot spot" between Sicily and Tunis to knock out more of the shipping needed by the Axis to supply its Tunisian forces.

That was just one dramatic example of the way ingenuity and hard, grueling work by Army Air Forces ground crews during

the early days of the Tunisian campaign kept planes in the air despite hardships and handicaps, and helped lessen German "staying power" in that vital theatre.

Moreover, it's an example of what mechanically adept American boys are doing to keep planes flying all over the world. Their motto is: "Get the job done." If vital supplies go down on sunken ships or are delayed by difficult terrain and bad weather, then something else will have to do until the supplies arrive.

NOTHING is called impossible until it's been tried and proven so.

Seldom, if ever, has more been done by an air force group with less equipment than by the B-26 outfit about whom this story is told.

"Yet we actually maintained our ships for a long while with little more than a screwdriver and a pair of pliers," said Warrant Officer O'Dell.

"Because of the nature of the campaign, we began operating in the African theatre long before we expected to start," he explained. "Much of our tools and equipment were still in England, and replacements were hard to get in Africa then."

ILLUSTRATED BY
CAPTAIN RAYMOND CREEKMORE

"Things are well organized here now, and most new groups coming over are pretty well equipped when they land. But, of course, there is still plenty of chance to improvise, and it will never be like aircraft maintenance in the United States.

"A kit with between 100 and 200 special tools is considered the minimum with which to maintain airplanes of our type back in the States," O'Dell continued. "Yet, I remember one day when two of our crew chiefs (Tech. Sergeant Harry F. Beals of San Antonio and Staff Sergeant Robert E. Farnsworth of Akron) set out to repair a plane and get it into the air with only a pair of diagonals, a crescent wrench, a screwdriver and a pair of pliers to work with."

Sometimes there was only one tool of a special type in the whole group. That meant hours of waiting by one crew while another used the precious tool. It meant miles of walking every day, too, for the planes were widely dispersed to avoid being a good target for Nazi bombers.

Spare parts were non-existent in Africa in the first months of the Tunisian campaign. So, when an airplane came back from a mission too shot up to be used again or had to make a "belly" landing, mechanics swarmed over it like vultures. Shot-up planes served as "warehouses" of spare parts for airplanes still able to fly.

An important part of working on an airplane engine is being able to reach it, but those handy metal crew chief stands on which mechanics stand while at work weren't available when this outfit went into action.

"Mechanics stood on barrels, balanced on flimsy sawhorses and hung precariously from wings to work on engines at first," O'Dell recalled. "Then we found that one of the flight chiefs, Master Sergeant Hubert J. Treille of New Orleans, spoke excellent French. From a nearby French army unit, he got some big window frames, and we made some crude stands from them. Even then we didn't have too many, and it was a major tragedy when a bomb got two of our five stands and two tool kits one morning just before dawn."

Changing tires on the big planes looks impossible without the big wing and nose jacks that are standard equipment in the Air Forces. Yet it was done dozens of times by ingenious ground crews.

To change a nose wheel tire, they raised the nose by having ten men get into the tail of the plane. Then fifty-gallon oil drums were placed on either side of the nose with heavy timbers between them to support the nose. With this accomplished, the nose was lowered onto the timber supports by having one man at a time come forward out of the tail.

"Once the plane was jacked up like that," said O'Dell, "we'd cross our fingers and hope another plane wouldn't taxi by too close and blow it off the blocks with its prop wash."

To change a main landing gear wheel

Ground crewmen of this B-26 group in Tunisia scored a victory with screwdriver, pliers and a patch of tin.

tire, the men would block up under the wing to keep the tire up, then dig a hole under the wheel. After the tire was changed, the plane had to be taxied out of the big hole. They nearly burned up the motors occasionally but planes were always ready for their missions.

Improvisations were the order of the day. They were so common nobody even discussed them.

There were no air compressors available, so tires were pumped up with a compressor on a British army gas truck. The men had to wait for an American transport plane to land at the field if they wanted to pump up the landing gear shock absorbers. The transports carried booster pumps.

Mechanics "borrowed" an old French battery charger to keep up batteries. Several times, bullet holes in the self-sealing rubber fuel tanks on the planes were repaired with a tire patching kit from a G. I. truck. The patches last several months, too, although 100-octane gas eats up regular rubber cement.

Auto-wrecking trucks were used to change the big, 800-pound propellers on the B-26s. But ten men had to exert all their strength to raise the prop the last few inches because the wrecker's winch wasn't quite high enough.

Welding and soldering were out of the question until a French construction company arrived to enlarge the air base. Sergeant Treille was pressed into service again, and soon the contractors were doing all the welding and soldering for the group.

For a while the big gas tanks on the planes had to be filled by hand from five-gallon cans—an endless, back-breaking job. Later, small British gas trucks with hand pumps were used, but all the gas from these trucks had to be strained through a chamois-skin held by hand. American automatic gas-tanker trucks finally relieved that problem.

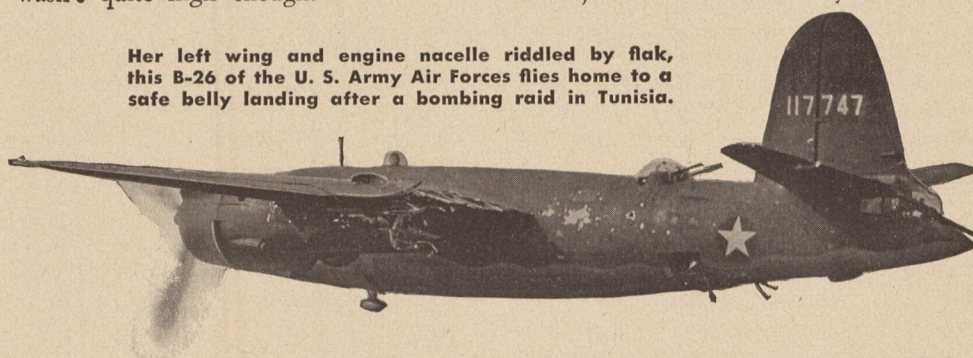
Once an air-oil strut was found to have a crack in it. Sergeant Treille got the French contractors to solder it—something unheard of in plane maintenance in the States—and the strut is still holding.

The lack of tools and equipment also affected the armament and ordnance crews. Ordnance men often worked most of the night in the freezing cold and under a strict blackout to load bombs for the daily missions.

BAD weather was a thorn in the side of the ordnance crews in more than one way. If bad weather caused cancellation of a flight for which bombs had already been loaded, those bombs had to be taken out of the bays—always a ticklish job—and another type loaded, because a change in targets usually meant different types of bombs would be used.

Loading and unloading bombs in the pitch-black cold of an African winter night was a job that called for steady nerves. But

Her left wing and engine nacelle riddled by flak, this B-26 of the U. S. Army Air Forces flies home to a safe belly landing after a bombing raid in Tunisia.



One day during a period of bad weather, the group was asked to bomb an Axis airfield near Tunis despite the adverse flying conditions. Pilots were willing, but the vital rubber de-icer boots on some of the planes were in bad shape and needed patching. For an hour the whole group was at a loss as to where the necessary rubber, scarce even in the States, could be located in Africa.

Finally a young mechanic hit on the solution. Several rubber life vests were torn up, and the rubber used to patch the de-icer boots.

The mission went out on schedule, caught thirteen Axis fighter planes on the ground and destroyed them. All our planes returned safely through an icy overcast—thanks to some worn-out life vests.

no mission ever failed to go out because bombs were not loaded. Ordnance crews headed by Captain Herbert Hartman of Newton, Kansas, are proud of that record.

Armament men who maintain the deadly .50-caliber machine guns on the B-26s also did their jobs well without full equipment.

"If you keep thinking that if a gun isn't in perfect condition it may cost the life of one of your buddies, you'll always find a way to keep that gun in shape," explained Lieutenant John R. Campbell of Stanton, Tennessee.

In all, the record of this one outstanding medium bomb group shows that the Army Air Forces' careful training program, plus Yankee ingenuity, pays off in seemingly impossible feats in the field of operations. ☆



IN THE DRIVER'S SEAT

By Capt. William J. Crumm, pilot

WHEN you've got your B-17 bouncing and weaving over Europe like a bucking steer, dodging hellishly close flak and giving your gunners a crack at swarming enemy fighters, you realize for the first time just what they meant back in O.T.U. when they told you a good crew was the most important element in combat bombardment flying.

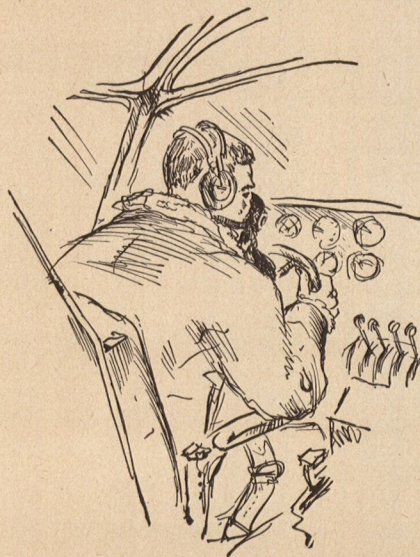
Old "Jack the Ripper"—that's what we called our B-17E—was saved from many a plastering simply because the sharp eyes of our gunners detected an enemy fighter slipping in from out of the sun, or judged the accuracy of flak almost before the stuff began popping. We hit many a target on the nose because our bombardier knew his stuff and wouldn't allow all the shells and machine gun bullets in the world to distract him when he was lining up his sight during a bombing run—and, because our navigator could hit a landmark on the head almost with his eyes closed.

We honestly believe we have the best crew of them all. And we know that other crews think they're the best. That's the way you should feel. Not cocky. But knowing you are the best because hard work and confidence in each crew member has made you the best. We don't have any individualists in our outfit. If you have a man playing for himself get rid of him because he can ruin you in combat.

You usually will know between four and five o'clock in the afternoon when you are to take part in a raid the next day. On the

morning of the mission you are aroused between 4:30 and 5:30 for breakfast and detailed briefing.

About an hour before take-off time, the pilot and co-pilot report to the ship and personally inspect the engineering, oxygen equipment, ammunition, guns, parachutes, life vests, clothing and first aid kits, and they talk with the other crew members. To me this inspection check is the most important duty of the pilot. Failure to do so may lead to unnecessary turn-back and even loss of personnel.



Once in the air and after leaving the coast of England, your gunners should test fire their guns. If a gun is out and continues to function improperly after a check-up, the pilot must then maneuver his ship in the formation to assure maximum coverage of the "dead spot" in the firepower.

A turn-back due to gun failure results in a weakened formation and exposes the single returning aircraft to intense enemy attack. I know of several instances where a returning ship has been surprised by enemy fighters and shot down. The wise pilot makes it clear that he does not intend to turn back because of gun failure or oxygen trouble so the crew will be kept alert and careful to check on all details prior to take-off.

From the time you leave the English coast, your ship is in constant danger of enemy attack. Your gunners must stay mentally alert and keep on the lookout for fighters. It may take only one burst from an enemy fighter to raise havoc with your plane. On several occasions we were attacked in mid-channel on the way over.

Whenever there's a lull in activity keep the crew chatting over the interphone. Talk about anything. This is one sure way to keep the boys on their toes.

Impressions gained by crew members of a B-17 during eleven operational missions over Germany and Occupied France.

Once over the European Channel coast, the fireworks usually begin. Sometimes the enemy will throw up light flak at first. This flak is white in color, and white puffs usually indicate flak with an effective range of about 15,000 feet. This was always beneath us. Now and then enemy batteries will throw up flak with pinkish bursts apparently for psychological effect and as deterrent fire. Flak with black puffs is the heaviest and is effective up to an altitude of about 35,000 feet.

Unless you are going on raids deep into France or Germany, you seldom encounter fighter opposition until you are fairly near the target area. We found this particularly true when bombing submarine bases along the French west coast.

Enemy fighter tactics, as far as our experience is concerned, differ decidedly over France and Germany. In our first raids over Germany late last fall, fighters attempted to press head-on attacks but they seemed to lack the experience and finesse of the older pilots we later met over Western France. After several unsuccessful attempts at head-on attacks, they would revert to attacking the tail and beam, coming in from either side. Fighters seldom used the sun to advantage in our raids over Germany.

IN Western France the attacks almost invariably came from between eleven and two o'clock. The fighters—mostly Focke-Wulf-190s in Western France in contrast to almost all types in raids over Germany—would climb and fly parallel to our formation at a distance of some 1,500 yards, just out of range. They usually approached in groups of four, flying in trail. They would fly out in front of our formation about two miles, then peel off and come in head-on, the rate of closure being about 600 miles an hour.

It was at this point that we could distinguish between an experienced pilot and a novice. The veterans would close in to within 200 or 300 yards before firing and if they were too close for a safe break-away, they would fly directly through our elements. You could almost count their whiskers on occasion. A standing comment on returning from a raid in Western France was: "I saw the guy with a red mustache again today." They came that close. Otherwise, the veteran's tactics were to roll over and dive straight down beneath the formation, exposing themselves to our gun fire for the least number of seconds.

Newer pilots, on the other hand, very often failed to bring their guns to bear because they would misjudge and overshoot our entire formation. Or else they would break away before they were within effective range, sometimes without even firing a shot at us.

We found that the most effective type of

evasive action taken in formation against these enemy fighters was to dive into the attackers. This would increase the rate of closure, throw off the fighter's line of sight and at the same time give our top turret gunners a crack at them.

In a situation like this a pilot has a three-fold job. He must fly a good formation, which, I might add, is the best life insurance in the world. German fighters always go for the loose formations when they can find them, and a straggler really catches hell. Secondly, the pilot must know the direction of the attacks. And, then, he must maneuver his ship to bring as many guns to bear as possible. A good interphone system is absolutely essential if he is to accomplish all three jobs, for there must be split-second communication between all crew members.

Not only does he fly in a good formation but a wise pilot takes individual evasive action. He changes elevation, skids, trying at all times to bring maximum firepower to bear against attacking planes. However, he must keep his relative position in the formation—and tight—to avoid lagging behind.

Evasive action must be continued after the turn on the target from the initial point, which is usually about five minutes away, up to the time the actual bombing run starts. Then it is up to the pilot to fly as level as possible, making any corrections in formation smoothly, in order to keep the gyro in the bombsight from "spilling."

Violent evasive action is frequently necessary both before and after a bombing run. In a raid on the submarine installations at Lorient on January 23, evasive action was the only thing that saved us at one or two stages of the mission.

The trip home is usually every bit as rough as the trip in, sometimes rougher. So don't let your men relax for a second. The pilot must fly a good formation until he peels off into the traffic pattern at his home field. Other crew members should keep on their toes right with him.

Remember a well disciplined, hard-fighting unit is hard to beat. Train your crew to be able to cope with any situation without losing their heads and you'll have very little trouble in combat.

NAVIGATING OVER EUROPE

By Lt. William C. Leasure, navigator

THE many tasks that fall to the lot of the navigator on combat missions are difficult to realize until he actually gets in the fight. At least, that's the way we found it in England.

You realize, of course, before you go out for the first time that your primary job is to get the plane over the target and back home

again. But in many respects, accomplishing this from a base in the British Isles is anything but the simple application of training received back home.

For one thing, we found that precision pilotage is the mainstay of navigation in the British Isles and the only navigation method which gives the accuracy needed for successful precision bombing. It is imperative, for instance, that the navigator know where he is at all times, frequently within one-quarter of a mile.

NAVIGATORS and bombardiers in O.T.U. who may see service in England should obtain all possible practice in pin-pointing at altitudes of 20,000 feet and up—and from 1,000 to 1,500 feet. Most of our flying was done at one or the other extremes.

On the average mission it is the job of the lead navigator to find the target and for the most part he employs pilotage. Wing ship navigators do not have to be so



exacting although they should always know within a few miles the position of the formation. Even during the run from the base to the British coast, you must keep the other crew members informed over the interphone as to their whereabouts. And it is wise to follow this procedure whenever possible throughout the flight. Such information as your location, the time when approaching the enemy coast, when enemy fighters may be expected and when the target is being approached proves a great aid to morale and tends to aid in welding the crew together as a team. This should be a primary function of the navigator.

I might add that all hands should be notified on the return trip just when friendly fighters may be expected. This prevents firing on your own pursuit planes.

The bombardier and navigator should know each other well and work together perfectly. At altitudes from which we operated, the target could usually be seen 20 to 40 miles away. When you spot the target you should point out to the bombardier a landmark near it so he can use pilotage in lining up for the run. It is your job to give him a heading that will require very little drift correction.

During the last ten minutes on the target approach, interphone silence is generally observed by all but the navigator and

bombardier. We found that this prevented needless confusion.

If attacked by fighters during the bombing run, the navigator takes over both his and the bombardier's guns, firing from whichever station will best meet the attack. When the bombs are away, it is the navigator's duty to note the time, heading, altitude and air speed. He also must determine hits and damage, obtaining reports from other crew members. The ball turret operator is especially well situated to report on damage.

During action—or at any time on a mission, for that matter—the navigator must note on his log any of our planes seen to go down, the time, location and whether anyone was seen to bail out. Reports of enemy planes shot down also must be reported by crew members to the navigator who enters the information in his log.

Although a navigator has his hands full the entire trip, the time spent near the target is a particularly busy one for him. After bombs are away and the plane is turned about on its home course, the navigator must take care to remember flak installations and avoid them. With the lead navigator pacing the formation homeward, wing navigators have plenty of time for shooting in the case of enemy fighter attack.

Every navigator should learn his gun as well as the theory of sighting. Tracer firing is deceptive and not very satisfactory. Each navigator cleans his own gun in combat theatres and in this way gets to know exactly how it operates and just what to do in the event of stoppage.

Although they have more time for firing on the way home, all navigators in a formation should know within a relatively close margin what their position is because one of them may have to take over the lead navigator's duties if he is wounded or the lead plane shot down. From the British coast to home station ALL navigators must know their position to within a quarter of a mile, not five or ten. All England looks alike and any one of the navigators may be required to take over the formation at a moment's notice. Moreover, it is particularly important to know your exact position at this stage since sometimes there are wounded men aboard your ship or other ships and no time should be lost in needless guesswork. Ships which have injured men aboard shoot a red flare and are permitted to land first.

Your job is by no means over when your ship rolls to a landing. In the interrogation by intelligence officers the navigator is a key man for he has kept in his log a complete and exact story of the mission.

HITTING THE TARGET

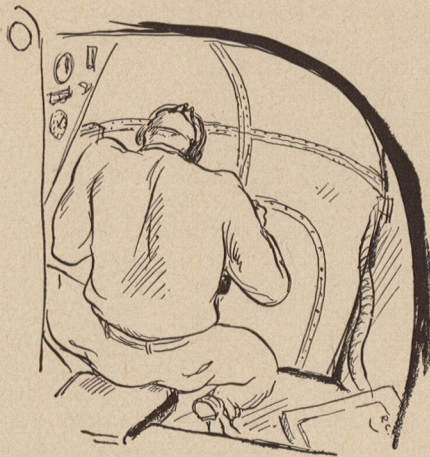
By Lt. Robert L. Kleyla, bombardier

WHEN you have your eye glued to that bombsight and are making ready to shout, "Bombs away!", you can't let a little thing like exploding flak and enemy fighter planes bother you too much. But the mo-

ment your load is dropped, you can grab your gun and start shooting.

That's just about the size of a bombardier's job over a target in France or Germany. However, unless he does his primary job well, the bombardier wastes a mission, and a lot of good men and equipment have been exposed for no good reason.

Before you leave on a mission it's your job to have a clear mental picture of the target you are supposed to hit. If you don't it's your own fault. At briefing you get a complete run down on the prospective trip



over the Continent. You know the size and number of bombs, the route in and out, weather reports and the zero hour or time for crossing the British coast on the way out. The group C. O. projects on a screen maps of the target section and pictures of the target itself. The bombardier is informed of dummy installations, ways of avoiding them and hitting the real target.

IN addition bombardiers get together later for a special briefing, during which they may request maps and pictures of the target area to be flashed again on the screen. They are given the opportunity to recheck the meteorological officer for such data as ground, air and mean temperatures at the target, and pressure tendencies in the target area.

By the time the bombardier visits the bombsight vault to get his sight, he should know all the information available on the target for the day. Before take-off, he should check the bomb load, his sight, the bomb racks and bomb bay doors, switches and any other equipment he might use on the flight.

In order to insure proper performance of his secondary job—that of shooting enemy fighters—a bombardier should check and recheck his gun before the mission.

As your ship gains altitude on a mission, you convert all data obtained from the metro officer. During the early stages of a flight, I also made a practice of memorizing some of the bombing tables so that if we failed to approach the target under exactly the conditions given at briefing, corrections could be made quickly and without confusion. I generally marked possible variations in pencil on the disc drum so they could be made with the least amount

of trouble. By setting all the values possible in the sight at this time, you have more of an opportunity to man your guns.

A bombardier should learn pilotage well, particularly from higher altitudes. This knowledge can be put to valuable use when the navigator gives you a landmark near the target after you have approached to within 30 or 40 miles. On reaching the advance initial point in the target approach, the bomb bay doors are opened. This is done for two reasons: Enemy fighters are unable to ascertain which target is our objective (there usually are several potential ones in any given area), and the pilot is given a chance to correct for air speed and altitude with the doors opened.

In making a bombing run in formation (which is usually the case), the lead bombardier sights for deflection and range; the wing bombardiers, for range only. Then, too, wing bombardiers may drop either on the lead bombardier or by their own sightings, depending on instructions at briefing.

It is your job to observe results whenever possible and to obtain reports from other crew members. At times you carry a camera. At least two or three ships in a formation are equipped with them and most of the time they are operated by the radioman on instructions from the bombardier.

On returning from a mission the bombardier supplies the intelligence officer with the number and types of bombs dropped, fusing data, results observed, altitudes, time of attack and the like.

All during our experience on combat missions over Europe I was particularly impressed with the value of plenty of high altitude bombing practice by the bombardier. Get in all you can in training because it is sure to pay off in bulls-eyes later. In addition, you can't get too much gunnery training. Learn how to sight properly and know the nomenclature and the action of your guns so you can feel you are getting the most out of the shots you are sure to have at enemy fighters.

The bombardier's got a hot seat on any combat mission but to me it's the best seat of them all. You get a peculiar feeling when the flak starts popping almost under your nose and the fighters come in so close you begin to think they want to roost in your lap, but it's all worth it when you drop your bombs where they'll do the most good.

RADIOMAN IN COMBAT

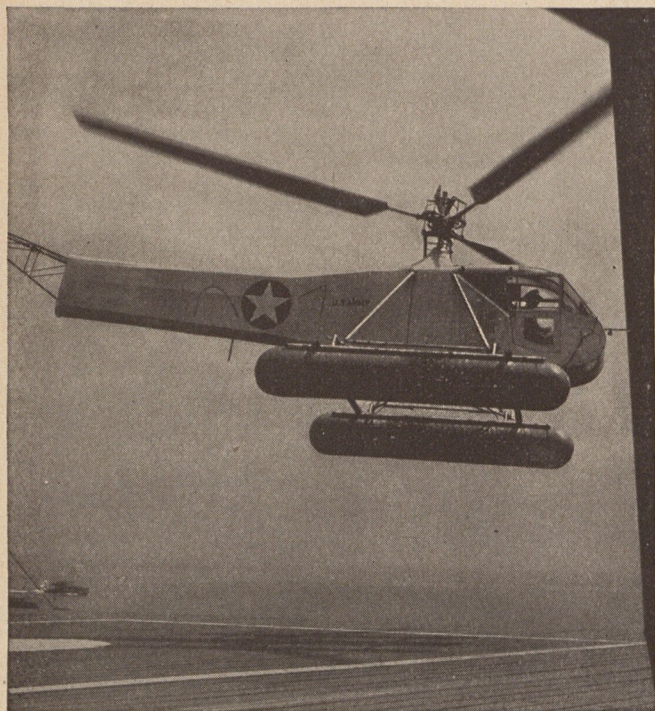
By Tech. Sgt. Peter F. DeBoy, radioman

IN ENGLAND the radio operator isn't a passenger any longer. Combat has given him an important twofold job.

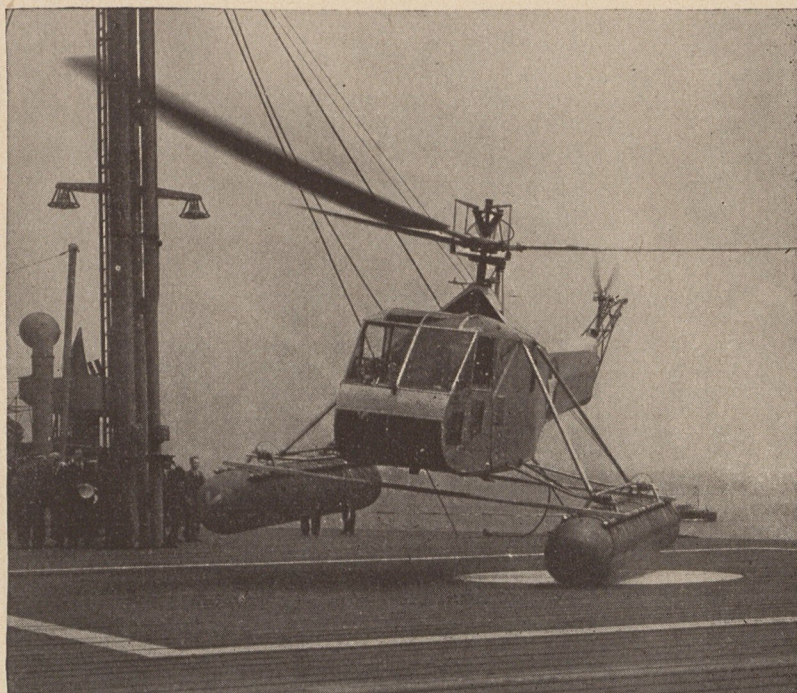
On operational missions from the British Isles he maintains radio communication while over friendly territory and in doing so serves as a valuable second to the navigator. Away from the British coast, where complete radio silence is observed except in emergency, he is a gunner—and may become an all-purpose one.

(Continued on Page 40)

AIR FORCE, July, 1943



The Army-Sikorsky helicopter takes off from a moving tanker.



Right, landing again on deck.

The Helicopter Gets Sea Legs

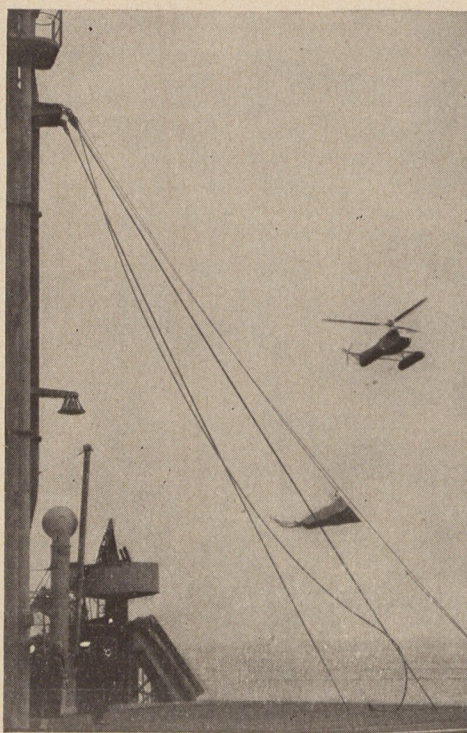
An Army-Sikorsky helicopter recently made approximately 24 take-offs and landings on the deck of a moving tanker on Long Island Sound, marking the latest step in the military development of this wingless aircraft.

Colonel H. F. Gregory, the Air Forces' helicopter expert (author of an article describing the military possibilities for this type of aircraft in the March issue of *AIR FORCE*), piloted the ship in the demonstration staged at the request of the War Shipping Administration as a potential means of combatting enemy U-boats.

The Long Island experiment was conducted from the tanker's deck, which offered a space 78 by 48 feet for take-offs and landings. Immediately fore and aft of this space were housing and mast superstructure, leaving only side and vertical approaches.

The first take-off and landing were accomplished with the tanker comparatively motionless, but for the remainder of the demonstrations the vessel was under steam up to maximum speed.

Colonel Gregory, who has been the project officer for the development of the helicopter at Wright Field, not only took the ship off, flew away from the tanker for some distance, returned and landed but also demonstrated the ability of the helicopter to hover above the tanker and land in different positions, on the deck space.



With the tanker under full steam, the Army-Sikorsky helicopter demonstrates its ability to hover nearby.

The helicopter was equipped with flotation gear which permitted Colonel Gregory to make two successful landings on water

near the tanker. The ship can land on a deck as well as water with this equipment since there is no roll of the helicopter on landing. This factor was further demonstrated by three flights, each with a passenger, from the tanker to shore and back again.

The flights took place over a period of two days, with representatives of the Army, War Shipping Administration, the British Royal Navy, the British Air Commission, the Coast Guard and others among the witnesses.

Engineers and pilots of the Materiel Command at Wright Field had recently completed the experimental testing of the machine. Since last summer, take-offs and landings had been made from a comparatively small raised platform, so it was no problem to carry on the same type of flights from a ship's deck. The only difference came in the movement of the landing area, and this factor offered no obstacle, in view of the helicopter's ability to rise and descend vertically; fly backward, forward and sideways; spin like a top about its vertical axis, and hover motionless in the air.

Incidentally, the Long Island Sound demonstration added two more "firsts" to the list held by the Army's helicopter: the first take-off and landing of a helicopter on a ship deck and the first helicopter ship-to-shore ferry service. (Continued on Page 18)



Rear Admiral Howard L. Vickery, vice chairman of the Maritime Commission and Deputy War Shipping Administrator, issued the following statement in Washington after the demonstration:

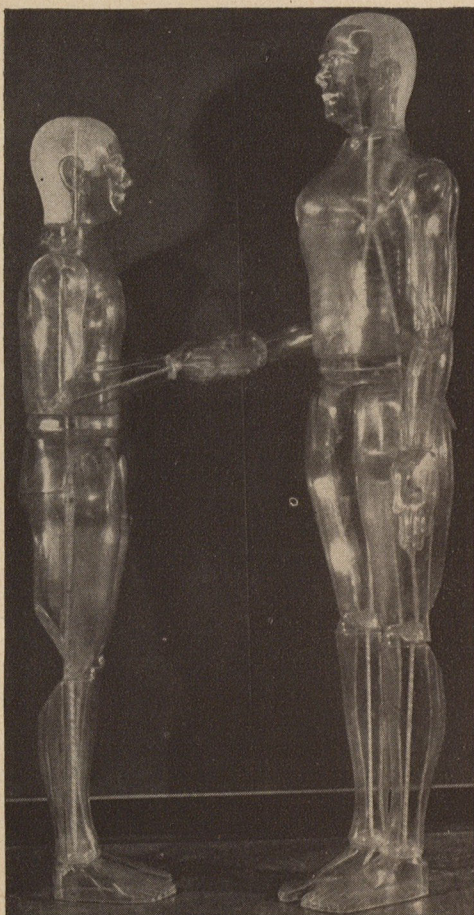
"Under the circumstances existing at the time of the demonstration of helicopters' ability to take off and land on the deck of tankers, the United States Maritime Commission and the War Shipping Administration believe that the feasibility of the operation has been sufficiently proved. These agencies are now preparing a plan for a small deck to be installed on Liberty ships without interfering with the cargo arrangement, which will permit helicopters to be used at sea, thus giving the ships added protection from submarines."

Clover Seed Cleaner

Clover seeds are speeding up the cleaning of pistons and cylinders in the engine repair shops of the Sacramento Air Depot, California. It's the idea of Frank Perry, civilian aircraft mechanic. The seeds, which will not clog up delicate machinery parts, are blown against the parts to be cleaned by a small sand-blasting machine.—**PRO, McClellan Field.**

Shorty

Slim



Manikins for Plane Designing

Just as a tailor fits a suit to an individual, AAF engineers are now fitting airplanes to the men who will fly them. Aerodynamic design comes first but no longer are the tall men or the short men ignored in designing turrets, cockpits, emergency doors and passageways.

Three synthetic men—transparent plastic manikins—now are influencing design of aircraft installations to a greater extent than any other three men in the country. Each is an average sized pilot, representing the tallest, the shortest and the medium of 2,954 cadets formerly at Kelly and Maxwell Fields.

These three silent men already have been responsible for changes in some installations of production model aircraft. Turrets, for example, have been modified in the last three months to give air crew members more room for effective operation of their guns. Upon the recommendations of the "human engineers" who fathered the manikins in the Wright Field Aero-Medical Research Laboratory, practically every type of ball and top turret now has undergone alterations to give the gunners more room.

Slim represents the tall five percent of our pilots, who average six feet, one and one-half inches, and weigh 172 pounds. Shorty stands in for the short five percent, who are five feet five and one-half inches tall and weigh 140 pounds. The remaining ninety percent, who average five feet, 9.2 inches and 154 pounds, are represented by Roger.

Slim, Shorty and Roger are used as the standard yardsticks now in all plane designs. They are flexible, lightweight and sturdy and can wear flying clothes like an Esquire model.

The trio is used to solve problems of adjustable pilot seats, location of instruments where any sized pilot can see them, proper placement of controls so both short-armed and long-armed men can operate them with equal ease, and of the hundreds of equipment items involving proper eye level, adequate elbow room, height clearance, passageways and seats of proper width, knee room, cockpit roominess, and so on.

Before Slim, Shorty and Roger were created, aircraft designers were using statistics and "typical guys" working around the shop. In such cases, however, there was too much chance for human error in measurements and the "typical guy" sometimes turned out to be not-so-typical.

If an airplane crew does not have room to perform its duties efficiently in the air,

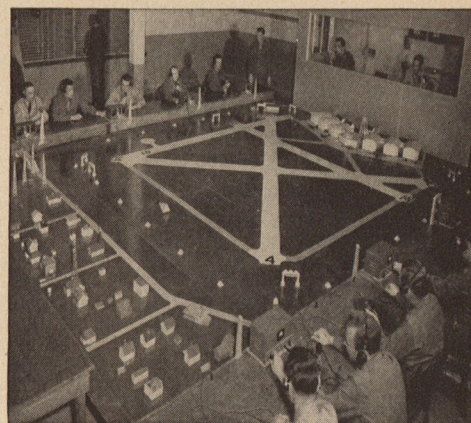
the plane becomes inefficient. To get the maximum performance from plane and crew, the AAF Materiel Command Aero-Medical Laboratory inaugurated its program of building synthetic men as yardsticks for aircraft design.

In 1940 a conference between Colonel O. O. Benson, Aero-Med Laboratory chief, and Dr. E. A. Hooton of Harvard University, one of the country's leading anthropologists, laid the groundwork for Slim, Shorty and Roger. Some time later, measurement statistics of almost three thousand cadet pilots were recorded and classified. During the research dimensions of variously shaped heads also were tabulated to assist in the design of properly fitting oxygen masks.

Upon completion of the investigation the three average sized pilots were defined and head shapes reduced to seven typical forms representing 98 percent of the men in the Air Forces.

With the specifications written for the first time, sculptors were put to work making models of heads and full sized statues of the average man. Flexible manikins were molded from transparent plastics.

Now, after three years of extensive research, Slim, Shorty and Roger have been created and delegated to devote all of their time to helping aircraft designers make combat aircraft more comfortable and better adapted to efficient operation by crew members.—**Lieutenant Robert V. Guelich, Wright Field.**



Model air base in action at Chanute Field.

Miniature Air Base

Operation of a miniature model airport, 16 by 24 feet, complete with floodlights, obstacle lights, wind indicator and radio towers, is a feature of the final phase of the Control Tower Operators training course at Chanute Field, Illinois.

Technical Training Command students sit on two sides of this miniature field with

its hangars, runways, aprons and model aircraft, and communicate by radio with the student operator in the model control tower at one end of the field.

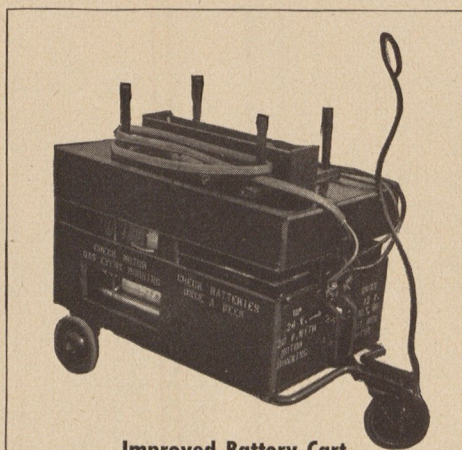
Each student, representing the pilot of a plane, has a card stating his problem, which may involve either coming in for a landing or preparing for a take-off. The student operator then has the problem of handling all planes and giving pilots necessary directions to assure safety and compliance with air traffic regulations.

The miniature was originally built by the 4th Airways Communication Regulation School at Smyrna, Tennessee, but was brought to Chanute Field where it was renovated and expanded after the course was moved to Illinois late last year.

The Control Tower Operators course is under the Department of Link Trainer and Teletype, Captain Ray D. Dallmeyer, Director. Instruction is given by First Lieutenant D. L. Morgan and Warrant Officer R. G. Phillips, both veteran control tower operators.—**First Lieutenant T. V. Watson, Assistant Public Relations Officer, Chanute Field.**

Wooden Wheels

Borrowing the idea from private airplane manufacturers, maintenance shop crews at the Sacramento Air Depot are using wooden wheels to replace rubber tires on aircraft while the planes are undergoing repair. The wooden wheels serve to protect the rubber tires from damaging grease and oil while the aircraft is on the repair line. Inspecting a wheel (below) is Clinton B. McElheney, shop superintendent in the maintenance division.—**Public Relations Officer, Sacramento Air Depot, California.**



Improved Battery Cart

An improved battery wagon has been designed and built at Barksdale Field by Staff Sergeant O. J. Naquin. It fits any AAF airplane, is suitable for field conditions, and charges its own batteries. The cart will adapt to 12, 24 or 28 volts. Made from salvaged materials the wagon is stenciled to insure correct procedure by "alert crews."—**Captain Harry B. Barnhart, Barksdale Field, Louisiana.**

Starter Wrench

To speed up the starting of nuts on bolts in inaccessible points on aircraft, Corporal Walter Ott of the Army Air Base at Casper, Wyoming, devised a starter wrench. His device is expressly designed for use on mounting bolts of inertia starters and batteries of B-17Fs.

The tool consists of a $\frac{3}{16}$ inch shaft, ten and one-half inches long and enclosed in a copper tube. At one end of the shaft is a knob and at the other a series of three gears which are turned by the shaft, thus causing a socket mounted on the third gear to rotate. The nut to be installed is placed in the socket, and the knob is turned to start the nut on the threads of the bolt. The nut is tightened with a standard wrench.—**Captain James A. Hilton, Army Air Base, Casper, Wyoming.**

Artificial Horizons

Taking off at night into a background as black as the inside of a tomb is no cinch for an experienced pilot. Add inexperience, instrument lag, a fast modern bomber that won't climb immediately, and you have a potential accident.

In fact, a recent Third Air Force study discloses that these conditions have caused crashes because young inexperienced pilots unable to compensate for instrument lag have a tendency to let a plane nose to the ground.

A solution was found that should be of interest to all bases where a similar hazard

exists: Provide the pilot with ground contacts so he needn't go on instruments until he gains altitude.

A good deal of credit for development of the idea is due Lieutenant Colonels Clint T. Johnson and J. T. Winstead, Base and Group Commander, respectively, Avon Park Bombing Range, Florida.

From odds and ends of equipment a lighting system was created at this Florida base which will be duplicated throughout the Third Air Force. The system is called an "artificial horizon."

The lights were installed about two months ago following the crash of two B-26 aircraft, each of which apparently had been caused by the failure of the pilot to orient himself with the ground. There have been no similar accidents since.

The "artificial horizon" consists of six clusters of red lights fanned out at a 20 degree angle for two and one-half miles from the runway's end.

The fan arrangement was selected so the lights would remain in view of both the pilot and co-pilot as the rising nose of the plane restricted forward vision. The length was calculated to give ground contact during the first minute of flight—a period of instrument lag, cockpit activity, and low altitude operation.

The light banks were constructed of materials found around the base. Each is made up of six 200-watt bulbs painted red, strung six feet from the ground in a box shape 20 by 30 feet. Two clusters were placed half a mile out; the next two, one and a half miles, and the final pair, two and a half miles. The last two banks are approximately 4,500 feet apart.

To avoid the delay entailed in obtaining miles of wire to connect the clusters with the regular power source, the commanders decided to use portable generators. The base's aviation engineering battalion scraped together six units and provided the men to operate them.

The permanent installations will be patterned after the Avon Park model, according to Colonel E. H. Walter, commander, Corps of Engineers, Third Air Force. Minor modifications of spacing may be necessary depending on the type of plane operated at a station and strings of lights instead of clusters may prove effective at some locations, he said.

The installations will become a regular part of a field's lighting equipment, controlled by a switch in the tower.

"If we save only one bomber," Colonel Walter explains, "that's a quarter of a million dollars, not to mention the lives."—**Flight Control Command, Winston-Salem, North Carolina.**



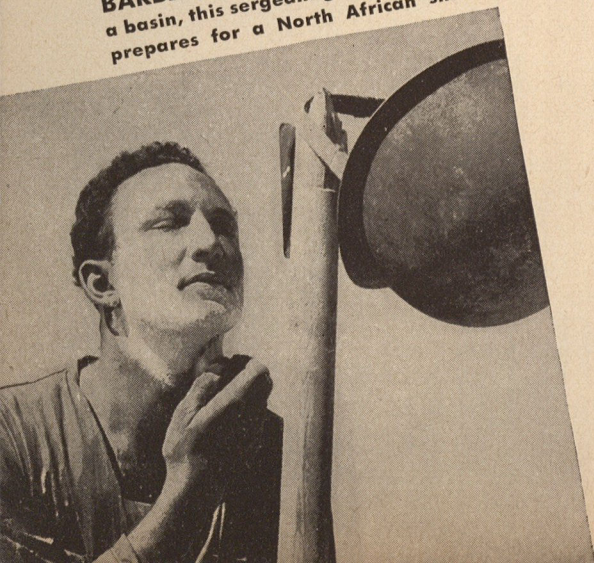
TAXI. Going to town sometimes means a jaunt like this.

PARLOR, BEDROOM and SINK

LIFE at Allied air bases in North Africa is not always one round of engine-repairing and bullet-hole patching. Behind the aerial offensive against Axis targets in the Mediterranean area are hours spent in such personal pursuits as tidying up for a visit to town, matching wits with the natives, athletics, old-fashioned bull sessions, Sunday worship, dreaming of home, and the dozens of other little everyday habits that you can't take away from any guy, war or no war. The daily routine may not be accomplished in the style to which they had become accustomed, but the boys seem to be making the best of a rugged situation.

On these two pages AIR FORCE presents a series of photographs portraying the personal side of life in North Africa for personnel of the Army Air Forces. Although they were taken by AAF combat camera crews before the last Axis retreat was brought to bay on Cap Bon Peninsula, these pictures are typical of scenes enacted almost daily by our flyers and ground crewmen in this vital war theatre. ☆

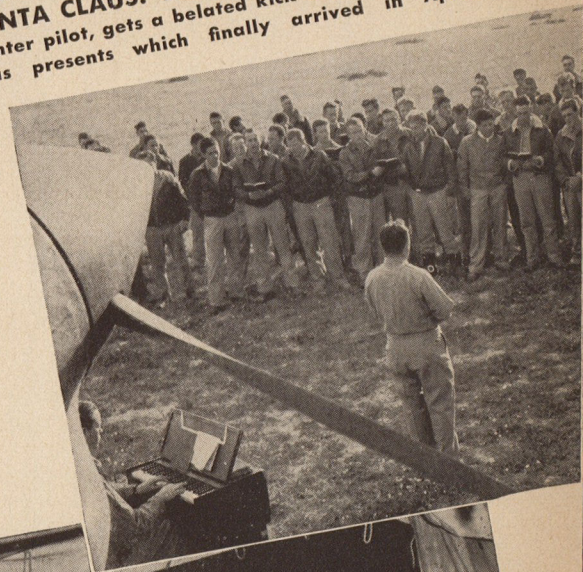
BARBER SHOP. Using his helmet as a basin, this sergeant ground crewman prepares for a North African shave.

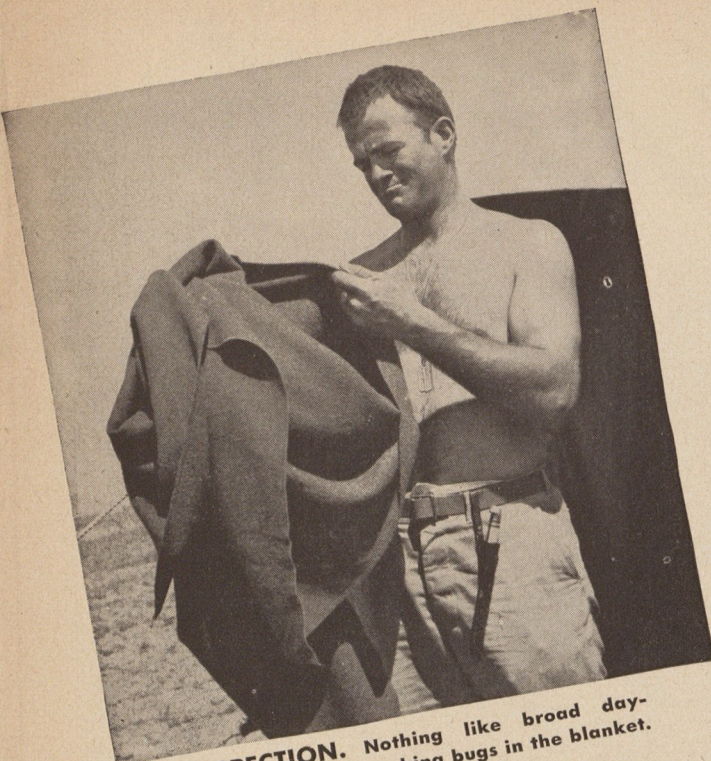


SERGEANT PEELERS. You guys who sweat over KP should enjoy this shot of a Master Sergeant skinning spuds.



SANTA CLAUS. Lieutenant Richard M. Wright, fighter pilot, gets a belated kick out of his Christmas presents which finally arrived in April.





INSPECTION. Nothing like broad daylight as an aid in seeking bugs in the blanket.



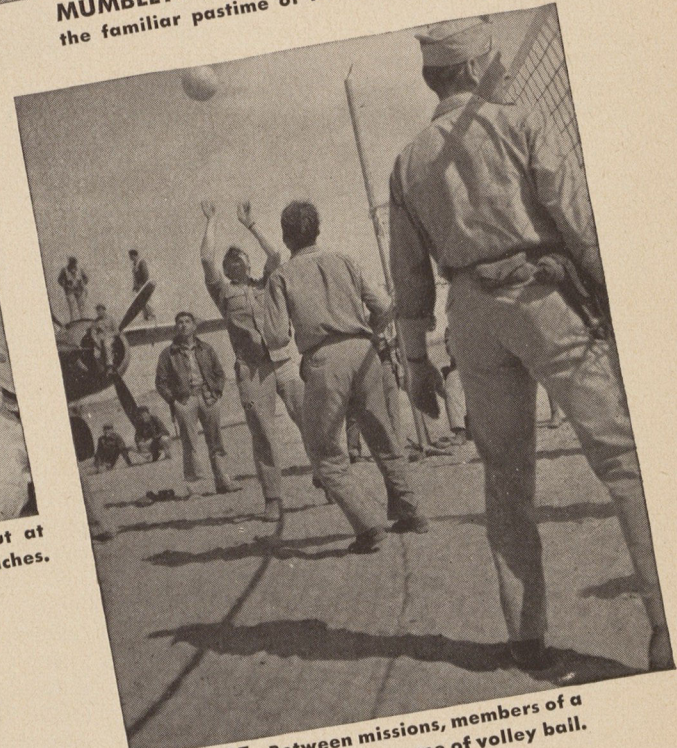
MUMBLETY-PEG. Enlisted men gather for the familiar pastime of tossing the jack-knife.



EXTRA STRIPE. This is never a chore for the men, but at home, you don't have seamstresses with handle-bar mustaches.



CHURCH. To the accompaniment of a portable organ, AAF personnel at a forward airdrome join in singing a hymn at Sunday services.



EXERCISE. Between missions, members of a bomber group relax at a game of volley ball.



SNACK. Bomber crewmen smack their lips over doughnuts and coffee, awaiting another mission.

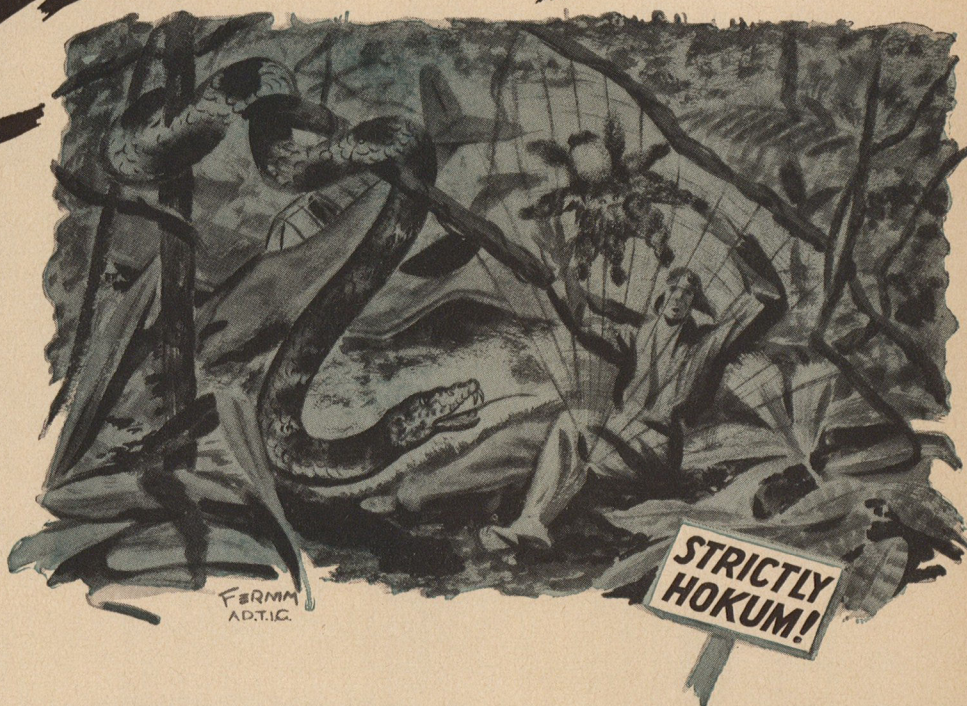
SWEET DREAMS. Your best girl looks even better when you're operating away from home.



**EXPLODING
THE**

Jungle Myth

"... David Dauntless extricated himself from the twisted wreckage of his plane, only to stumble and grope into a green hell of tangled vines, teeming with insects. Unnamed terror gripped him as he faltered into the clutching net of a fearful spiderweb. Struggling to free himself, he sensed the new menace of a giant tarantula near his face. Overhead, he saw the cruel body of a boa constrictor uncoiling its lethal length. Somewhere in the bush, a jackal screamed. Cold sweat beaded on his brow as he lay helpless on the dark, steaming earth, awaiting a slow, tortured, certain death. . . ."



THESE might well be the words of back-room fiction writers who have never been near the jungle, or of publicity-seeking professional travellers who boost their stock by coloring the jungle with an aura of glamour and terror. Take the word of competent scientists and explorers with first-hand experience—it's strictly hokum!

Plenty of people, aside from the natives, have lived unromantically and without incident for years in jungle regions. Those who visit the jungle return with an almost unanimous conviction that it's a much more pleasant and safe place in which to live than most of our big cities.

The truth is that fear of the jungle, like most fears, is caused by an ignorance of the facts. This fear is largely the result of tall tales from unreliable sources. What are the jungle fears? There is the fear of animals—of snakes, crocodiles, spiders, wild beasts, bats and insects. Then there are fears of poisonous plants, of disease, of cannibals, of suffocating heat, of the impenetrability of the jungle "wall."

Let's look at the facts through the eyes of experienced naturalists and explorers who know the jungle intimately. Let's take up the "dangers," one by one, and "lay their ghosts." It is quite true that tropical jungle areas have a greater variety of animals than any other type of region but their aggregate number is relatively small. And contrary to popular notion, dangerous animals are rare and even these are timid in the presence of man.

Snakes, of course, are the number one jungle fear. The consensus among men who know is that the chances of being bitten by

a poisonous snake in any tropical region are actually smaller than in many parts of the United States where rattlesnakes or water moccasins are found. Many of the tropical islands are actually free of poisonous snakes, and even where they do exist, they're seldom seen. Normally, one may expect to see only one snake a month even when wandering through the jungle each day, and the chances are that this one will not be poisonous. Scientists who go out deliberately to catch snakes experience considerable difficulty in finding them. Some years ago, a large party of some seven hundred men travelled through a wide area of New Guinea and in a year's time, not a single member of the party was bitten by a snake. Pythons may be seen but they do not attack humans; no snake of the constrictor variety in the South Pacific islands is big enough to harm a man.

Some snakes in tropical jungles are poisonous, but they are easy to avoid and ordinary precautions are sufficient. Be especially careful when clearing ground for a camp site or trail, or when gathering firewood in the brush. Don't put your hand into dark crevices or behind rock ledges. Don't walk barefooted. You'll be given detailed instruction on suitable clothing to wear to protect yourself against snakes, along with a first aid kit for treatment in the exceedingly rare event of a bite. A last word on snakes: Visit your local zoo before you depart for the tropics and have a look at the only snakes you may see until you return home.

You've heard a lot about poisonous lizards in the tropics, but they're like ghosts,

often reported but never caught. The only poisonous lizard in the world is the Gila monster which lives in the southwestern United States. Large tropical lizards may look very fierce but they're actually quite harmless. If you come across a lizard when you're lost in the jungle, consider yourself lucky. It makes good eating. The smaller lizards you'll see scampering around in the forest or even in your tent are about as noxious as your maiden aunt's canary. Even if you deliberately make one bite you, its teeth aren't strong enough to pierce your skin. A mouse is a dangerous beast compared with the jungle lizard.

Man-eating crocodiles represent another much overrated danger. They're big, to be sure, but they have minute brains, very little initiative and certainly no courage. They rely for protection on their very tough hides rather than on their ferocity. As you approach them, they'll get out of your way. Only if you deliberately try to provoke or capture a crocodile will he put up a fight, and then the danger is more from the swift stroke of his strong tail than from his rather weak bite. A crocodile swallows its food whole and for this reason it won't attempt to attack any animal too large to swallow. To take on even a small man a crocodile would have to be more than fifteen feet long, a size rarely seen. Use reasonable caution; don't approach a crocodile too closely, and you'll have nothing to fear.

Now for the fable of the "dangerous wild animals." About the only carnivorous animals you'll find are in Africa; in Sumatra, Bali, Borneo and southeastern Asia there are tigers; the South Pacific has none. You'll

have to be a mighty good hunter even to see one of the big cats (outside a game reservation). Even if you should meet one, he'll make himself scarce. Large animals are dangerous if cornered or if you startle them suddenly, especially the females with young. But these are rare circumstances. Don't bother the big animals and they won't bother you.

But what of the other jungle "terrors"? What of the vampire bats, tarantulas, scorpions, leeches and army ants? Like the snakes, they're real enough, but they're much less fearsome than the Sunday supplement explorers would have you believe. One scientist deliberately exposed himself to the attack of vampire bats and was so little disturbed or frightened that he had considerable difficulty staying awake long enough to observe the results. It is true that their bite is painless, and that they can draw a small amount of your blood while you sleep. For that reason, if there are bats around use screens if you have them. But the bats won't leave you a bloodless corpse. The worst they may do is act as sleeping sickness carriers and this is rare.

Old wives' tales have it that the "tarantula" found sometimes on bananas from the tropics is capable of a bite that results in quick and certain death. Very large spiders, averaging two to three inches in diameter, are found in burrows in the ground, but

salt available, apply a pinch to the pest. A touch of a lighted cigarette or a swash of alcohol also will make it let go. Disinfect the site of the wound. When you have a companion handy, it's a good idea to strip daily to examine each other for the presence of leeches or ticks. Get them off before they have a chance to imbed themselves.

Army ants move about the jungle in long columns hunting for insects and other food. They are swarming killers who can devour anything *small* in their way that will not resist strongly. Unless you are helpless, absolutely the worst that can happen to you is a few stinging nips. If you get out of their way the army ants won't trail you through the brush like a pack of hunting dogs. And don't worry about being set upon and devoured in your sleep; you will be wide awake at the first bite and have plenty of time to move away.

Poisonous plants of the contact variety do exist in the jungle but none of them is as common or as virulent, as the abundant poison ivy and poison oak found in the United States. At the worst, you'll get a painful rash. You may happen on thornbushes and nettles, but once you get scratched you'll learn to recognize and avoid the offending growth. Watch the scratches. Disinfect them immediately if practicable. A secondary infection in the tropics is likely to be more serious than one at home. Learn

Use common sense in the jungle and leave those horror stories back home in the zoo.

they quickly retreat into their hideouts when you approach. Centipedes, scorpions, tarantulas and spiders may bite you. Generally, the worst you can experience is severe pain and some swelling, which will disappear in a few hours. The bite of certain large spiders in Australia may prove fatal but the spiders of America and Africa with one exception are not dangerous to a normal individual. The one exception is the notorious "black widow," a rather small and harmless-looking black spider with a red hour-glass figure on her underside. This spider has caused a few deaths, and, believe it or not, in the very healthy climate of California rather than in the "dangerous" tropics. You can take some simple precautions against spiders and tarantulas that should protect you. Before you lie down at night, look over your bedding carefully. Before you put your shoes on, shake them out; they're a favorite resting place for scorpions.

Leeches are common in the tropics in wet or swampy places and are often a nuisance. Their bite is harmless but the small wound they make may become infected and cause a sore. It is well to wear leggings or to tie the trouser legs snugly to protect yourself in areas where leeches are present. If a leech does attach itself to your skin, it is easy to remove. Don't tear it off, because the head may remain imbedded in your skin. Flick the leech off with a knife or if you have

the technique of moving about in jungle growth. A slow, deliberate, snake-like movement is best. Blundering forward only leads to bangs on the head and thorn scratches under the chin. You'll go faster if you watch your step. Keep your head forward with your chin in. Part the jungle; don't try to push through it.

Your first night in the open or in a tent in the jungle may give you the "heebie-jeebies." The forest is alive with sound, with all manner of howls, shrieks, screams and eerie echoings. There some birds rattle out a machine-gun tattoo on tree trunks. The magnificent peacock makes a horrible noise. Monkeys may howl or roar like lions. Dead trees may fall and snap like pistol shots. Don't get the idea you're going to be jumped and mauled. Animals looking for food don't advertise. The loudest and most terrifying noises are made by harmless birds and monkeys. A cat fight on your back fence at home doesn't scare you. Get used to jungle sounds at night; they have about the same significance.

Now what about tropical diseases? The average fighting man imagines himself coming back from the tropics shivering with fevers, rotting with parasites and suffering from the ravages of dysentery and cholera. The truth is that a man can stay reasonably healthy in the tropics provided he observes a few simple precautions.

In many jungle and tropic areas, mosquitoes are thick and malaria is a serious problem, although the scourge is by no means universal. If you find yourself in a mosquito area, sleep under your net and take quinine or atabrine at the direction of your medical officer. Be especially cautious at night when mosquitoes are at their biting worst. Keep your face and head covered and if you have them, wear mosquito boots and gloves. Don't scratch mosquito bites. Malaria may be an uncomfortable ailment but with modern treatment and medicines, there's not much to fear from it.

Dysentery and cholera are intestinal diseases which you put into your own mouth. If you're careful about sanitation and the cleanliness of the food and water you consume, chances are you won't get them. Unless you are lost and starving, eat only food coming from cans or freshly cooked in your own mess, or fruit (thick-skinned) that you have peeled yourself. Watch the water you drink. Mountain streams distant from human habitation are safe. However, unless you know that there isn't a native hut a mile or two upstream, always boil the water you drink or sterilize it with chemicals.

News on tropical climate frequently has been distorted. The weather is warmer as a whole on a yearly basis than in the temperate zone to which you're accustomed, but actually the temperatures are not excessively high. The heat is simply more persistent and continuous, and in humid areas it may be somewhat uncomfortable. Yet, seasoned jungle travellers tell us that they have found Washington, D. C., in the summer much more oppressive than any jungle they've ever visited. Chilly nights are not uncommon in the tropics.

Now a word about the native "terrors." Cannibals and headhunters are a thing of the past. You may find natives hostile to small parties in the interior of Dutch New Guinea and in the Admiralty Islands. But for the most part, primitive jungle tribes have come under the influence of missionaries practically everywhere. The best evidence is represented by the invaluable assistance given our flyers who have been forced down in jungle areas. Most natives know they will be rewarded for the aid they render. Just remember to respect native customs; try to conform to their manners, or at least be tolerant of them. Let their women alone. It's a good idea to find out something about the natives in the area in which you will operate. A little understanding of their habits and language may help save your life some day.

While the tropical jungle will be very different from your home environment, the same principles of precaution apply. You soon learn how to live in the tropics but it's best to go there with foreknowledge. Take all the "terror" stories you've heard with a grain of salt. Knowledge and common sense will see you through. ☆

(Additional reading on this subject: "Jungle and Desert Emergencies," distributed by the Flight Control Command.—Ed.)

HE'S REALLY QUITE A MAN!

(Continued from Page 9)

northern Canada and he was there with his passengers for 39 days before the weather permitted rescue crews to get them out. For a month this pilot, his crew and his passengers had been supplied with food supplies by parachute. Equipment was dropped which permitted them to cut out a runway on the ice of the frozen lake. After their rescue, crews went in and flew the forced down C-87 off the ice.

Both the pilot and plane are still in the North Atlantic service, each of them graphic examples of the closely meshed coordination between the civilian and military personnel of the Air Transport Command.

If you've ever flown one of the commercial luxury airliners you'll remember up above the instrument panel where they had the cigarette lighter, just like the one on the dashboard of your car. Down over the South Atlantic recently one of these old airline pilots absent-mindedly reached up above his head for the lighter. Before he could drop the cigarette from his mouth the right motor conked out on him. He had forgotten that on ships being delivered to the Army such luxury items as cigarette lighters are non-essential. Where the lighter used to be is the control for feathering the props.

Little incidents like that keep them on their toes.

They have no guns on their planes even though they are often flying through skies patrolled by enemy planes.

"Yeah, we think about it some," one vet-

eran million-miler told me. "Hell, we even got it planned to stick broom handles out through the cargo doors to make 'em think we got machine guns if we ever get jumped. Maybe it'll scare 'em off."

As a matter of fact the only armament they carry is a forty-five for their life raft and a Very signal pistol. Not much use against cannons or lead-spitting fifties. But the Air Transport Command will tell you that their job is to deliver the goods and armament weight reduces precious pay load.

Sometimes their cargo is as dangerous as enemy planes in the sky. One pilot tells the story of carrying a load of 6,000 pounds of short fuse detonators, which is just about as dangerous as coming home to your bride of three weeks and telling her you dropped the family bankroll in a friendly game of poker.

"We showed up at this base," he says, "and the dispatcher tells me there are three Generals waiting to hitch a ride on to the next stop. 'You aren't afraid to fly so much brass in one load, are you?' he asked me.

"I think a hell of a lot more of my own skin than that of any General and I'm riding with it," was my answer."

However, the Generals failed to arrive in time for the scheduled departure so an Army chaplain, evidently having already made his peace upstairs, climbed in for the ride and slept peacefully the whole trip atop the detonators.

Overseas, however, isn't the only place you will have a chance to become acquainted with the new ATC uniform. They are approved for airline personnel in the vast transition transport training program and domestic cargo operation of the Air Transport Command. At Army Training Detachment fields these airline veterans are conducting the training program under the Army-approved curriculum prepared by the Airlines War Training Institute. On the regular cargo runs each veteran pilot will have two Army Air Forces trainees under his guidance, teaching them the important "know how" of transport flying. The gray matter and experience in transport technique tucked in between the ears of these air contract carrier personnel and now being conveyed to Army trainees is one of the most important con-

tributions of this country's airlines to the war effort.

The importance of this domestic air cargo operation cannot be over-emphasized.

It is a system that permits air cargo planes to operate schedules between the factories turning out vital parts and the modification centers, training units and air depots.

Frequently a plane is finished at the factory needing only one small part before it is operational. The part may be produced in a plant that is across the country. If parts of this kind can be picked up today by plane, delivered to the manufacturer and installed on the waiting plane, it may be flown to its destination with a minimum of delay. It may save five days in the time required to get an airplane into action. Adding these savings together often totals a month. A month saved getting a plane into combat may mean the difference between victory or defeat.

These pilots work hard, averaging 100 hours a month in flying, making daily trips of eight to twelve hours duration. On a round trip from a base in the United States and return they'll maybe be gone from a week to ten days, putting in a total of 35 or 40 hours of actual flying time in that period and covering up to 12,000 miles.

Submarines are a big worry to them, not only because of the danger U-boats represent but because it makes their blood boil when a German sub crew down in the South Atlantic mans the guns on the deck and waves for them to come on in and fight.

"And us without even a brick to drop on them," they moan.

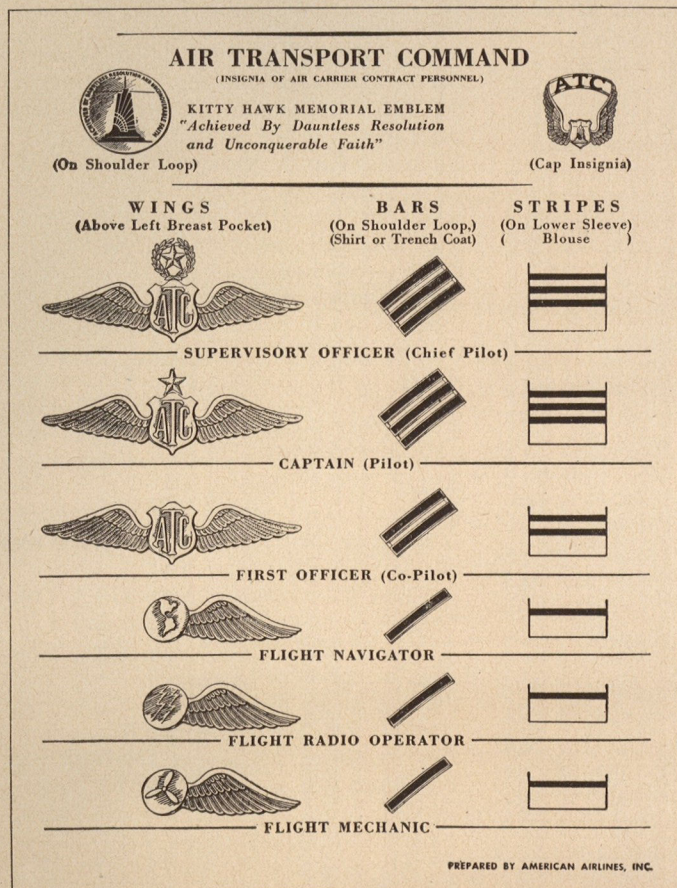
But submarine scares furnish many a laugh, too, on cold icy nights at lonely bases across the North Atlantic route, as they sit around waiting for the weather to clear. They tell and retell the story of the crew flying a C-87 up an Arctic fjord last winter, under a heavy overcast, when they spotted what they thought to be two submarines firing tracers from their bow deck guns. They got out of there in a hurry only to find out later that their "submarines firing tracers" were a couple of whales spouting water.

They've had German aircraft chase them in the skies off England and icy runways crack them up in the Arctic. They have sweated in temperatures as high as 105 degrees and a few hours later been in the midst of a raging blizzard.

"Why we don't all die of pneumonia, I'll never know," more than one marvels.

So the next time you see an Air Carrier Contract man wearing the "ATC" insignia look at him with respect. Maybe he's forgotten more about flying than you'll ever know. And remember that fighting a war isn't all ribbons and fast pursuits and sorties with tons of bombs over the enemy. Remember that it takes supplies and men and vital materials to carry out these missions and they are needed in a hurry. It is the Air Transport Command's job to see that they are delivered there when they are needed. And this man is doing his part to see that they arrive on schedule.

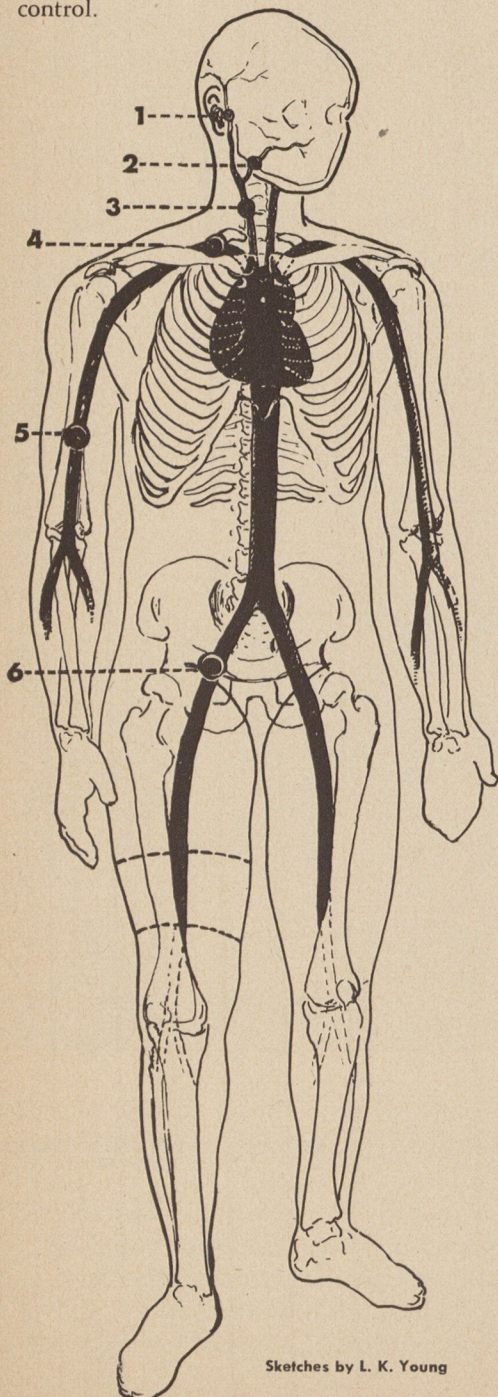
He's really quite a man! ☆



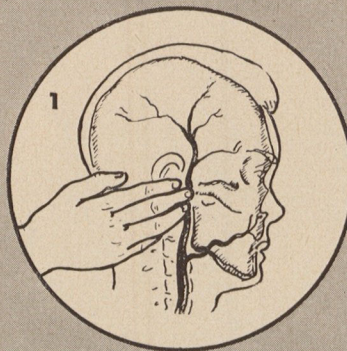
SAVING LIVES WITH YOUR FINGERTIPS

IN THIS and other wars, untold hundreds of lives have been lost due to excessive and uncontrolled flow of blood from wounds received in battle. Bombers have returned from missions with bodies of crew members who bled to death. In many cases, the simple knowledge of first aid pressure points on the part of a companion might well have saved a life.

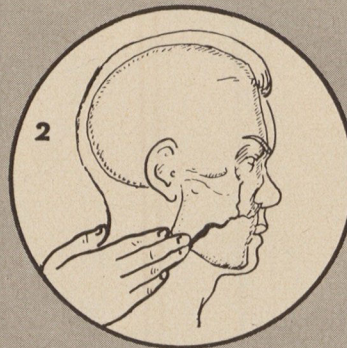
The accompanying diagrams illustrate these pressure points for the control of hemorrhage. On the full figure are pointed out the locations of these vital arteries, while the close-ups show the proper placing of the fingertips to accomplish pressure control.



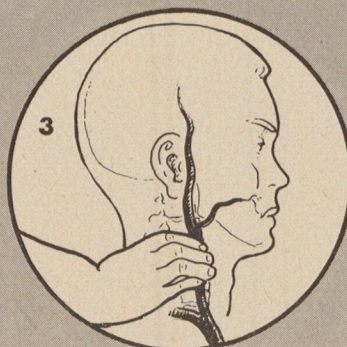
Sketches by L. K. Young



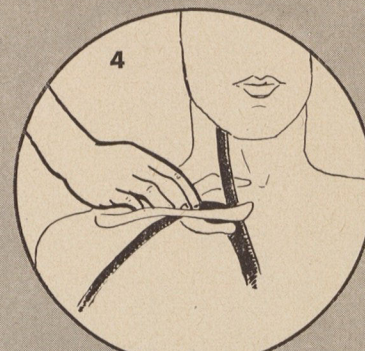
1. To control bleeding in the scalp above the ear, *light* pressure is applied in front of the middle of the ear, where the temporal artery can be felt pulsating.



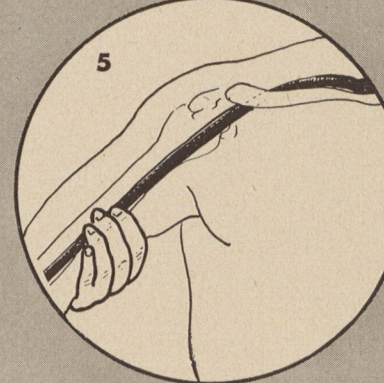
2. In a notch on the under edge of the jaw, two-thirds of the way back from the tip of the chin may be found the small facial artery. *Very light* pressure here will control bleeding in the cheek.



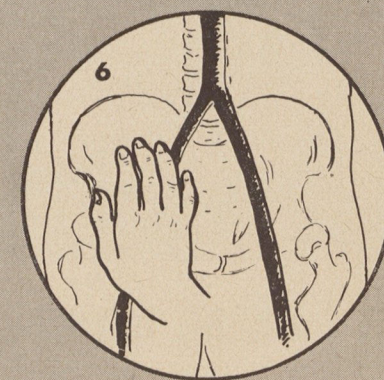
3. About a hand's breadth below the ear and about halfway between the jaw and the collar bone, the carotid artery can be felt throbbing in the neck. Moderate pressure of this artery against the spinal column controls bleeding above that point on the same side of the body, both on the inside and on the outside of the head.



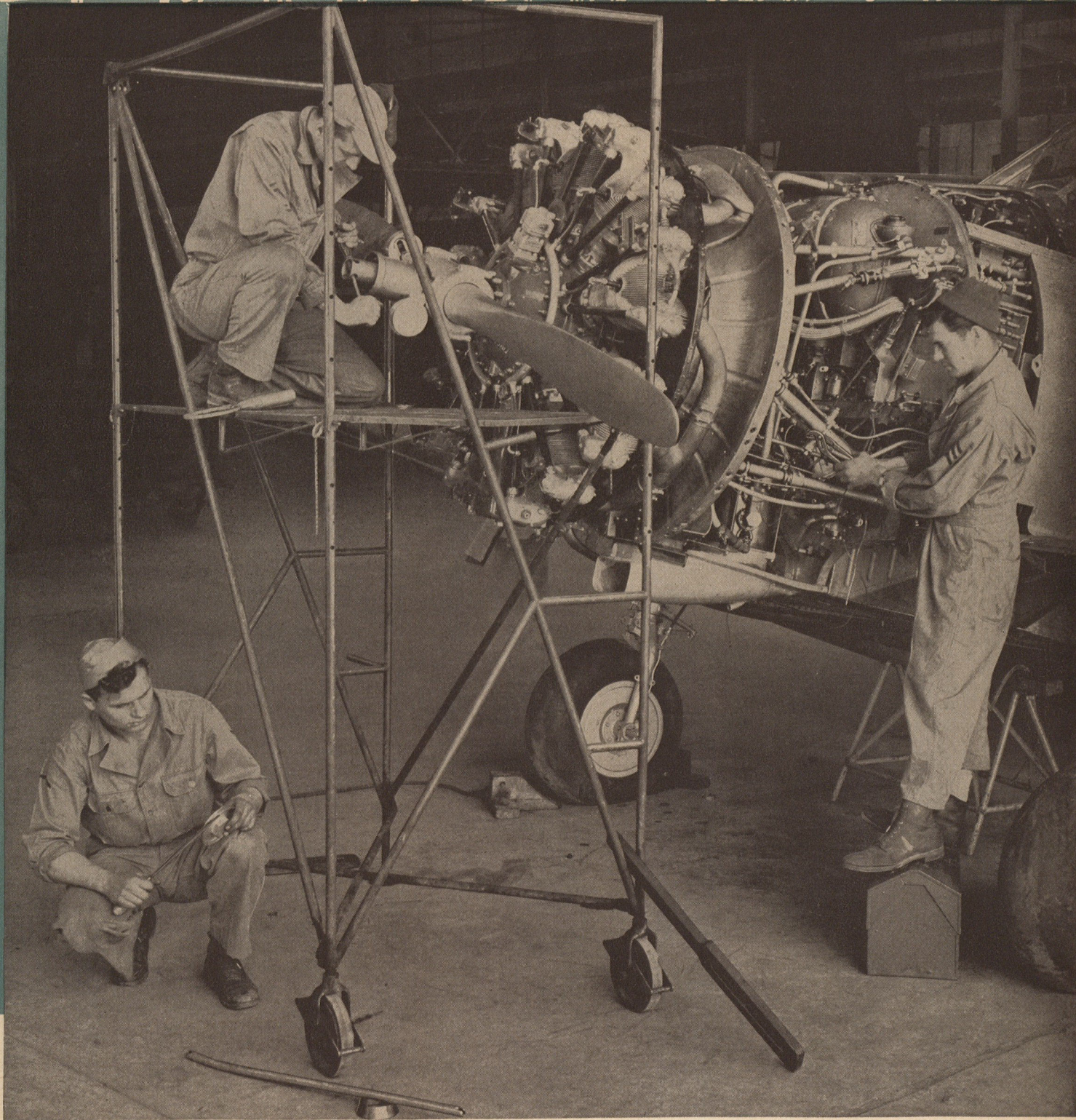
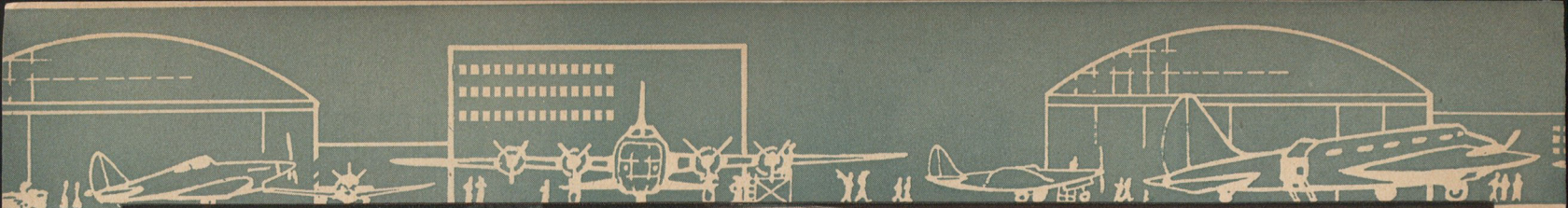
4. Located behind the middle of the collar bone is the subclavian artery. When this artery is *firmly* pressed against the first rib bleeding in the arm can be controlled.



5. At this point the large artery of the arm (brachial artery) can be compressed against the long bone of the arm. When *strong* pressure is exerted here the pulse at the wrist will disappear. It is at this point also that one may apply a tourniquet for control of hemorrhage in the forearm below the elbow.



6. *Strong* pressure in the groin with the heel of the hand presses the femoral artery against the pelvic bone and stops or decreases bleeding in the thigh and leg.



WHAT'S WRONG WITH THIS PICTURE?

Daisies won't tell—but T.O.s will.

This page will give you some laughs but it isn't meant to be merely humorous. The real idea is to depict some everyday maintenance boners. Some of the mistakes that look funny in the picture aren't quite so laughable when they happen in the hangar. You'll find those mistakes listed on Page 32. Technical Sergeant

John R. Hicks, crew chief in the photograph, can point out eleven errors. Did he miss any? How about it, mechs?

The picture this month for our regular feature "ON THE LINE" was posed by Technical Sergeant Hicks, on the stand; Private First Class Leonard Gallas, left, and Sergeant Gene Wefler, all stationed with the 18th Headquarters Squadron, Air Service Command, Patterson Field, Ohio.

ON THE LINE

A monthly maintenance roundup prepared in collaboration with the Air Service Command and the Technical Inspection Division, Office of the Air Inspector.

DID YOU KNOW . . .

That salt tablets and water for mechanics are plentifully supplied in all hangars and shops? Don't wait until the heat gets you. Take these salt tablets and drink plenty of water to replace the salt and water your body loses in excessive perspiration.

Radial engines do not require water, but a human engine does. Service your own cooling system regularly. Camels can drink ten or twelve gallons of water at a time, store up a water supply. Human beings can't. Their water intake must be at frequent intervals to avoid dehydration. There's your cue.

Ventilation is important in combatting the ill effects of heat. Look around and see that windows and doors are kept open. Get all possible circulation of air when temperatures are torrid.

Take salt tablets before you need them, not when it's too late.

Cool off a little before gulping cold liquids. Keep windows and doors open for best ventilation possible.

Such simple heat precautions may prevent your incapacitation. Stay off the sick list for your own comfort, and to fill the vital need for your work.

STRANGE AS IT SEEMS

At a midwestern field, eight airplanes were found to have either one or two wheel retaining nuts safetied with common nails. Cotter pins should be used, as indicated in T.O.'s -03-25 series.

TWISTED CABLES . . .

Rudder trim tab cables, particularly on single-engine trainers, occasionally get twisted inside the rudder during installation. This condition is often overlooked during subsequent inspections. These twists will break the strands, thus weakening trim tab cables, and endanger steering apparatus. Watch for this at the next inspection. Take a look at T.O. 01-1-26.

IMPORTANCE OF CRATING . . .

Sloppy crating of Army Air Forces equipment for shipping will inevitably result in damage en route. Frequent example of carelessness: improper or inadequate crating. Crates should be made plenty strong, as prescribed in T.O. 01-1-31.

Engines, in particular, have not been given sufficient care in crating. For the right way to do it, see T.O. 02-1-1, paragraph 4. Bust our stuff over Tojo's head, not in some railroad boxcar.

COTTER PIN . . .

Keep the old eye on each cotter pin installed in landing wheel retaining nuts. If the pin is not bent and cut off as directed, the end will rub against the dust cap. This will cut off filings, which work their way into the bearings and inflict damage there.

See T.O.'s of 03-25 series. These pertain to landing gear.

DEFLATING STRUTS . . .

Damage to a valve core causes air leak and possible disaster to the airplane while landing with a deflated strut. This trouble is often traced to air-oil shock absorber struts being deflated by depressing the valve core. T.O. 03-25E-1 specifies that the strut is to be deflated by backing off filler plug slightly. Lightly and politely, mechs.

ENGINE HOISTS . . .

Remember that the type A-2 engine hoist assembly must *not* be used without the crossbar attached. Minus the crossbar, the legs might spread, dropping the engine to the floor. Think of what this does to the engine, or you, if you're underneath when it falls.

HERE COMES THE SANDMAN . . .

Sand and other impurities often are found in gas strainers. T.O. 06-1-1 gives instructions for cleaning gas servicing nozzle screens. If not cleaned regularly, dirt gets into the aircraft fueling system. A sorry situation if that dirt stops the engine while in flight.

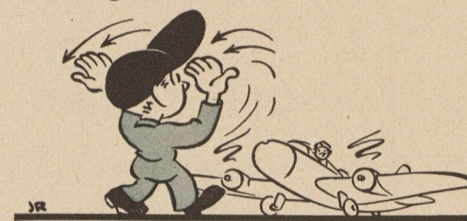
CARBURETOR AIR CLEANERS . . .

Many an airplane engine's life has been cut short in early youth because carburetor air cleaners were not cleaned and oiled daily. This daily requirement is set forth in T.O. 01-1-23. Our engines must live to a healthy, ripe old age.

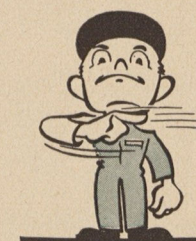
IS THIS NEWS TO YOU?

That there is now a standard system covering the use of hand signals to guide the operation and movement of all aircraft on the ground? Every mech should learn and use the signals officially adopted by the AAF to direct taxiing airplanes. It's the real way to insure a high degree of safety.

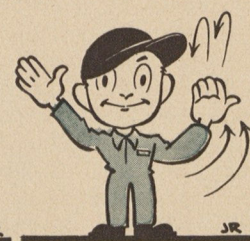
Illustrated on this page are the five signals needed most frequently. The drawings give the correct signals. Refer to Schedule A of AAF Regulation 62-10 which gives the complete setup on the new standard hand signals.



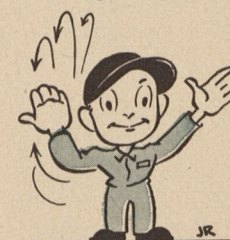
Go Forward
(Stand where pilot can see you)



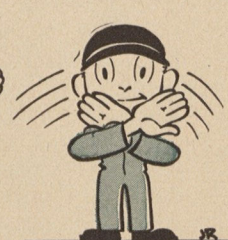
Parking Completed



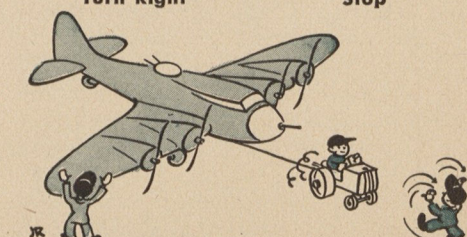
Turn Left



Turn Right



Stop



Man on Foot Shall Precede Towing Vehicle

BRIEFING

For the South Atlantic Run

By CAPTAIN T. W. FINNIE

GROUP S-2, MORRISON FIELD

COMBAT crews headed for the battle-fronts by way of the South Atlantic route are processed through Morrison Field, Florida.

This station is responsible for seeing that all departing planes are properly equipped and prepared for the flight overseas and, moreover, that they are manned by crews provided with adequate training and information. Officers and men of such crews go through our S-1, S-2, S-3 and S-4 sections for the final check-up.

Not the least of these responsibilities is that of the briefing unit. It is the duty of the briefing unit:

1. To insure that all crew personnel are properly equipped for the flight, including the issuing of route data, maps, navigational equipment, secret codes and other necessary material.
2. To insure that all flight personnel of departing aircraft are familiar with the facilities and conditions of the route.

It is upon information supplied by this section that a crew largely depends in meeting its initial challenge—to get over that water.

Briefing for trans-oceanic flights, as now practiced in the Army Air Forces, really began at Morrison Field.

More than a year ago the field was established as an Air Transport Command base and since that time a vast store of flight information has been collected. So extensive is this data that, if necessary, a crew could probably be briefed for a trip not merely across the South Atlantic but to any part of the eastern world.

Route information concerning weather, radio beacons, location and procedure of airfields, and other conditions affecting flight is maintained in complete and compact form. This data is kept up to date and expanded by reports from returning pilots. The briefing section has a wide variety of United States, British and French aeronautical, engineering and hydrographic charts. A map and chart room, perhaps the most extensive library on the South Atlantic route, has shelf after shelf of both the long range and pilotage type maps. Some are special maps and projections developed by

navigators sent out from the station itself on trail-blazing missions.

Supplementing all this information are photo displays with pictures of main and auxiliary fields, runways, living quarters, repair and overhaul facilities, and the like.

IN a word, briefing at Morrison is comprehensive, visual, and up-to-the-minute designed to give a pilot a rounded picture of any area to which he may be going.

The actual briefing of pilots and navigator of a combat crew takes very little time—approximately 45 minutes. This time, of course, varies with the experience of the crews being briefed. Those familiar with the South Atlantic flight can be briefed in fifteen minutes, receiving only changes and late information since the crew's last trip.

When a crew first arrives at Morrison Field it reports to group operations for processing. Briefing is scheduled for three definite periods each day, but it is actually available day or night, at the request of a plane commander or flight commander.

ILLUSTRATED BY
CAPTAIN RAYMOND CREEKMORE





Combat crews are well prepared for their first big over-water flight

Briefing appointments are made at least 24 hours before take-off. Last minute instruction is not satisfactory because it adds to the mental confusion of a crew necessarily engrossed with other details of departure. The purposes of advance briefing are:

1. To discuss with pilot and crew the route folder, which has its maximum value when studied at leisure.
2. To give pilot, co-pilot and navigator an opportunity to read the latest information about the route, and to examine reports of returning crews.
3. To allow time for pilot and crew to question experienced personnel at the station, on matters pertaining to oceanic flying.
4. To allow the navigator enough time to calibrate his instruments and prepare his maps.

5. To allow time for study of photographs and all related data except weather information which, of course, is imparted just before take-off.

Briefing takes place in a large room which has a relief map of the Caribbean Area, fifteen by eighteen feet, to illustrate verbal information.

Normal briefing includes a discussion of visual signs for identification purposes, communication identification codes, Rekoh cards, and an explanation of the weather folder which the pilot receives from the weather officer.

Explanation of the pilot's folder comes next. This is prepared by the briefing office and contains the latest route information obtainable from all accurate sources. Crew members always have an opportunity to read over this folder before a briefing and are ready to ask pertinent questions.

The folders are arranged very logically. Like the data used by commercial airlines, the regular route and regular stops are separated from the alternate route and alternate stops or emergency fields. This technique permits the pilot to have a small, compact folder for the regular route he anticipates flying.

For use in an emergency, the pilot will still have additional information about the nearest alternate airport and a route to it.

Since it is obvious that the value of the information furnished by pilots passing through Morrison Field is the speed with which it is made available to other crews, a new directive permits the use of certain data in these pilots' folders without waiting clearance from Headquarters in Washington.

Folders are arranged geographically so they can be followed progressively along the route to be flown.

They include descriptions of fields, radio stations and frequencies, of housing and messing facilities, and of prominent geographical landmarks which can aid in navigation. All this material is illustrated by photos. The weather folder, given immediately before departure, contains a weather map of the pertinent area, a cross-section diagram of conditions forecast over the route, a flight plan, and the weather codes.

During the briefing, the briefing officer discusses individual airports and the procedure for entry through corridors to avoid restricted areas. Radio facilities along the route are thoroughly analyzed for their navigation value. Crew personnel are invited to ask questions relative to any of this information.

The general climatic conditions to be expected are discussed by officers who have covered the route, and suggestions are made concerning elevations, let-down procedures, and methods of avoiding turbulence and storms. The crew receives a detailed weather briefing one hour before departure.

Briefing covers the Caribbean Area and the South Atlantic as far as the first stop in the South Atlantic Wing. This is done for several reasons, principally because the first

long flight to South America is frequently a "shakedown flight."

New crews are inclined to be worried about the long over-water hop. Confidence can be inspired by a complete discussion of the entire route within the Wing by officers personally familiar with it. Each station within the Wing supplements the overall briefing with a detailed briefing of the next leg of the flight anticipated by the crew.

A new crew, therefore, receives at Morrison a highly specific briefing on the first leg, a specific written instruction for the entire trip, and a verbal treatment of the overall route within the Wing.

No night flights are permitted without a navigator. After the briefing, the navigator of a crew is taken aside by an experienced navigator who explains in great detail the problems of long-range aerial navigation of the South Atlantic. Each navigator must satisfy the briefing navigator that he is properly equipped and capable of making the flight. All essential equipment for his work is available at the field. He has, moreover, a locker to store his equipment and broad desks upon which to facilitate the handling of his maps and charts.

Radio operators are likewise given special attention after the main briefing. They are briefed in detail by radio operators who are well experienced in communications and procedure along the route.

To all members of the crew much stress is laid upon the necessity for maintaining military security. The briefing officer discusses the possibilities and procedures in case of capture, escape and parole in enemy territory, and the destruction of classified material. Instructions concerning IFF and VHF equipment and its destruction is included.

Emphasis is placed on the current position of enemy and friendly troops and air forces, so that the crewmen will be oriented when they set out.

Maps extending as far as Cairo and the Middle East are provided at Morrison. These maps cover all four of the methods of navigation—pilotage, dead reckoning, celestial and radio. It has been found that all four methods may have to be utilized.

With folders, reports from returning crews, photographs and various other kinds of data, every member of a crew has a mass of material on hand at Morrison with which to inform himself for the South Atlantic flight. This written information is supplemented by personal advice from briefing officers, who are always available.

It is not expected that either a pilot or a navigator will memorize all the details of what he has been told, for they are voluminous. But every effort and facility is provided to help him know his business thoroughly. The procedures, material and methods used in briefing at Morrison Field have been the result of much experience. When a crew leaves the field it should not only know how to get where it's going—it should be ready in every way for foreign duty. ☆



A monthly record of decorations awarded to personnel of the Army Air Forces.

DISTINGUISHED SERVICE CROSS

BRIGADIER GENERAL: Howard K. Ramey (Also Distinguished Service Medal). **CAPTAIN:** David A. Campbell. **LIEUTENANT COLONEL:** George B. Greene, Jr. **LIEUTENANT:** Edward D. Durand.

DISTINGUISHED SERVICE MEDAL

MAJOR: Lewin Bennett Barringer.

SILVER STAR

COLONELS: William W. Momyer (With Oak Leaf Cluster, Also Distinguished Flying Cross and Air Medal with three Oak Leaf Clusters), Edward Timberlake, James H. Wallace, Stanley T. Wray. **LIEUTENANT COLONELS:** Charles E. Mario, Claude E. Putnam, Jr. **MAJORS:** Raymond S. Morse, Walter B. Putnam, Henry N. Sachs, Allan J. Sewart, Jr.* (Also Distinguished Flying Cross* and Air Medal*). **CAPTAINS:** Glenn W. Clark, Edwin A. Loberg (With Oak Leaf Cluster, Also Distinguished Flying Cross), Raymond P. Salzarulo*, Roman T. Schumacher, Leo F. Wolcott, Jr., Boris M. Zubko. **LIEUTENANTS:** George F. Callahan, Jack I. B. Donaldson (With Oak Leaf Cluster), Bruce A. Gibson, Jr., Rush V. Greenslade, Thomas L. Hayes, Jr., Kermit C. Hynds, John W. Kidd, Edward J. Magee, Mortie M. Marks, Ralph G. Martin, Kermit E. Meyers, Richard E. Miller* (Also Purple Heart*), James B. Morehead, Marne Noelke, Glenn C. Osbourne, George A. Parker, John C. Price, Gustave R. Rau, Robert H. Richards, Daniel T. Roberts, Charles E. Rogers, Mabry Simmons, Luther P. Smith, Jr., Lloyd H. Stinson, Charles P. Sullivan, Joe Walker, Dugan V. Woodring. **MASTER SERGEANT:** Franz Moeller*. **TECHNICAL SERGEANT:** Clarence E. Daugherty, Thaddeus S. May, Claude B. Phillips, Cal Russell, Robert Starevich (Also Distinguished Flying Cross and Air Medal), James H. Turk. **STAFF SERGEANT:** Richard T. Brown, Harold J.

* Posthumous

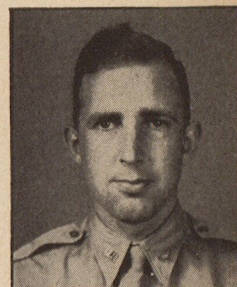
Leamster, Hubert M. Stratton, D. C. Stuart, Arthur Webber, Leslie D. Willard (Also Distinguished Flying Cross). **SERGEANTS:** Ronald J. Allsop, Karl E. Binder (Also Distinguished Flying Cross and Air Medal), Joe G. Maupin, Charles Petrakos, Leo T. Ranta, George D. Scheid*, Aaron B. Shank*, Thomas W. Smith, John J. Stephenson. **CORPORALS:** William R. Holmes, John W. Kinnane, Hyman Marder, Leo E. Shreve (Also Purple Heart), Robert P. Swan (Also Purple Heart), William J. Wagner*, Charles H. Young.

PURPLE HEART

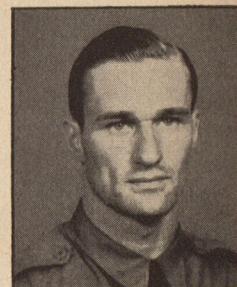
COLONELS: Harry G. Montgomery, Wilfred J. Paul, Augustine F. Shea. **MAJORS:** Victor C. Huffsmith, Carey L. O'Bryan (Also Air Medal), Marvin E. Walseth. **CAPTAINS:** Gilbert E. Erb (Also Distinguished Flying Cross with Oak Leaf Cluster and Air Medal), Howard R. Fellenz, Andrew J. Reynolds, Donald R. Strother* (Also Air Medal*). **LIEUTENANTS:** Barnett S. Allen, Garde B. Baldwin, Edwin M. Boughton (Also Air Medal with three Oak Leaf Clusters), Everett L. Clinard, David M. Conley, Herbert V. Dow, Robert Paul Dresch, James H. Foster, Delbert H. Hall, Edwin P. Heald, Cleveland D. Hickman, John T. Hylton, Jr., Oscar R. Krebs, Allan W. Lowry, Clarence E. McClaran, Mac M. McMarrell, William R. Maloney, Robert H. Markley*, Louis G. Moslener, Romulus A. Picciotti, Harvey E. Rehner, Jacob C. Shively, Frederic E. Whitaker. **MASTER SERGEANT:** Warren B. Caywood. **TECHNICAL SERGEANTS:** Anthony L. Buckley, Edward J. Cashman*, Harry D. Donahey, Lloyd C. Martin, Clarence A. Witmer. **STAFF SERGEANTS:** Rupert W. Arnold, William A. Bellwood, Edwin A. Bettencourt, George P. Bolan, Maurice P. Cotter, Edward C. Graboski, Elwood R. Gummerson, Wilson A. S. Howes, Maurice W. Knutson, Harold F. Lightbown (Also Distinguished Flying Cross with Oak Leaf Cluster and



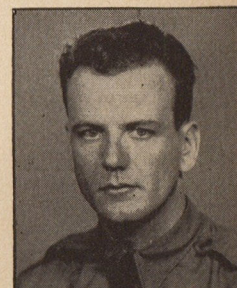
Capt. E. H. Nigro



Lt. A. W. Lowry

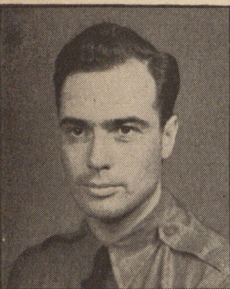


Lt. R. L. Hartzell

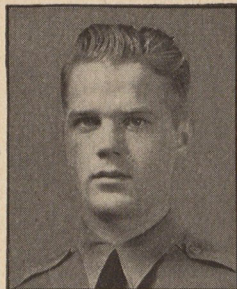


Capt. R. T. Schumacher

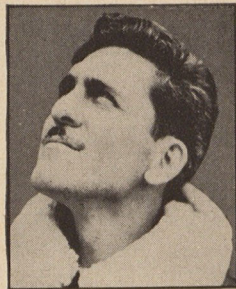
ROLL OF HONOR



Capt. A. J. Kush



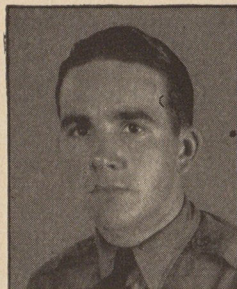
Lt. R. H. Dennis



Sgt. Alfred A. Ise



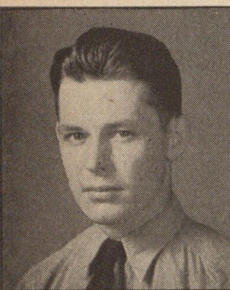
Capt. G. W. Clark



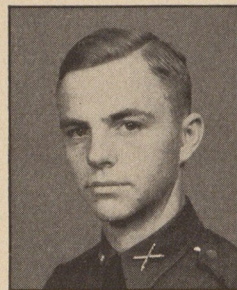
Lt. A. E. Aenchbacher



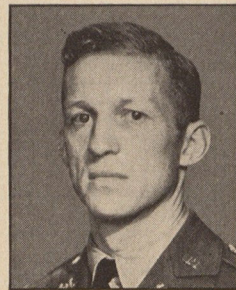
Capt. Denver Truelove



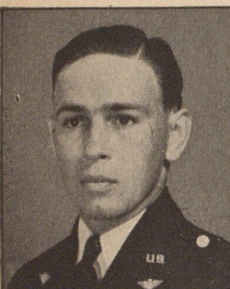
Lt. R. P. Dresp



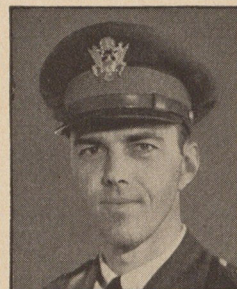
Capt. C. H. Hillhouse



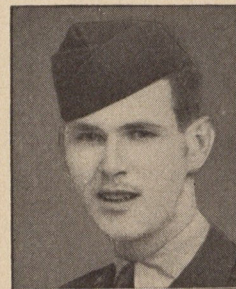
Lt. Col. C. T. Davis



Major W. B. Putnam



Col. J. H. Wallace



Sgt. H. F. Lightbown

Air Medal), Sheldon D. Nearing, Everett F. Perkins (Also Oak Leaf Cluster to Silver Star), Andrew Seman, Paul J. Smith, Earl E. Teats, Charles D. Wright. **SERGEANTS:** Wilbert R. Burns, Francis D. Crossman, Samuel H. DeBerry, Robert C. Dewey, William Hislop*, Edmund B. Lepper*, George M. Martin, Jr.*, Edwin N. Mitchell*, Robert J. Nichols, Richard K. Ramm, Roslyn C. Richardson. **TECHNICIAN FOURTH GRADE:** James L. Schiller. **CORPORALS:** Edward Finn, Roberto Gonzales, Emmett E. Morris*, Hoyt A. Pollard, Antonio S. Tafoya*, James M. Topalian*. **TECHNICIAN FIFTH GRADE:** Martin J. Zimmermann. **PRIVATES FIRST CLASS:** Louis H. Dasenbrock*, James E. Gossard, Jr., William E. Hasenfuss, Jr., Carl E. Lanam, William E. McAbee*, Harrell K. Mattox*, Alfred Osborn, Sidney E. Wroton. **PRIVATES:** Garland C. Anderson*, William F. Blakley, Robert S. Brown*, Willard Fairchild, Russell E. Gallagher*, Robert R. Garrett*, Glenn V. Greenfield, John J. Horan, Walter J. Hughes, James R. Johnson, Robert H. Johnson*, Donald Y. Kemmerer, Marion E. King, Jr., Herbert E. McLaughlin*, Charles Mesrobian, Victor L. Meyers*, George A. Moran*, Robert S. Waugh, Theodore A. Wenzel.

DISTINGUISHED FLYING CROSS

BRIGADIER GENERAL: William E. Lynd (Also Air Medal). **COLONELS:** Thomas O. Hardin, Ernest K. Warburton. **MAJORS:** John A. Roberts, Jr., Raymond F. Rudell, Francis A. Smith. **CAPTAINS:** Charles H. Bowman, Vincent M. Crane (Also Air Medal), Charles H. Hillhouse (With Oak Leaf Cluster), Clyde B. Kelsay (With Oak Leaf Cluster), Ira F. Wintermute. **LIEUTENANTS:** George W. Beaver, John E. Bloomhuff, Robert E. Carlson, Charles M. Carter, Leo M. Eminger, David C. Everitt, Jr., Richard H. Dennis, Dan D. Drakulich, Rush E. McDonald, Clarence L. Marthey, William R. Morhous, Richard W. Nellis*, Jack Pebworth, Arthur J. Platt, R. V. Prouty, Michael L. Reitman, Francis L. Schneiders, John W. Sears, Robert L. Stevens, James C. Watson, Frederick G. Wheeler (Also Air Medal with Oak Leaf Cluster), John L. Wolford. **FLIGHT OFFICER:** Burl S. Ashley (Also Air Medal). **MASTER SERGEANT:** Russell E. Mackey. **TECHNICAL SERGEANT:** Louis Burleson (With Oak Leaf Cluster). **STAFF SERGEANTS:** Ralph W. Barnes, J. W. Childers, David C. Culver, Lawrence E. Donald, John J. Gerrity, James E. Houchins*, James M. Iverson*, P. J. Leonard, Joseph W. McWilliams, John R. Meeks, Jr., Peter F. Novak, Robert K. Stone, Jr., John F. Szymonik, Thomas G. Thompson, David C. Vaughter, Wilbur H. Weedon. **SERGEANTS:** Joseph J. Brust, Victor A. Edwards, Charles D. Hudson, Wayne E. Johnson, Donald J. Kunding, Doyt T. Larimore, Howard S. Peterson (With Oak Leaf Cluster), Walter E. Shay. **CORPORALS:** Bruce W. Osborne, Robert G. Thomas, Alexander Zaretsky. **PRIVATES FIRST CLASS:** George R. Graf, Edwin Rhodes. **PRIVATES:** Francis J. Foye, Paul Panosian.

(Continued on Page 32)

OAK LEAF CLUSTER TO DISTINGUISHED FLYING CROSS

MAJOR: John Dougherty. **LIEUTENANT:** Curtis J. Holdridge. **TECHNICAL SERGEANTS:** Stanley C. Jackola, Fred S. Secrest. **STAFF SERGEANT:** Douglas H. Logan, Lloyd D. Whipp. **SERGEANT:** John J. Wilfley.

SOLDIER'S MEDAL

TECHNICAL SERGEANT: Lee R. Embree. **STAFF SERGEANT:** Moses B. Tate. **SERGEANTS:** Norman L. Johnson, George J. Manger, Edward L. Schmidt. **CORPORALS:** Joseph H. Hanejcek, Luther O'Neal. **PRIVATE FIRST CLASS:** Leon A. Thomas.

AIR MEDAL

MAJOR GENERAL: Hubert R. Harmon. **COLONELS:** William C. Bentley, John K. Gerheart, Arthur W. Gross, Benjamin S. Kelsey, A. J. Kerwin Malone, Elliott Roosevelt. **LIEUTENANT COLONELS:** William Basye, Elwin H. Eddy, Cass S. Hough, Herbert Morgan, Jr., Donald N. Wackitz. **MAJORS:** Owen G. Birtwistle, Adam K. Breckenridge, Rich-

ard G. Buswell, Bruce K. Holloway, Dwight F. Lewis, Stephen D. McElroy. **CAPTAINS:** Arthur Kush, Edward H. Nigro, Denver V. True-love, Laurence R. Blackhurst, Jr., Joseph W. Boone, Donald E. Bradley, John J. B. Calderbank, Kenneth K. Wallick. **LIEUTENANTS:** Oscar Aarness, Robert L. Hartzell, Arthur Eugene Aenck-backer, Donald L. Arlen, Thomas F. Armstrong. **SERGEANTS:** Donald C. Appleman, Melvin C. Bahnmler, Robert E. Browe, Henry A. Buller, Robert E. Collins, Keith F. Colpitts (With Oak Leaf Cluster), Raphael A. Cournoyer, David C. Dodd, Charles E. Donahoe, James T. Ellenburg, Roy Ellis, Earl D. Favinger, Welton K. Fulton, Daniel E. Gable, Archibaldo Gonzalez, Zackie T. Gowan, Jr., Herman S. Haag, Wilmer J. Harver-son, James M. Henderson, Thomas E. Hight, Al-ton H. Hinson, Warren K. Hughes, Alfred A. Ise, Joseph W. Sanders, Randy Shelhorse, Jr., Ed-ward D. Smith, Edward H. Smith, Sylvester Stanley, Jr., Francis G. Stein, Earl E. Stevens, Jr., John H. Stolting, John D. Sullivan, Bur-rel T. Thorne, Joseph R. Tokar, John E. Treon, Felix A. Trice, Dana R. Wemette, Hinson C. Witt, **CORPORALS:** Walter A. Bohnenstiehl, John J. Duffy, Edmund M. Fitzjarrell, Edward C. Lind-quist (With Oak Leaf Cluster), Hubert E. Mc-Kinney, Frederick T. Mayer, Phillip J. Murphy, Stanley O. Niedwecki. **PRIVATES FIRST CLASS:** Lenwood E. Benham, John Q. Brock, Abraham Levin, Bernard P. Ritts, Ralph W. Thomas. **PRIVATES:** Theodore A. Alleckson, Harry F. Ar-nold, Frank D. Axtell, Johnie O. Burcham, Al-fred M. Faries, Ellsworth L. Kidd, Fred J. Little-wolf, Roland C. Lorenz, William G. Merriman, Leward T. Opsal.

FLIGHT TO NAPLES

(Continued from Page 7)

Clusters drop out horizontally and, a few feet below the plane, the six little bombs split away from each other and point their noses down toward the target in a long parabolic arc.

"Bombs Away! Bomb bay doors closed."

Suddenly two bursts of flak went off di-rectly between us and the other wing ship. I could hear them both faintly. Then about five seconds later there was a tremendous explosion which seemed to come from be-hind my seat. I could hear pieces of metal tearing through the plane in several places. The cockpit was filled with dust and smoke, and for the first time I could smell the acrid garlic-like odor of the charge.

The flak had gone off just below our plane, causing it to lurch violently. The number two engine began to wind up like a siren. I looked at the tachometer and saw it passing 2500. I glanced at the pilot. He nodded. I shut off the engine and feathered the prop. Another explosion came from the starboard side. I glanced at engines three and four. Oil was gushing from the top of number three. I cut it off, too, and feathered. Casey and I were both thinking the same thing: "Did one of those explosions get number one or four?"

WE had lost so much speed that our ele-ment was far ahead of us. I saw the second element of three planes, led by Lieutenant David W. Bishop, snuggling in on our wing to give us protection from the fighters which were now swarming about.

We kept the throttles on our two engines wide open. We dived and turned until we were out of the anti-aircraft zone. But the Messerschmitts, Reggianis and Macchis were still on us. We could hear the pound-ing of every gun on our plane. The gunners knew that they were fighting for dear life and the sound of their guns proved it. After the first attempt, the enemy fighters decided not to press the attack. We all breathed easier when we discovered that no one on the plane had been injured and that we could hold our altitude without forcing the two remaining engines too much.

On the long journey home I suppose the Mediterranean was just as beautiful as it had been on the trip out, but somehow it didn't have the same appeal. During the entire day there wasn't anything that looked as beautiful as our home base as we circled it prior to landing.

Casey made a beautiful landing. When the wheels touched the ground "The Grem-lin" swerved sharply to the left, the first in-dication we had that the left tire had been punctured by flak. But Casey kept the plane on the runway with the number one engine.

When the engines finally came to rest and all was quiet, Casey turned to me with a smile and said, "Those Italians really take that 'See Naples and Die' stuff seriously, don't they?"

"I think the Italians will remember to-day, too," the intelligence officer said as he wrote the report of our bombardier. ☆

MISTAKES IN "ON THE LINE" PICTURE on Page 26

(Beginning at lower left corner)

1. You on the left, buddy. That file looks big enough to whittle a horseshoe. It's pure folly to attempt to dress those threads that way. Return the cylinder head (from the pro-peller control unit) to the machine shop for rethreading.

2. Hey, you on the stand, there's a tool lying on the edge of your maintenance stand. The slightest shift of your foot and . . . konk . . . it's on your friend's head.

3. Nix on tightening that retaining nut with a screwdriver. To get the proper lever-age and tension use the specified bar. Refer-ence: T.O. 03-20A-1.

4. And look what you've done. Believe it or not, it does happen. The mech installed that prop by hoisting it right off the mainte-nance stand, locking the stand between the prop and the engine. Now the prop will have to be removed to get the stand free.

5. That maintenance stand must be our jinx this month. Another offense: It's rubbing against the spark plug terminals. T.O.'s give you essential information but you're expected to use common sense along with it.

6. And, Sergeant, the wheel locks haven't been tightened on the maintenance stand wheels. After all, it isn't a tea cart.

7. There's a rear cone on the floor in front of the stand. Could it be that the mech forgot to install it? Reference: T.O. 03-20CB-2. Besides, what's that rear cone doing on the floor anyway? The surface of the rear cone is machined and polished and shouldn't be exposed to scratching or other possible damage. Never leave it carelessly on the floor or allow other surfaces to nick its finish. (Incidentally, that bar resting on the rear cone is the tool that should be used to tighten the retaining nut instead of a screwdriver.)

8. A torque blade beam shouldn't be wedged in the ladder. It might mean a broken ankle should the crew chief make a quick descent.

9. Now, you, on the right. Those water pump pliers are too large for tightening hose clamps. Hose clamps should be finger-tightened. Reference: T.O. 03-1-20.

10. And what's going on here? You're standing on a toolbox. It's unsafe and, be-sides, it might injure the box.

11. Are chocks being rationed? Or did the mechs just forget to put one under the right wheel? If the plane moves, the main-tenance stand will cause the prop to lose her schoolgirl complexion. Reference: T.O. 01-60FC-2.

ANSWERS TO QUIZ

ON PAGE 8

- (a) P-51.
- (b) Prevent the spread of respiratory diseases.
- (b) Gasoline.
- (b) False. The command, right step, march is executed starting with the right foot.
- (c) Calcium hypochlorite is inappropri-ate. It is a chemical used in water purifi-cation. Benzene and Carbon tetrachloride are cleaning fluids.
- (c) Mister Jones.
- (b) The wing loading.
- (d) Parade rest.
- (b) False.
- (c) Hung on the recipient's neck, suspended on a ribbon.
- (b) 1/2 inch below top of shoulder seam (see AAF Reg. 35-11).
- (c) 110 feet.
- (a) True.
- (c) Wind direction indicator.
- (c) A theodolite is used by meteor-ologists to follow the ascent of the gas filled balloon in checking wind velocity and direc-tion.
- (b) Captain
- (b) Florida.
- (b) Prevents a turret gunner from shooting into the tail, the propeller or the other surfaces of his own plane.
- Mustang.
- Hudson Bomber.

PICTURE CREDITS

7: Royal Air Force. 8: British Information Service. 9 and Back Cover: AIR FORCE Staff Photograph. 39: First Motion Picture Unit, AAF, Culver City, California. All other photos secured through official Army Air Forces sources.

AIR-GROUND COOPERATION IN NORTH AFRICA

(Continued from Page 6)

be heavily populated with refugees. Ferryville, itself, was packed with civilians whose pleasure in seeing the Allied commanders in the city was very genuine and quite moving. The city showed no evidence of the war at all. The waterfront area in Ferryville, however, was a twisted shambles of steel, broken concrete and sunken ships.

The road from Ferryville to Tunis was difficult; the center and sides were littered with damaged and burned out trucks, armored cars and tanks. It was on this road in the American 2nd Corps area where we had dispatched some 240 fighter-bomber sorties to work on the 15th Panzer Division when it had endeavored to move south to escape the 2nd Corps but found the 9th Corps blocking its way to Tunis and then tried to turn around and move back on the same road. The effectiveness of the fighter-bombers on the 15th Panzer Division was evident all over the road. Truckloads of rations were standing on the road showing evidence that they had been hit by machine gun fire or by aircraft. Piles of rifles were beside the road where fleeing troops had obviously thrown them. The evidence of a defeated and panicked, trapped German Panzer Division was everywhere at hand.

Tunis, itself, is a large, modern, attractive city. It also shows almost no effects of the war. For in Tunis again we had no objectives in the city but many objectives in the harbor and in the unloading facilities there. Here in Tunis, also, was a heavily populated city through which a sharp line might be drawn. On the waterfront side of the line, the effect of the war is vivid; warehouses, docks, piers, planes, ships and all waterfront installations were smashed debris. On the other side of the line is an attractive, unscathed city. Both the effectiveness of our bombers and the accuracy of our bombing is graphically illustrated.

With General Alexander and Air Marshal Coningham, we landed at El Aouina on the 9th in what was probably the first combat airplane dispatched to that airdrome without a load of bombs. El Aouina had been a principal transport operating base for the German air force. It was littered with a gratifying number of wrecked Ju-52s and Me-323s. There was also a considerable number of combat aircraft which we could fly away after very little maintenance and repair.

The Northwest African Tactical Air Force was our most completely integrated allied air establishment in the theatre. We maintained the national integrity of only two of our major units. They were the two major fighter commands in the north and in the center. The center group was an American unit which retained its original name for administrative purposes rather than any other reasons.

It was the 12th Air Support Command which throughout the battle was com-

manded by Brigadier General Paul L. Williams. Williams' command consisted of three of our fighter groups led by top-notch fighter commanders—our Colonels Momyer, Dean and West, and an observation unit commanded by Major Dyas. These three fighter groups are now outstanding fighter organizations and are able to meet any enemy any place in the world. It is most reassuring to know that those American groups completed the last day of the intensive operations in this battle at a greater strength than ever before. The flow of aircraft into the theatre fully met all requirements and resulted in our having full strength, battleworthy, experienced air units where one might ordinarily expect tired, worn and under-strength air commands.

The Tactical Bomber Force was an integrated unit consisting of a superb light bombardment group commanded by Colonel Terrill.

This group also included two B-25 squadrons with long experience in battle area bombing which had been moved to this front from the Western Desert Air Force, an RAF light bomber wing and French night bomber unit. The tactical bomber force was commanded by Air Commodore L. F. Sinclair, an outstanding light bomber leader whose skill and gallantry is justifying his long service throughout this war and his George Cross, DFC, OBE and several other high British decorations.

The Western Desert Air Force similarly was an integrated unit consisting of many fighter squadrons, including our excellent 57th and 79th P-40 fighter-bomber groups. The 57th and 79th had come across the Western Desert with the Western Desert Air Force and showed the skill, experience, strength and toughness which that drive across the desert had instilled in all of the components of the force. The Western Desert Air Force had a number of light and medium bomber units in it, in which our 12th medium bomber group, equipped with B-25s and commanded by Colonel Bachus was a star unit. The Western Desert Air Force was commanded by Air Vice Marshal Harry Broadhurst. Broadhurst had been one of Air Marshal Coningham's principal commanders when Coningham commanded the Western Desert Air Force in its long drive across the desert.

Thus it is seen that the Northwest African Tactical Air Force, operating directly under General Spaatz' Command, as one of the major components of the Northwest African Air Forces, was an almost integrated Allied air effort with its RAF commander, Air Marshal Coningham, and an American deputy commander, four major units, two of which were about half American and half British. The desire to respect the national integrity of air units is a real one and a worthy one. However, to win this battle, the keynote in our employment of

our Air Forces was the word "concentration." When we wanted to use bombers in front of the 8th Army or in front of the First Army, we found it much more effective to direct one bomber unit into that operation than to direct an American bomber complement and a British bomber complement. We were guided solely by the military necessity that the full advantages of the ability to concentrate great masses of aircraft on the vital point take priority over all other considerations. Among the air units, the result of this Allied effort was most satisfactory. The American Command is proud of the RAF units it had the privilege to handle. The RAF Command states it was similarly deeply impressed by the American units under that command. We are assured that the Allied effort in the air when the battle requires it need not be confused by barriers of nationality.

The complete illustration of air and ground command planning and working in closest coordination may be summarized in the daily intelligence and operations conference at the combined Air-Ground Headquarters, Tactical Air Force, 18th Army Group. Each day the Ground Operations officer presented in detail the previous 24 hours' operations on the ground, and the air operations officer presented the day in the air. The ground intelligence officer then presented his concept of the enemy's current situation on the ground and the air intelligence officer presented the enemy situation in the air, after which General Alexander and Air Marshal Coningham, or in his absence, his American deputy, discussed the immediate situation and future operations. When the air and ground commanders were at the map after this daily conference, one saw the cockpit from which the air-ground war was controlled. The air commander not infrequently pointed out specific locations on the front which would improve the air situation if captured.

The ground commander would examine that particular location and if possible direct the Ground Forces to move on to those specific localities. In this manner, Ground Force support to air operations continually recurred. Similarly, the Ground Force commander would find the spot at which the ground effort had been hampered by the German air force. Normally the necessary movements were made and action taken by the air commander to further the effort on the ground in that particular location which was, in turn, air support of recurred. Similarly, the Ground Force and its final result showed to very high order the soundness of the airman running the air war and the soldier running the ground war, but working coordinately and with striking success toward the same objective.

This close teamwork by allies was not only in the air effort but in all operations of General Eisenhower's allied command. ☆

TAKING THE *KINKS* OUT OF TRAINING

By Col. Edward H. Underhill

DIRECTOR OF TRAINING, CENTRAL INSTRUCTORS' SCHOOL, RANDOLPH FIELD, TEXAS



WE HAVE taken pains to see that our Army Air Forces has the best team in the conference in the matter of players and equipment. Now we can devote more effort to strengthening the coaching staff. That's the reason for the Central Instructors' School at Randolph Field.

The Army Air Forces has expanded tremendously in the past three years. Naturally enough, the Flying Training Command, responsible for training all pilots, was the first to feel the effects of this growth; and the growing pains have been severe and prolonged.

Not the least of these pains was caused by the shortage of qualified flying instructors.

This problem was solved by selecting students at the advanced schools to be instructors. After graduating, they are given additional flying time and instruction and then placed on duty as full-fledged flying instructors.

That the solution was correct is proven by the fact that our pilots go to combat better trained than those of any other nation.

It did have some faults, however, and the principal fault was the short amount of time available for additional instruction. This necessitated the training of instructors at their assigned stations, which led to variations in the kind of training given them and, consequently, to the students throughout the Flying Training Command.

Some instructors would emphasize one phase of training to the probable neglect of others, either because they considered the latter phases relatively unimportant or were unable to present them correctly to the student.

The result was just as though you had a dozen cooks in one kitchen, each trained by a different chef but all trying to do the same work.

One cook might have learned to prepare some excellent egg dishes, since his teacher made a specialty of that line, but he won't be able to roast a leg of lamb. A meat ex-

pert won't be able to handle the egg dishes. So the meals won't be too consistent in quality.

Now that the expansion is not so rapid, the growing pains are not so severe; time, equipment and personnel can be spared for more thorough training of instructors.

The Central Instructors' School at Randolph was established to produce competent, thoroughly qualified Flying Instructors, and to standardize the instruction of students throughout all of the pilot training schools. All instructors in the Flying Training Command will eventually come to Randolph before they start teaching.

The best methods found in any one place will now be made available to all. We shall constantly have access to the latest information pertaining to our assignment. We will learn anything developed at any of our training fields. Three of our departmental directors have observed RAF training methods and are giving us the benefit of their findings. Men returning from combat areas will bring information of value. The instructors leaving here after receiving their training will take this knowledge with them.

Also, this school will serve as a laboratory for evaluation of new *training ideas*, or conflicting theories about existing methods. No other training field has this set-up.

In the twin-engine division, for instance, 2,000-mile cross-country flights in the C-60 type of craft are soon to become an impor-

tant part of the curriculum. Pilot, co-pilot, radio operator, navigator and engineer will participate in these flights and will gain experience they could get in no other way except on long-range combat missions. This procedure is brand-new to flying training.

In the same division, the initial phase of instruction has been concentrated on disproving certain false beliefs the average trainee brings with him about twin-engine aircraft—beliefs which would nullify his ability to serve as a competent instructor were they allowed to exist.

Specifically, the false beliefs concern the AT-9 and AT-10 twin-engine planes. Many pilots believe these planes can't be safely flown when operating on only one engine. They believe it impossible to turn into a dead engine, and word-of-mouth has established a landing speed for single-engine operation of the twin-engine craft some forty miles in excess of the speed at which these planes can actually be landed.

The scarcity of experienced twin-engine pilots in the early days of this type of instruction and the guesswork basis on which qualified single-engine pilots attempted to fly multiple-engine craft gave rise to these false beliefs. Before his first week here has closed, the instructor-trainee is freed of these flying "superstitions."

Also, to accomplish more efficient training, the Central Instructors' School has set about to eliminate the "cockpit-riding" type of instructor—the fellow who attempts to instruct his students with verbal whip-lashes. Trainees are being schooled in an intelligent and understanding approach to the problems of each student. They are constantly being impressed with the fact that they must not be slaves to a tradition.

Development of curricula hence will be an important service of the school. Along with this we shall give considerable time to development and improvement of training aids, such as films, charts and mechanical devices.



This will not be an advanced flying school. The instructor-trainees must be good flyers when they get here. They are especially selected, so they'll have to be.

However, they will learn precision in their aerial maneuvers. A man in combat may be too busy to do a maneuver in an exact fashion. But an instructor must be precise to show the student exactly what he is trying to put across.

Not all of the work is done in the air. In the ground school are taught such courses as "Analysis of Maneuvers," "Psychology and Technique of Instruction," "Operational Procedures" and "Aeronautical Equipment." Some of the courses are general and apply to all types of training. Other courses are specifically designed for a particular type of training—Primary, Basic, Advanced Single-Engine or Advanced Twin-Engine.

The means of putting across the knowledge he already has is what we are trying to give the instructors. They learn just *why* each maneuver is made, what it does for the student, and why it is in the curriculum. They are taught what abilities are necessary for each performance and what a new trick will teach the student. The purpose, technique, training value, and proficiency required in every individual act of flying are analyzed.

This analysis of maneuvers is taught in the ground school, along with psychology of instruction, operational procedure and

A standardized course for flight instructors is introduced at Randolph

aeronautical equipment. In the psychology of instruction, the trainee will learn to study his students' personalities, abilities, and reactions to all phases of training.

Means of instilling confidence in the cadets are an important phase of this subject. Many a potentially great flyer has been ruined or retarded because he was allowed to lose confidence early in training. Under operational procedure come such subjects as planning and supervising night flying and cross-country flights. In the courses on aeronautical equipment the instructor-trainee will learn just what can be expected, and what cannot be expected, of each part of his plane.

Instructors required for the Ground Schools and for the Military Training of Cadets are also produced by the CIS. They are given additional instruction in their specialties and instruction in methods of teaching, and in the use of training aids, films, synthetic devices, models, and so forth. A large part of their course will be devoted to actual instruction of classes under the supervision of experienced personnel.

The ground training is divided into three parts—the pilots' ground school, for the flying instructor-trainees; the ground school; and a tactical officers' school.

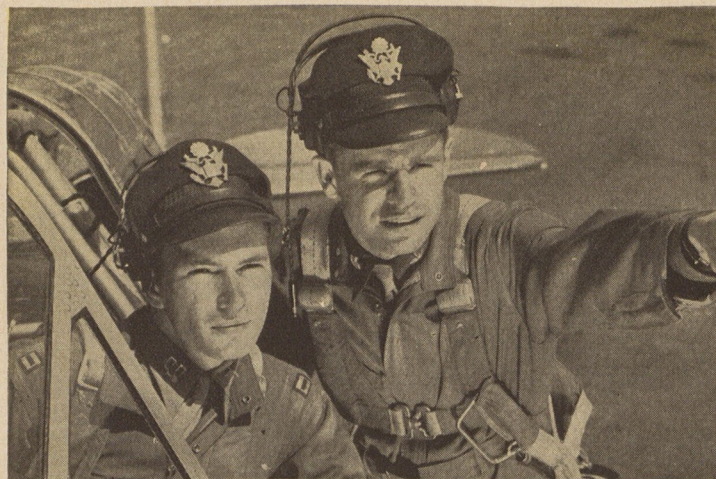
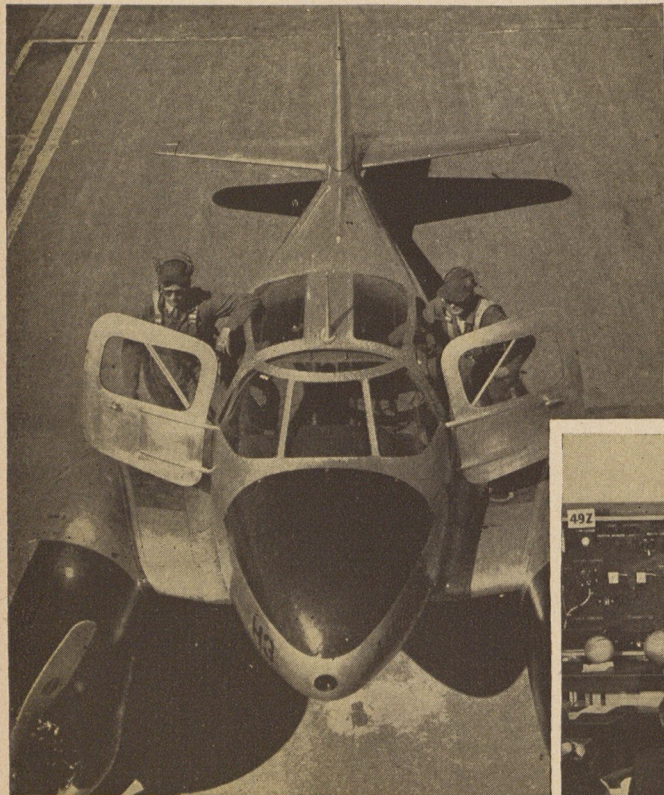
The "tac" officers' school is expected to fill another long-felt need in the Army Air Forces. It has been a problem as to how much "military" the cadets should have. In the old days, when there was more time, rigid class system was in effect. The cadets learned courtesy, discipline and responsibility through the merciless ministrations of the upperclassmen.

But we're in a war and the frills have had to be eliminated. Pilots must be turned out at the fastest rate compatible with efficiency. Hence there has been a problem of just how much time and effort should be spent on the strictly military phases of training. It must not interfere with flight training. Yet it has been shown on the war front that pilots must be able to assume responsibility and to take orders—to function as members of the *teams* essential in modern air operations. Such abilities are not stressed in the ordinary course of flight training.

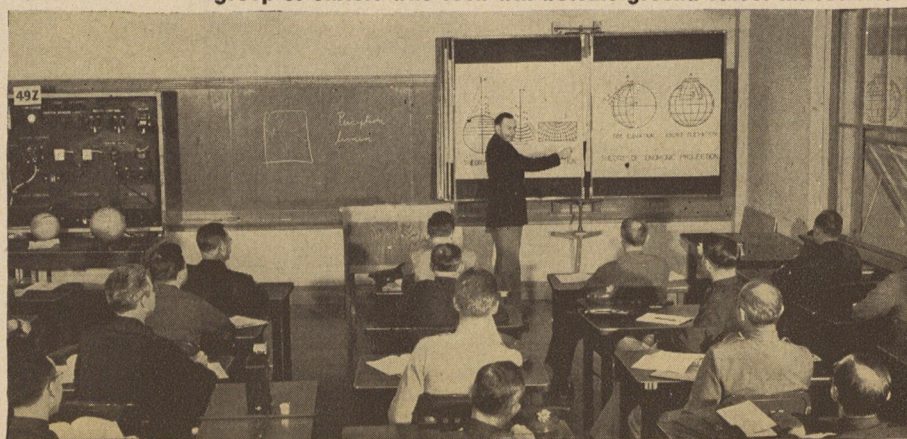
The amount of "military" training has varied greatly at the various schools. Now we are standardizing this, as well as the flight training, to assure that the cadets will become good officers besides good flyers.

All of this implies that the general level of instruction will be raised throughout the Flying Training Command and I believe that this will result. With the wealth of information, ideas and developments of every school available to us there is every reason to believe the new program will be successful. ☆

These instructors in twin-engine advanced flying at the Randolph Central Instructors' School (below) enter the "classroom" in which they teach—an AT-9. Left to right: Lieuts. D. J. Kingsbury, New York, and E. G. Harrington, Wisconsin. At right, Major E. G. Righetti, outlines a formation to Capt. W. J. O'Donnell.



Lieut. Robert H. Cuyler, former associate professor of geology at the University of Texas, lectures on maps and charts before a group of officers who soon will become ground school instructors.





SYNTHETIC DEVICES . . . BOON TO WARTIME TRAINING

TODAY more than ever before, the training problems of the Army Air Forces at war have to be met in major degree by the use of synthetic devices. The necessity for the conservation of critical materials, aviation gasoline, man hours on the part of both students and instructors, and lives of future combat pilots has called for the maximum use of gadgets which provide short cuts.

C.O.s and instructors are daily saving themselves headaches by the successful employment of synthetic train-

ers now available for use. Scores of officers and men and commercial engineers are working overtime to develop others which may aid in the AAF training program.

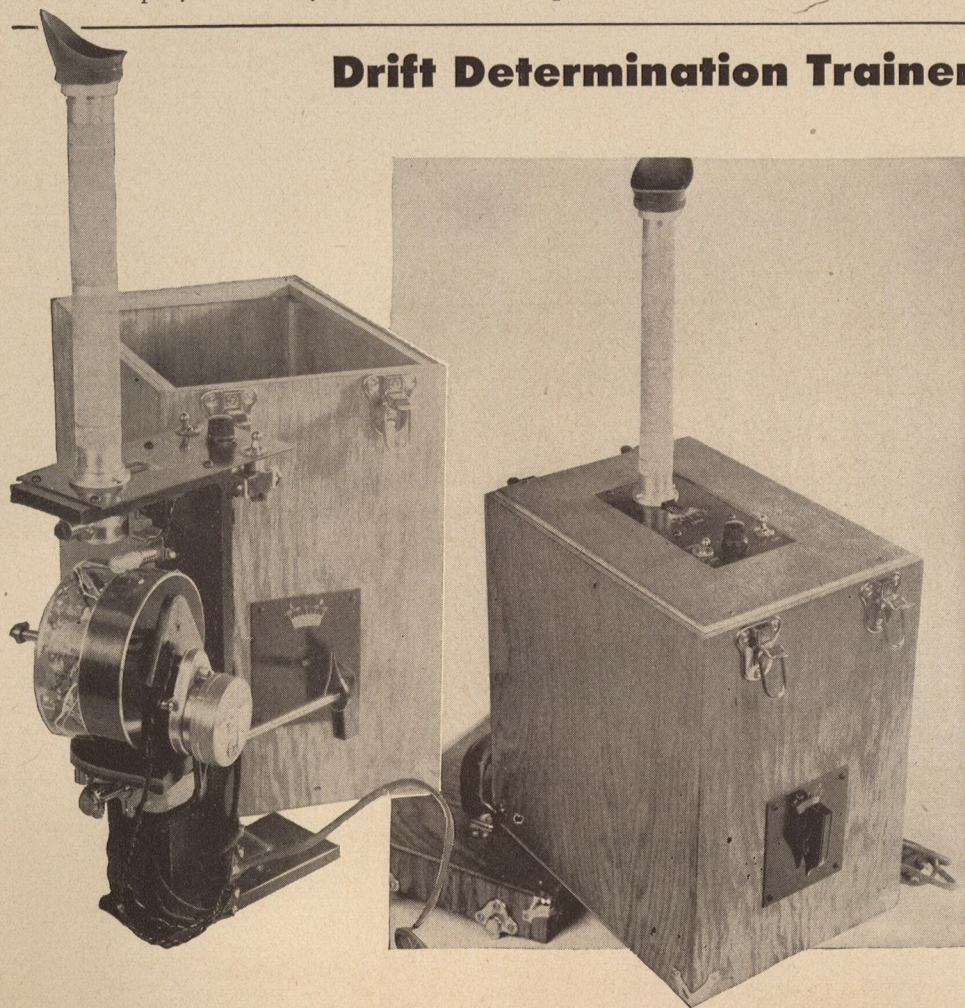
Now on display at the headquarters of the AAF Training Aids Division, Park Avenue and 32nd Street, New York City, are most of the available synthetic training devices, recognition equipment, training films and strips, training literature and posters. The demonstration is primarily set up as a shop window for C.O.s and instructors

who may have the opportunity to visit the headquarters.

AFTAD's "stock" of training aids was collected from the AAF, the Army Ground Forces, the Navy, the RAF, RCAF and commercial manufacturers. Catalogs listing materials available through each section of AFTAD are being distributed to headquarters of AAF Commands and training Air Forces.

AIR FORCE from time to time will describe selected items of equipment available for training within the Air Forces.

Drift Determination Trainer



A DRIFT determination trainer has been designed to aid student bombardiers, navigators and pilots in acquainting themselves with a fundamental factor encountered in navigation. To teach students to operate a drift sight by the usual classroom method requires considerable imagination on their part. This factor is eliminated in using this device (left), which simulates drift in flight.

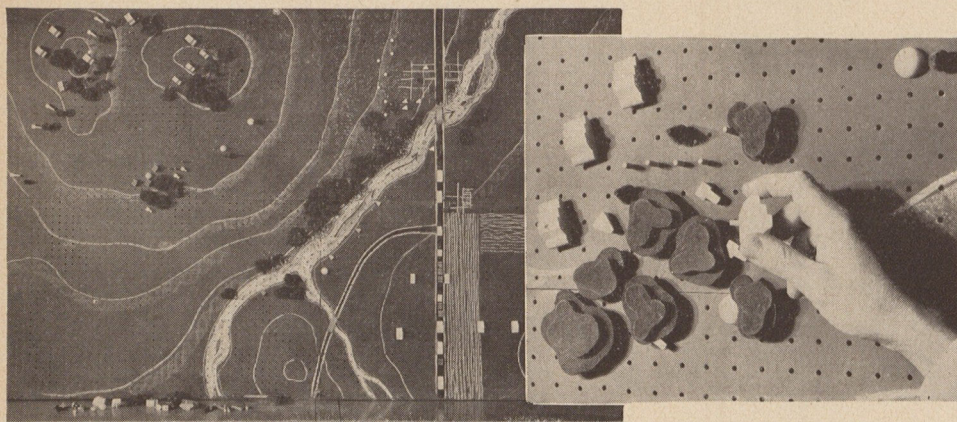
The trainer consists of a simple drift sight, a motor driven cylinder and a rheostat-controlled light source. The cylinder contains aerial map photographs of land and sea. In spots, the cylinder has been perforated to allow specks of light to filter through, simulating ground lights at night. A constant speed motor rotates the cylinder to give the effect of ground speed. A set of switches is provided to control the interior lighting providing either day or night problems. Rheostats control the intensity of interior lighting and illumination of the drift sight grid.

In operation, the instructor, by means of a lever on the side of the box, sets the desired amount of drift. The pupil then sights through the tube of the sight, adjusting it to determine the drift angle. Upon completion of the operation, the instructor makes any necessary corrections in the student's results.

This instrument is approximately one cubic foot and can be placed conveniently on a desk. It is commercially manufactured and operates from 110-volt light service.



(Continued on Next Page)



Tactical Board

A BOARD designed as a tactical map, (above) has flexibility in its possible uses. The board is made up of four sections, each 4 by 2½ feet. The surface of the board is plywood, finished in several layers of abrasive silicate blackboard paint of olive green color. The boards are perforated at one inch intervals to accommodate the assortment of models required in each situation. The small models are pegged, enabling an instructor to place the board vertically in front of the class for better vision.

White and colored chalk may be used in laying out a problem, and objects necessary for illustration of combat principles and problems may be applied in any desired

manner. Examples of some of the peg models that are available with a board are vehicles, pill boxes, trees, bridges, high and low flying and grounded airplanes, tanks, command posts and hangars. Changing the situation on the board is easily achieved by moving the object as required. Instructors who might otherwise be handicapped by lack of practice in handling chalk on a blackboard could make a clear demonstration.

Sections of this board may be added to give a larger map and, if special terrain features such as large mountains are required, they can either be obtained with the board or manufactured locally. One of the features of this board is its visibility due to the contrasting colors and three-dimensional objects.

Automatic Rater

AN automatic rating device (left) presents to the student a series of question cards pertaining to various military subjects and automatically records his score based on correctness of answers and speed of answer selections.

When the student presses the starter button, a card appears in the window at the top of the machine. This card presents a question and several possible answers from which the student makes his selection. He then presses one of seven numbered push buttons corresponding to the answer which he considers to be correct.

The machine records a score based not only on the correctness of the answer but also the time, within a range of twenty seconds, required by the student to make the correct selection. The student is given four seconds to read the question. If he presses the correct button immediately, the "correct" light shows on the machine and he receives twenty points for that question. If

he delays while thinking about the correct answer, his score is reduced one point per second. If the student presses a button corresponding to an incorrect answer, the "incorrect" light will go on and no score is recorded. The card is delivered through a chute to the student after each play. He may thus ascertain the correct answer in case he has been in error.

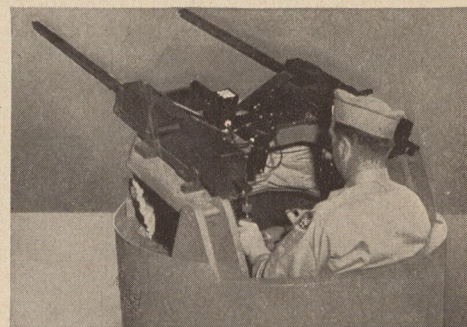
By pressing the starter button again, the student releases another question card into the window of the machine. A total of ten question cards may be played consecutively, after which the "reset" button must be pressed.

The machine may be loaded with a maximum of 800 cards at one time presenting questions on aircraft and ship recognition and a number of other subjects. Latest models of the device may employ film strips rather than cards. About 4 by 6 feet of floor space is required by this commercially produced device. A 110-volt light circuit supplies sufficient alternating current for power.

Turret Trainer

EFFECTIVE use is being made of a turret trainer in giving the potential turret gunner economical training in smooth turret manipulation. The turret closely resembles real equipment in appearance (see below) and operation and the controls are identical with those on operational turrets.

A training reflector sight or spotlight can be readily attached to electrical connections in the trainer. Patterns may be drawn or mechanical moving targets may be mounted



on available wall space (or on wires) for the student to follow. A free spotlight can be used to project a beam of light upon the target in order to observe the degree of skill with which the student manipulates the turret. In using the trainer in this manner, the 120-degree azimuth and 70-degree elevation of the trainer offer no handicap to its efficiency.

A 110-volt, 60-cycle light source operates this device. It is of commercial construction.





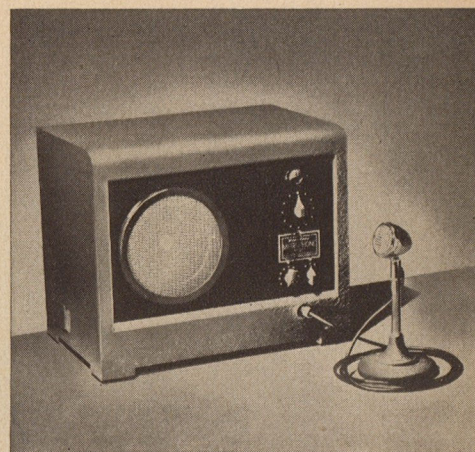
Mirrophone

As its name implies, the Mirrophone mirrors one's voice or other sounds and immediately "phones" back to an individual or group the voice or sounds recorded.

For a full minute, the Mirrophone's magnetic tape records sound of any kind—individual or group messages, conversation, music, code messages or portions of radio broadcasts. At the flick of a switch, the Mirrophone instantly stops recording and begins to play back over its loudspeaker the sounds it has picked up. The recorded sound may be reproduced over and over again. After the "repeat" switch is changed for

another recording, the new sounds automatically erase the results of the previous minute of recording on the automatic tape.

Those who use radio communications should find the Mirrophone especially useful in developing clearer speech and better technique in transmitting concise and direct messages. By listening to his own voice on the Mirrophone, a pilot or radio operator who has difficulty making himself understood can criticize himself and thus contribute to a more effective communication system. An output jack on the machine permits connection with an external loudspeaker or another recording machine if permanent records are desired.



"Learn and Live"

Hollywood star Guy Kibbee, who gave his services gratis to the Air Forces training film program, dons the robe and halo of St. Peter to put across some timely lessons in flying safety in TF 1-3300 "Learn and Live." St. Peter and Joe Instructor reminisce over the earthly fate of some of the pilots who are seen wearing wings in St. Pete's Pilot's Heaven. Their conversation sets the stage for flashbacks to the pilot errors that brought a typical few of the boys into Pilot's Heaven: Hank with the empty tank, the familiar guy with propellers in his pants and in too much of a hurry to check temperature gauges before take-off, the hotshot pilot who liked to stunt at low altitude and the egoist who thought many of the routine flight orders were meant only for others, to mention only a few. "Learn and Live" is a film for all pilots, whether beginners or advanced. (For more details see Page 39.)

"Flexible Aerial Gunnery . . . Making a Gunner"

"Flexible Aerial Gunnery—Making a Gunner" (TF 1-760), released last month, shows how aerial flexible gunners are made—a survey of what goes into their weeks of intensive instruction, the tools and armament they use, a preview of what the prospective gunner can expect, a story substantiating the statement that "gunners are made, not born." "Making a Gunner" is the first of a series of six training films being produced under the general title of "Flexible Aerial Gunnery." Already complete are two others, TF 1-762 "Arithmetic for Battle" (background material for instruction in harmonization of guns and sights) and TF 1-764 "Range Estimation" (estimating target range with the sight ring). Titles of other films to be completed soon are "Bullet Between You and Your Target" and "Estimation of Lead."

"Fifty-Hour Inspection of The B-24D . . The Airplane in General"

This past month saw the release of the first in a series of aircraft maintenance and inspection training films especially designed for the ground crews who keep the crates in the air. "Fifty-Hour Inspection of the B-24D—The Airplane in General" (TF 1-818) shows the procedures followed in the first phases of the 50-hour inspection of a B-24D—washing down the plane and engines, exterior surface inspection,

checking the flight controls, emergency hatches, and other details called for in columns 31, 32, 33 and 34 of Form 41-B. Four additional training films will follow at an early date, to complete the details of the B-24D inspection. In addition to this group on the B-24D, production is well along on other films dealing with the 50-hour inspection of practically all types of bombers, fighters and cargo aircraft.

"Photo Intelligence in Bombardment Aviation"

Welcome news to the bombardment intelligence officer and the air crew personnel with whom he works is the release this month of a new AAF training film, "Photo Intelligence In Bombardment Aviation" (TF 1-3306). Through the medium of a dramatic story which has its beginning at a bombardment headquarters "somewhere in England," this film depicts the role of photographic reconnaissance in air warfare, the futility of photo reconnaissance unless it is interpreted correctly, and how correct interpretation of reconnaissance photos enables the bomber crew to spot a difficult target.

(All films produced by AAF Training Film Production Units.)

TRAINING OFFICERS, ATTENTION!

Ask for them. Your command headquarters has copies for you of AAF Training Film and Film Strip Catalog—First Edition, and Supplement No. 1.

A GLIMPSE OF PILOT'S HEAVEN



Employing a novel motion picture treatment to teach a vital flying safety lesson



EVER hear of Pilot's Heaven? It's the place that flyers go who insist on learning their lessons the hard way.

Of course, nobody ever came back from Pilot's Heaven but the AAF's Directorate of Safety Education and the First Motion Picture Unit have collaborated to produce "Learn and Live," a movie that shows the place in all its detail. It's a dull, drab place. There is no flying, there are no girls and even the pool tables click with eight balls exclusively.

Undesirable as this fictional residence might be, St. Peter (Guy Kibbee) is face to face with a housing problem. Pilots are coming in faster than he and his assistants can care for them. This gives rise to an emergency call for Joe Instructor. St. Peter puts it squarely up to him to cut down the rate of entrance. By way of

reply, Joe reviews how each of the present restless, unhappy inmates got there.

As St. Peter listens to these stories (dramatized on the screen) of carelessness, inattention and mistakes of all kinds, he occasionally is moved to observe, "The devil you say!" Whereupon his neon halo flickers and goes out only to re-light brighter than ever for the next incident.

There is nothing new about the use of motion pictures in flight training, but this film is a far cry from the usual class-room presentation. Designed for use in either post theatre or classroom, "Learn and Live" is as good for entertainment as it is for the lessons it teaches. It is sixty minutes of good sense wrapped up in a neat package.

Ideally, of course, good pilots will absorb good sense without the trimmings.

Likewise a hungry man will eat almost any kind of food regardless of how it looks, but if it's made attractive he will eat a lot more of the right things. Director of Safety Education, Major Robert L. Steinle, figures the same way about safety lessons. Safety isn't a bit more interesting than a raw potato. But the same things can be done to make safety attractive as can be done to make a potato practically irresistible.

Professional excellence in this film was assured by the talent of those who produced it. Guy Kibbee as St. Peter brings top-flight acting ability to the production. Most of the personnel of the First Motion Picture Unit are former top-ranking members of the motion picture industry.

The project was under the general supervision of Lt. Colonel William Keighley, chief of the motion picture division at AAF Headquarters, and Major Paul Mantz, commanding officer of the First Motion Picture Unit. One of the movie industry's top peacetime executives, Major Owen Crump, chief of the production department, produced the film, while Lieutenant Edwin Gilbert, one of Hollywood's finest writers, turned out the screen play. The musical score was created by Alex Steinert and arranged and conducted by Dave Rose, using eighty musicians now members of the Santa Ana Air Force Band.

"Learn and Live" is the forerunner of other films in which the same techniques will be used. ☆

HAVE THE BEST CREW OF THEM ALL

(Continued from Page 16)

Pilots, navigators and bombardiers aren't the only crew members to get a thorough briefing before a mission. Enlisted men are given a fill-in on details of the flight—the target, route in and out, concentrations of flak along the way and near the target, enemy fighter, airdromes, type of fighters to be expected, enemy interception tactics and the like—and later, radio operators are given a special briefing by the Communications Officer who distributes log books and several sets of signals.

Flimsies containing such information as the call sign for code, the voice call sign, all frequencies and flying control stations also are given each operator.

You can't put too much emphasis on the necessity for the destruction of all data and equipment which may be of value to the enemy in the case something goes wrong on a mission.

A THOROUGH check of all equipment is absolutely essential before taking off. In addition to the careful inspection of your radio equipment and gun, you also should check your ammunition, parachute, life rafts, clothing, escape kits and make sure the kit knife is located where it can be found quickly. This is important. Your oxygen mask may freeze and that knife will come in mighty handy when you have to cut the tube and get your oxygen supply direct—to name only one of its many uses.

As soon as the engines of a ship are started, the radio operator begins his log, and, I might say, you don't fool around with this log on a combat mission. It must be complete and accurate, and entries should be made at five-minute intervals at least. It would be a good idea for radio operators to get in as much log-making experience as possible before going to a combat zone. It is sure to prove a great help.

Once over enemy territory the radio operator breaks radio silence only on orders from his C. O. He buckles down to his gunnery job. While at his gun, a radio operator is in an excellent position to observe flak. It is his duty to call it out to the navigator, giving the place of burst by the clock system, the height and color, all of which is used by intelligence officers later.

A good combat radio operator should be able to take fifteen or twenty words of code per minute. He should have enough experience to perform minor repairs on both radio equipment and machine guns. A student should operate radio equipment as often as he possibly can and especially should practice interpolating and calibrating frequencies.

Plenty of "digging" in training will make things a lot easier when he gets across. In England an operator is given a two weeks' course in British radio procedure and a code check and he must pass the course before he is permitted to fly.

Aircraft recognition is particularly important in the European theatre. If you

don't watch out you may find yourself "pouring it into" one of your own fighter escort. On several missions we were escorted by Spitfires, which to me are plenty difficult to tell from an ME-109 at a distance. At times, one or two of the Spitfires would pull up over us to show they were friendly, but any fighter plane that dived toward the formation was fired on.

It also would be a good idea to get in plenty of first aid training before going on a combat mission, learning particularly the use of morphine and what to do in case of shock. This is knowledge you are sure to have a chance to put to good use.

FIGHTING FROM A TURRET

By Tech. Sgt. Carl L. Masters,
engineer

EXCEPT in case of emergency, an engineer of a B-17 operating on combat missions from England engages in a minimum of engineering and a maximum of gunnery. In my case I handled the top turret and, believe me, you can get in some good shooting from there.

The best tip I could possibly offer as a result of combat experience is **KNOW YOUR GUNS**—every inch of them.

In the first place, before starting out on a mission, you can't know too much about your guns when you give them that last once-over. This check-up, to my way of thinking, is the most important job of a gunner—next, of course, to his work of putting the finishing touches on an enemy fighter plane.

In England we made a practice of stripping our guns completely before a flight in order to check in detail for rust and worn parts. In this theatre don't be afraid to use oil. I remember one occasion when we were ordered to clean our guns with gasoline and then dry them thoroughly—that was all. When we took to the air there was just enough condensation to cause the guns to stick or freeze. We could fire one shot and then the guns would stick. At one point on the mission—just over the target—five guns on our ship were not working properly. In a flight of seventy planes that day, all except thirty-seven turned back due to gun or engineering trouble.

Later we found that best results were obtained from our guns simply by wiping them dry and giving them a thin coating of oil. It is important, too, to check the head space and the oil buffer, as well as the quantity of oil in the buffers to make sure they are full.

Don't rely solely on the other fellow in figuring your turret is operating properly. Specialists give the turrets a thorough going over the night before a mission, but we always made it a practice of checking their operation with the aid of a portable energizer. The energizer provides electric current which builds up the necessary hydraulic

pressure to run the turrets for this check.

Gunners should be at their positions from the time the ship leaves the field until it lands again. Be on the alert always. Enemy planes can come at you anywhere, any time.

The top turret gunner has a responsible job. He has a good view of everything happening above and on either side of the ship and he must continually sweep a full 180-degree range, depending, of course, on his plane's position in formation.

On our early missions last fall fighters were coming in head on most of the time. I got plenty of action then simply by telling the pilot to dip the B-17's nose a little. The one sure enemy fighter I have to my credit is a FW-190 that came in that way. When the enemy pilot turned to duck out of it, I let him have a good squirt right along the 190's belly.

LATER, however, the fighters began coming in out of the sun. They would begin firing directly out of the sun and sometimes would be within 200 yards before we could see them. We tried putting burnt cork around our eyes to cut down the glare, the same as in football, and it helped a lot.

It's a good idea for all gunners in a crew to feel at home in all gun positions. You can never tell when somebody handling a particularly hot position is going to get knocked out and you will have to take his place. On the St. Nazaire raid, our two waist gunners were hit by flak and Sergeant DeBoy, our radioman, went back to take care of both waist guns while the co-pilot took over the radio gun. In this way we were still pretty well defended.

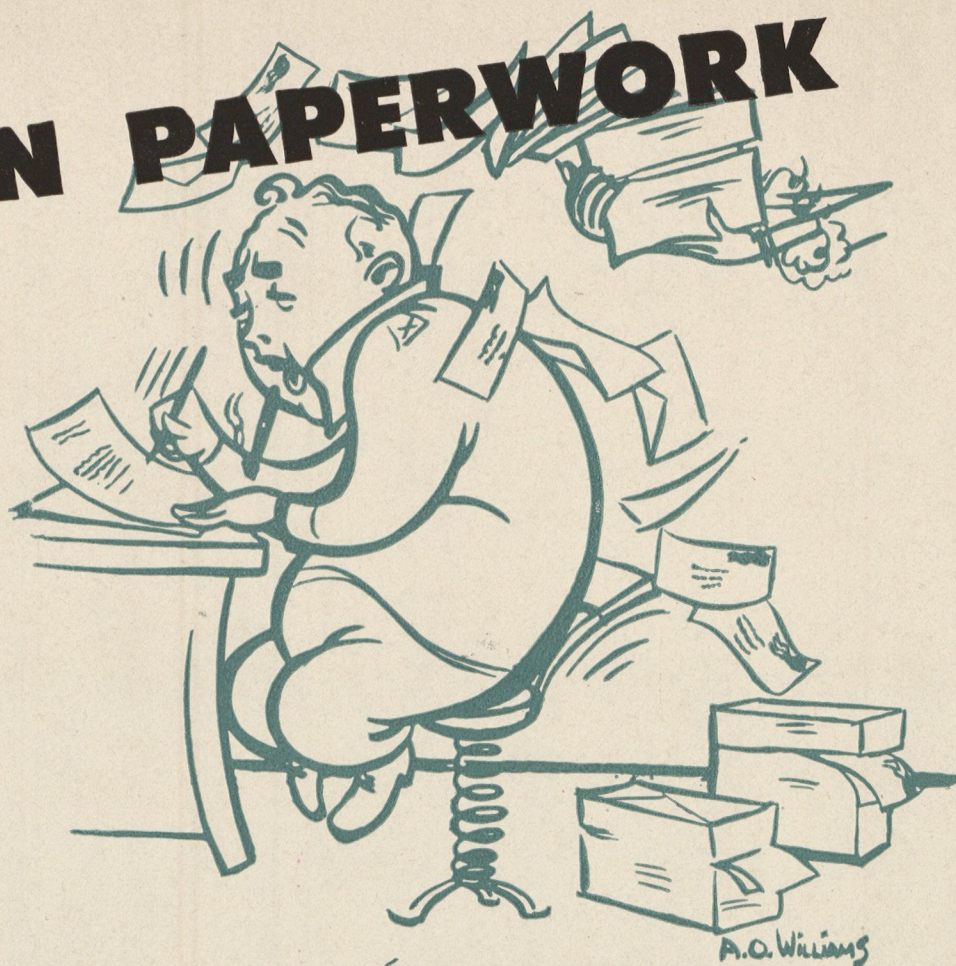
Coming home from a mission the top turret gunner is apt to get his roughest work because enemy fighters are usually lying in wait for the formation as it comes back off the target. In the European theatre you can count on fighters following you back to their own coast. We even had them follow us to within thirty miles of the English coast over the North Sea. The top turret gunner should stay in the turret until his plane begins circling the home field.

About the only thing a gunner has to do at the intelligence interrogation is to claim any enemy planes he shot down. It is a wise idea never to claim a fighter unless you are absolutely sure it was destroyed. Intelligence might check off enemy fighters in that particular area and the next time you and your buddies go over that territory you may be jumped by a lot more fighters than your intelligence officer warned you of. There's no glory in claiming an enemy fighter—your primary objective is bombing, not shooting down fighters—and if you claim too many you are only making it harder for yourself and the rest of the crews to gauge your opposition.

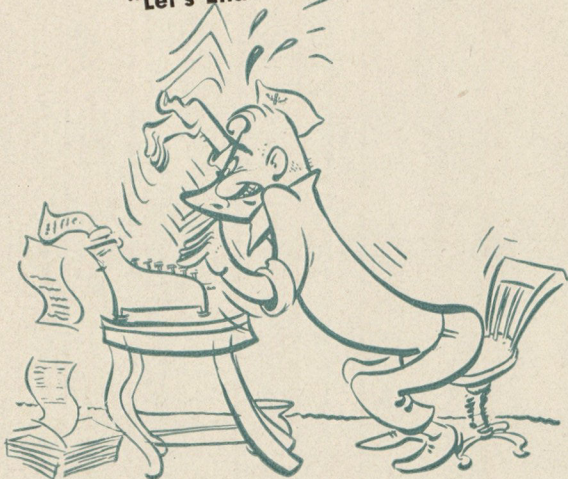
When you finish the interrogation, don't call it a day and head for the barracks. Go to the armament shop and clean your guns. There may be a mission again the next day, and it's a comfortable feeling to know that your guns are OK. ☆

"PAU" ON PAPERWORK

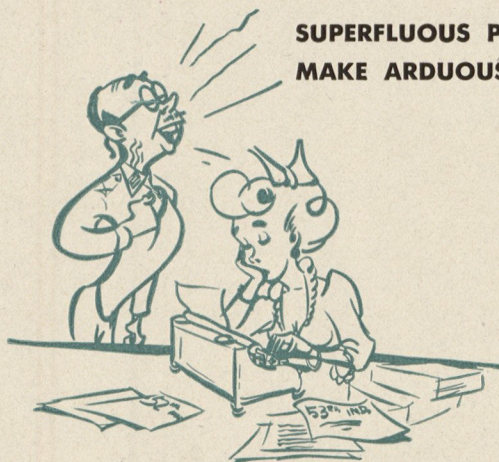
The war on paperwork, that old Army hairshirt, has spread even to Hawaii, the land of grass skirts and leis. From the pen of Lieutenant A. O. Williams of the Seventh Air Force have come these lively sketches intended to encourage elimination of reams of unnecessary memoranda, letters and indorsements. "Pau" in its literal sense is Hawaiian for "end," "complete" or "finish". In this instance, for all practical purposes, it might well read, "Phooey on Paperwork," or, if more dignity is preferred, "Let's End Useless Waste of Time."



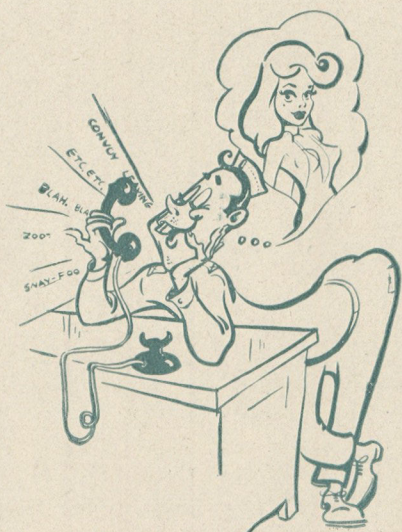
**SUPERFLUOUS PAPERS
MAKE ARDUOUS LABORS**



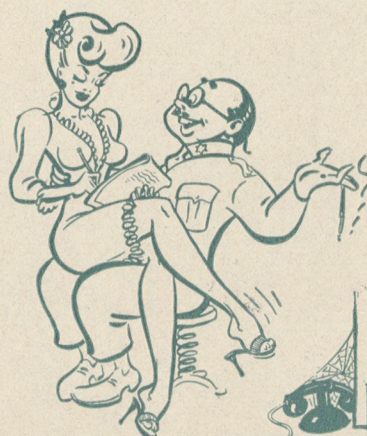
**DON'T CAUSE A GREAT PREPONDERANCE
OF NEEDLESS CORRESPONDENCE!**



**THE SADDEST WORDS OF TONGUE OR PEN—
"INDORSE THAT LETTER BACK AGAIN!"**



**DON'T USE THE PHONE FOR IDLE CHATTER,
OR CLASSIFIED, IMPORTANT MATTER;
BUT FOR ALL ELSE, FOR GOSH SAKES GRAB IT!
GET THE TELEPHONING HABIT!**



**TELEWOMAN MAY BE MORE FUN,
BUT A TELEPHONE JOB IS QUICKER DONE!**

YOU NEVER KNOW!



HE may be the most friendly guy in the world. Patriotic too. Chances are he is genuinely interested in soldiers and in the war effort. But he likes to talk, likes to ask questions; almost everyone does. And soldier talk is the kind of talk people repeat. Your words may be innocent enough at the time, but sooner or later they reach enemy ears. Talk like yours, pieced together with other loose talk, forms a pattern. Suddenly it becomes dynamite.

Then again, this seemingly friendly guy may be an enemy agent. You know the answer to that one.

So be smart, soldier. Don't discuss military matters, no matter how trivial, with anyone—friend or stranger. **YOU NEVER KNOW** what your talk will lead to.