

# AIR FORCE

OFFICIAL SERVICE JOURNAL

OF THE U. S. ARMY AIR FORCES



MAY 1943



MAY 1943

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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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## May Brief

**IN SPRING** many an airman's fancy turns to the North Atlantic Route. We can't call it a young man's fancy, for chances are the spring thaw means more to the old-timers. So this issue we give you straight-from-the-shoulder advice on hopping the North Atlantic from veterans who have crossed the big pond many times.

These men are civilian pilots of the Air Transport Command who cut their eye teeth at Army and Navy flying schools many years ago, piled up thousands of miles with the commercial airlines before the war, and now shuttle big DC-4s and Stratoliners all over the globe.

Our article deals in the lessons they've learned from the "hard knocks" school of ocean flying, presented in what amounts to a round-table discussion on the subject written by Captain Robert B. Hotz, also of the Air Transport Command, and formerly of the AIR FORCE staff. The article appears on Page 6.

**THE NEW ORGANIZATION** of the Army Air Forces is covered in this issue, first in a statement about its basic principles, on Page 2, by Major General George E. Stratmeyer, Chief of the Air Staff, and in a revised organization chart of the Air Forces on Pages 20-21. The chart carries the names of key personnel as of March 29, effective date of the reorganization.

Speaking of the reorganization, the April issue, prepared before its completion, carried an article explaining the functions of the Directorate of Photography. Under the reorganization, it ceases to be known as a directorate; its functions now fall in with the units headed by Assistant Chiefs of Staff for Training, and for Operations, Commitments and Requirements, respectively. We have tried to catch up with the reorganization in the May issue. But if you spot something that doesn't jibe exactly with the new setup, we hope you'll understand.

**SNOW, SAND AND SARONGS** is just another way of referring to the arctic, desert and tropics, and it is the name selected for our newest department, introduced this issue. Snow, Sand and Sarongs is prepared by the Arctic, Desert and Tropic Information Center, Eglin Field, Florida, and contains miscellaneous bits of practical information on conditions in non-temperate zones. Suggestions, contributions and requests from the field will help greatly in its preparation each month.

**U-BOAT HUNTING** is featured in an article on Page 4 which sums up the tactics being employed by our Antisubmarine Command in aerial warfare against the subs. Author of the article is Captain Harold B. Ingersoll of the A-2 section of the Command. Accompanying pictures illustrate the action which takes place from the sighting to the sinking of a U-boat by depth charges.

**WITH HIS FINAL ARTICLE** on compressibility, which will be found on Page 12, Colonel Ben S. Kelsey sums up present knowledge about this perplexing topic and lifts the veil on tomorrow's possible developments in aircraft design. Clouded as the problems of compressibility admittedly are, progress is being and will continue to be made in overcoming its effects, the Colonel concludes.

**PRECISION BOMBING** is graphically illustrated in a series of aerial photographs on Pages 9, 10 and 11. The photos were all taken from our heavy bombers during attacks on three objectives in North Africa. Of special interest is the picture study of the pasting given the enemy airdrome at Tripoli before it fell to the Allies. Five pictures, arranged in sequence, show: the approach to the target at Tripoli, bombs away, the first hits, blasting the airdrome and its equipment, and finally the departure of the attackers, after causing heavy destruction.

**"ME LONG-LONG"**, in the lingo of Pidgin English, means "I don't understand". And if you don't understand Pidgin we recommend a glance at the article on Page 29 which tells you about this useful language, practiced in the best native circles, and how the Special Services Division is teaching it. In addition, we present a brief glossary of Pidgin English terms in the hope that it will make "you savvy", or understand.

**AS NEW DESIGNS** and new tactics send our airman up higher and higher, the question of oxygen and oxygen equipment becomes increasingly important. The front cover picture close-up of a combat crewman wearing the Type A-10 Demand Oxygen Mask is the work of Staff Photographer Sergeant Roger Coster. Next month we have scheduled a feature which will include a statement by Brig. General David N. W. Grant, The Air Surgeon, on the proper use of oxygen equipment, as well as some Do's and Don'ts on the subject and a series of picture illustrations.

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# CROSS COUNTRY

## Reviewing the Bismarck Sea victory, and other developments of the month within the Army Air Forces

A NUMBER of Superman stories seem to have grown out of the Bismarck Sea victory early in March.

When the boys knocked off the Jap convoy near New Guinea, a number of people were left scratching their heads. Even the first press reports from the Southwest Pacific summed it up as "incredible".

It was a landmark in the history of military aviation. But the Bismarck Sea victory was no miracle. When you analyze the engagement and the preparations leading up to it, you're convinced of that.

Good fortune played a prominent role. No one will deny it. "Half luck, half practice and rehearsal" was the way Lieut. General George C. Kenney, Commanding General of Allied Air Forces in the Southwest Pacific, described the annihilation of the convoy, with its thousands of troops and tons of equipment.

But a study of the action indicates two chief factors responsible for the success:

1. Thorough diagnosis of the enemy's plans and intentions, which was formulated well in advance from numerous sources of

information, including excellent air reconnaissance of the entire scope of the enemy's movement and possible sea lanes.

2. Precise execution of a well-planned and coordinated medium- and low-altitude bombing attack, with fighter cover and with repeated attacks on enemy refueling bases on land near the scene of action.

The Bismarck Sea job took about 48 hours in all from the time the convoy was first sighted on the evening of March 2, until there was nothing left of it on the evening of March 4. A total of 20 missions was run. Approximately 35 percent of the bombs dropped hit home. Of the 20 missions, 17 were run on March 3. That was the red letter day.

The Japanese managed to maintain from 20 to 30 fighters over their convoy but our P-38s flying cover prevented them from effectively interfering with the action of our bombers.

Level bombing at medium altitude by B-17s and B-25s was followed closely by low, mast-high bombing by A-20s and B-25s, both of which covered their approach by strafing the decks of their targets. Additional protection was afforded through simultaneous deck-strafting by RAAF-manned Beaufighters. Attacking bombers alternately strafed barges and life rafts during the engagement.

A flight of nine B-17s began the assault on the evening of March 2. The initial

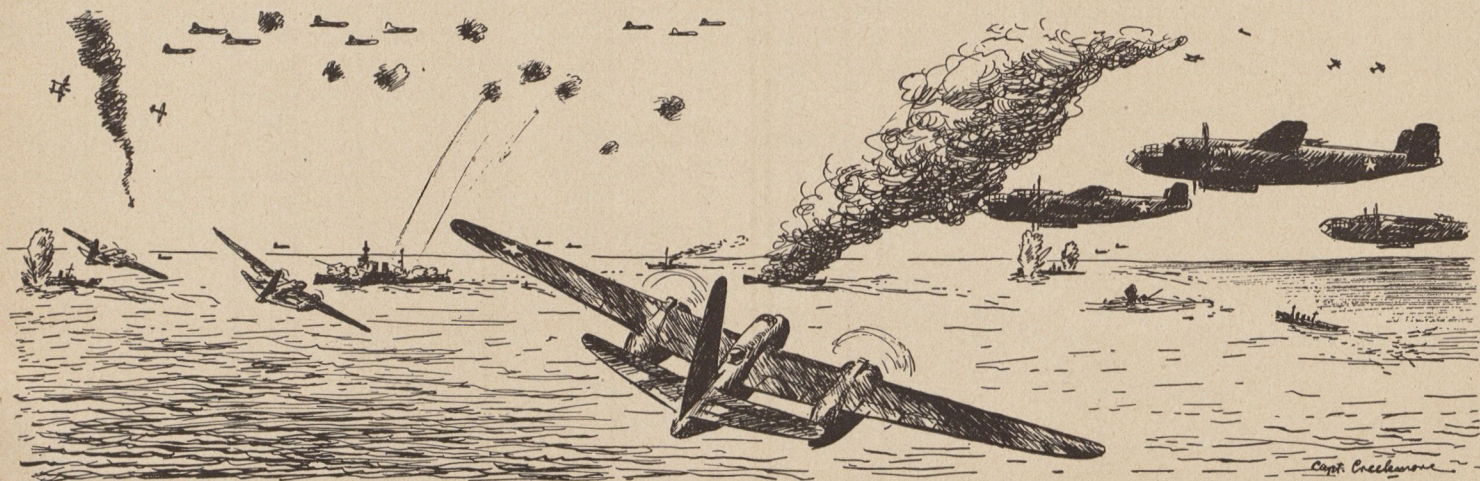
attack proved successful despite interception by about 18 Zeros and by intense, accurate anti-aircraft fire from the vessels of the convoy. One-thousand-pound bombs were dropped from altitudes ranging from 8,000 to 14,000 feet. Two direct hits were scored on a medium-sized merchant ship, which was left sinking; damaging near-misses were scored on an 8,000-ton and a 4,000-ton vessel, one of which came to a complete stop. One Zero was shot down and another probably destroyed. Five B-17s were damaged that day.

By the following day (March 3) the convoy was proceeding through the Vitiaz Strait between New Britain and New Guinea. Our planes then began pouring it on in weather marked by well-broken clouds and scattered showers. Here's the way the missions ran that day:

Twelve A-20s moved in low with 500-pound delayed-action bombs. They executed skip-bombing from mast-high altitude, scoring 12 hits on six ships which immediately caught fire, one of them exploding.

Four B-17s, flying at from 6,500 to 7,500 feet, then scored four near-misses with 1,000-pounders. They were intercepted by 15 fighters, five of which were destroyed. One B-17 was shot down, the only bomber lost in the entire engagement.

Twelve B-25s, flying mast-high, scored 14 hits on 10 ships with skip-bombing tech-





nique. One destroyer was sunk and another left sinking. One cargo ship was sent to the bottom, and another cargo ship and a troop transport were left sinking. In addition, a destroyer, two cargo ships and a transport were left burning fiercely. Ten enemy fighters attempted to intercept the B-25s but were ineffective.

Seven B-17s then attacked from between 6,000 and 9,000 feet, scoring direct hits on two 6,000-ton cargo ships. Seven of from 15 to 18 fighters intercepted by our bombers were destroyed, another probably shot down.

Next followed a wave of six B-17s which sank a 4,000-ton cargo ship with two direct hits and two near-misses, and set a second cargo ship afire with one hit and a near-miss. Five intercepting fighters were shot down, another probably.

Thirteen B-25s, some flying at 200 feet and others at about 5,500 feet, scored two direct hits and one near-miss on a 3,000-ton ship which exploded; two direct hits and four near-misses on a 5,000-ton cargo ship which was left burning; one hit amidship on a merchant vessel and one hit and three near-misses on a large transport, with resulting fire and explosions.

Six B-25s sank a 6,000-ton cargo ship, bombing from between 3,000 and 6,000 feet, and scored several near-misses on another.

Eight B-17s, in three flights at about 7,000 feet, left a 5,000-ton cargo vessel sinking with two direct hits, scored one hit and two near-misses on a destroyer previously crippled by B-25s. The destroyer was left burning. Twenty enemy fighters intercepted the B-17s. Four were shot down and a fifth was believed destroyed.

Five B-17s scored one hit and five near-

misses on a destroyer and three near-misses on a 5,000-ton cargo vessel; fire and explosions followed. Three of 20 intercepting fighters were shot down. One B-17 was damaged.

One B-17 on a lone mission scored fire-setting hits on a destroyer from 7,000 feet.

Ten B-25s, flying mast-high, scored four hits on a destroyer which exploded and was left sinking, four hits on another destroyer which was set afire and was left probably sinking, and one hit on burning transport.

Five RAAF A-20s scored two direct hits and ten near-misses on a destroyer from about 2,000 feet.

Nine B-25s, some at low altitude and others at about 5,000 feet, scored six direct hits on two destroyers.

Five B-25s stopped a destroyer with four direct hits from 5,500 feet.

Meanwhile, 16 P-38s flying cover destroyed ten enemy fighters and damaged three others. Three P-38s failed to return to their base.

P-40s and RAAF A-20s attacked the Jap airdrome at nearby Lae, the P-40s dive-bombing. Other P-40s bombed Lae. Of 16 intercepting enemy fighters, six were destroyed and three probably destroyed. All P-40s returned.

At the same time, RAAF Hudsons bombed and strafed the Jap base at Dobo, and Dutch B-25s fired a fuel dump.

On March 4, one B-17 on reconnaissance scored two hits and two near-misses on a crippled destroyer, leaving it sinking. The lone bomber was attacked by 20 enemy fighters but returned safely after shooting down four of the interceptors.

Later reconnaissance that day revealed only one Jap ship left afloat—a destroyer.

It was finished off by a flight of nine B-25s, which were opposed by one lone machine gun left in operation on the destroyer.

The Jap convoy had been annihilated.

Any number of estimates can be made concerning the significance of a victory like the Bismarck Sea job, but it's almost impossible to produce comprehensive conclusions while the battle of the Pacific is still going on. Quite likely, that will have to wait for the history books.

What we can't forget right now is the potential saving in Allied materiel and manpower by the destruction of the Jap convoy at sea *before* the force it represented could be brought to bear against our ground forces on New Guinea.

You can call that air support of ground troops, if you wish, or label it air power. But the fact is that 48 hours after Japanese troops and equipment were proceeding full speed ahead for land action against the Allies, those same Jap troops and equipment had been rubbed out by our planes before ever touching land.

#### WEARING OF PARACHUTES

"In all flights of Army aircraft, with three exceptions, the pilot in command will ascertain and be responsible for insuring that:

"*Prior to Flight:* (1) A parachute is available, assigned and satisfactorily fitted for each person making the flight. (2) The assigned parachute is conveniently located to the normal position of the occupant to whom it is assigned and its location is known to that individual. (3) Occupants are familiar with the operation of the parachute equipment. (4) Occupants have knowledge of the operation of emergency

## Theory and Practice of the Army Air Forces Reorganization

By MAJOR GENERAL G. E. STRATEMEYER  
CHIEF OF THE AIR STAFF

A NEW organization for the Army Air Forces became effective at 0001 o'clock March 29, 1943. It is essential that all concerned understand the basic principles governing this revised organization in order that each individual may play his proper part. It is therefore appropriate to restate certain fundamentals.

#### STAFF AND COMMAND RELATIONSHIP

The Army Air Forces consists of Headquarters, Army Air Forces and the various commands and air forces. Headquarters, Army Air Forces, functions in Washington and consists of the officers shown above the command level on the master organization chart.

Army Air Forces operations are conducted by the several commands and air forces which, generally speaking, function outside of Washington.

Headquarters will tell the commands and air forces *what* to do but not *how* to do it.

The basic principles of this reorganization are:

1. Decentralization to the field of all purely operating functions.
2. Realignment of the Headquarters Staff, with reduced personnel, to formulate overall plans, policies, and programs for execution by the field.
3. Concentration within particular Headquarters staff offices of primary interest, in the problems of the several commands and air forces.

#### ROLE OF THE COMMANDS AND AIR FORCES

Under the new organization, Headquarters, Army Air Forces will:

1. Establish plans and policies for the conduct of operations in the field.
2. Produce and revise as occasion requires an integrated program for performance of the Army Air Forces mission.
3. Exercise broad supervision over the commands and air forces to eliminate duplication, resolve conflict, and insure compliance with directives.

The commands and air forces translate

into action the policies, plans, and programs established by Headquarters. This requires:

1. Making decisions as to how to carry out staff directives.
2. Taking appropriate action to comply with all such directives.
3. Referring problems of policy, plans, and programs to the Commanding General, Army Air Forces, for decision.
4. Preparing reports for submission to Headquarters as required.

No organization with as complex a task as the Army Air Forces can remain static. Experience will indicate the need for adjustments in the functions set forth in the organization charts involved. As such adjustments are called for they will be made and the appropriate chart modified accordingly.

**The new organizational chart of the Army Air Forces appears on Pages 20 and 21.**



exits and their locations, and when deemed advisable each occupant will be assigned a particular exit for use in case of emergency. (5) An emergency signal and 'abandon ship' procedure are known and understood by all occupants.

*"During Flight:* Parachutes or the harness, in the case of detachable chutes, are worn by all occupants of aircraft; except that crew members, at the discretion of the pilot, may unbuckle straps and remove same temporarily for necessary movements within the airplane." (AAF Reg. No. 60-5, March 3, 1943).

The exceptions: (1) Commercial types of aircraft procured "off the shelf" by the Air Forces in which provisions have not been made for the wearing of parachutes. In this case, instructions will be issued in the Technical Orders covering such aircraft, prescribing the means for compliance with this regulation. If parachutes listed in TO 13-5-17 for use in liaison type aircraft are uncomfortable for certain individuals, the type parachute to be worn will be prescribed by the CO concerned, who also decides whether any parachute will be worn in types L-2, L-3, L-4, L-5 and L-6 series airplanes. (2) Except as may be specifically directed by the Commanding General of the Air Transport Command, the provisions of this Regulation shall not be applicable to multimotored transport type aircraft operated by the Air Transport Command over regularly established air routes. (3) This Regulation is not applicable to the pilots of aircraft transporting airborne troops.

#### PLANE DESIGNATION CHANGES

The letter "R" (Restricted) will prefix the designation of combat airplanes of type, model and series which, for any reason, are no longer considered by Headquarters to be entirely suitable to perform their primary combat mission. Examples: the B-10 becomes the RB-10; the B-25A becomes the RB-25A. Combat planes will be placed in this restricted class only by the authority of Headquarters; those so classified will be listed in appropriate technical orders by authority of Headquarters. The new classification should not be confused with the status of the airplane, "Operational" or "Not Operational" as defined in AAF Regulations Nos. 15-110 and 15-111.

The letter "U" (Utility) will prefix the designation of transport and cargo planes ("C") normally providing capacity for eight persons (including pilot) or less, or for cargo weighing 1,400 pounds or less. Examples: the C-35 becomes the UC-35; the C-72 becomes the UC-72. All types, models, and series falling within that definition which accrue to the active inventory of the Air Forces in the future will be designated "UC" without further reference to Headquarters. Planes so classified will be listed in appropriate technical orders.

Airplane designations which have been previously prefixed by "X", "Y" or "Z" will continue to be prefixed by these letters.

Source: AAF Reg. No. 65-44.

—THE EDITOR.

AIR FORCE, May, 1943

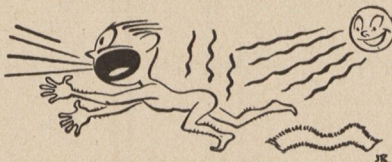


## SNOW, SAND AND SARONGS

**MISSIONARIES** have had a profound effect on natives all over the world—an effect which is peculiarly benefiting our flyers, especially in the South Pacific. Scores of crash survivors in New Guinea, the Solomons, and Northern Australia owe their lives to native friendliness. Religious medallions carried by flyers are recognized and serve as a passkey to aid. In the Solomons, the words "Tie Loto" mean "church people"—and a flyer using the word "Loto" will be welcomed and treated as a friend.

**IN SOME PARTS** of New Guinea there are giant spiders whose webs, when baited, catch small fish whose fins become entangled and are held fast.

**SUNBURN** can cost the life of a flyer forced down in tropical zones without sufficient clothing or cover. Even the most barren beach or desert can offer some protection. Scoop a hole in the sand, bury yourself in it, and cover your face with brush. Jungle leaves can be turned into clothing for protection. Lay low during the heat of the day. Do your traveling at night.



**GRASS** is used to warm frostbitten feet in the Arctic. Senna grass, used for centuries by Eskimos and Laplanders, is packed into oversize shoes or boots. Its tough, absorptive qualities keep the feet warm.

**RAZOR BLADES** for close shaves! Pilots who have survived forced landings in the New Guinea jungle say that if you give a native an ordinary safety razor blade, you're treated royally. (Razor blades are carried regularly by pilots operating in this theater.) Australian stick tobacco, like cut-plug, is another "Open Sesame" to native assistance.

**IN THE AFRICAN DESERT**, salt chotts (salt beds), although resembling American desert salt flats which are frequently used for emergency landings, should not be used for landing purposes. The dry bed of these chotts is usually only a two- or three-inch crust, covering a vast quagmire which will drag down any aircraft or vehicle. "Don't be sucked in, boys!"

**DIFFICULTIES** encountered in making successful landings in Arctic and desert regions are attributed to deceptive reflection on snow and sand-colored surfaces which distort depth perception. The tendency is to level off high and plop anywhere from 10 feet to 50 feet to the ground. Pilots are advised to orient themselves by shadows and other reference points on the terrain.

**If you're forced down in a jungle area containing no water, make your way to the coast. You'll be able to get water near the beach. Scrape the sand at the high-tide mark. Water will seep up. It may be brackish, but will be relatively free from salt and fit to drink and sustain life. Be sure not to dig too deep—you'll run into salt water. By experimenting, you'll find the best place to scoop for water.**

**AIR PERSONNEL**, destined for service in Arctic regions, had best look to the firm anchoring of their teeth fillings and inlays before heading north. In extremely cold climates, the metal contracts in low temperatures and fillings pop right out of teeth.

**TIPS on the treatment of North African Moslems:** Don't offer pork to a Moslem. Don't smoke, spit, or loiter in front of a mosque. Don't slap a Moslem on the back. Don't speak to, stare at, or touch a Moslem woman. Try to speak Arabic—the Moslems like it. Pass your cigarettes out freely—they make friends.

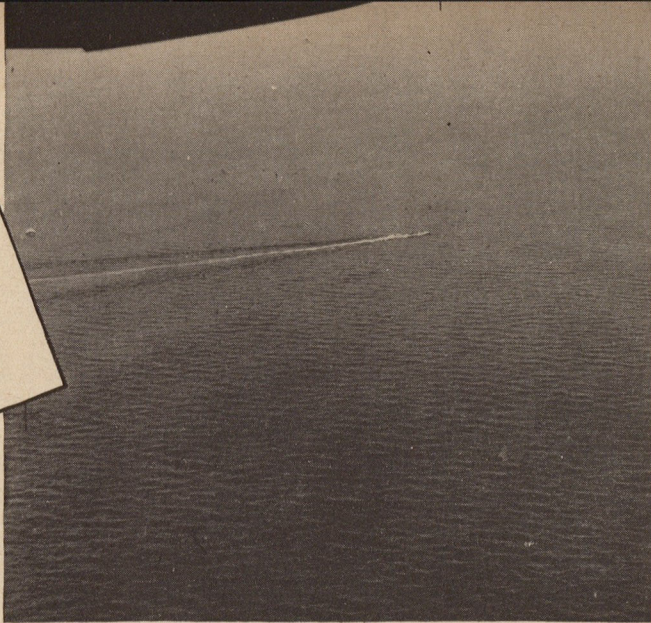


**DR. WILLIAM BEEBE** tells us that "There is more danger of attack from the 'rattlers' and 'copperheads' on the Palisades opposite New York City than there is of being bitten in a tropical forest or jungle by a cobra or a viper, providing you are able to walk or move about and thrash the undergrowth with a stick."

**THE ARCTIC, DESERT AND TROPIC** information center welcomes contributions from all Army personnel possessing knowledge of the non-temperate theaters of operation. Submit to Arctic, Desert and Tropic Information Center, Eglin Field, Florida. ☆



Here are actual combat photographs made during two separate but identical air attacks on submarines. The best pictures were chosen for the following sequence which shows how an aerial attack on an enemy submarine takes place from the time the sub is sighted by the attacking plane until the U-boat is sunk.



**SIGHTED:** The crew of a patrolling plane sights a U-boat and attacks. Speed is vital; a submarine can crash-drive in 30 seconds.

**THE RUN:** Diving over the submarine, machine guns raking

# Fishing

## FROM THE SKY

*By Captain Harold B. Ingersoll*

### A-2 SECTION, ANTISUBMARINE COMMAND

THE Antisubmarine Command of the Army Air Forces has been assigned the job of seeking out and destroying enemy submarines wherever they may be found. However, most men in the Army Air Force probably are not acquainted with the fact that a special technique is required to combat submarines from the air.

A combat crew with bombardment training for land-based targets under its belt must be further trained in the special technique of U-boat warfare. To develop this technique, the Antisubmarine Command has established a special training school.

The training program includes recognition of types of enemy submarines, approach and attack procedure, identification of points of vulnerability to gunners and bombardiers and instruction in related subjects pertaining to the particular duty to be performed. Navigators, in particular, must know special techniques employed in over-water navigation.

Types of aircraft used by the Command in antisubmarine warfare include the B-17 and B-24 heavy bombers, B-25, B-18 and B-34 medium bombers, and the A-20 and A-29 light bombers.

The antisubmarine bomber takes off normally prepared to be in the air continuously

from six to eight hours. As the ship roars out to sea, the crew takes up battle stations assigned, all eyes, however, not losing sight of the primary mission. To make antisubmarine warfare more efficient, engineers have developed special equipment for tracking down submarines not sighted visually.

A definite zone of responsibility is assigned each mission and it is the job of the combat crew to patrol the zone so that no object on the surface will miss detection. On a routine flight, ships, debris and other objects may be sighted in the water. All must be carefully scrutinized to determine the importance of the sightings which will later be evaluated in an intelligence report.

In the early days of submarine hunting an airplane would occasionally fly low over a swirl in the water, release depth charges and then circle back to find that an innocent whale—not a Nazi U-boat—was the victim of the attack. To avoid future errors in evaluation, combat crews are trained to distinguish types of swirls.

When an enemy submarine is actually sighted, different approaches for attack are made depending on the circumstances.

If the submarine is sighted five or six miles distant and it is apparent that it is already crash-diving, then the most direct

approach possible is made. Depth charges are released on the visible target or on an estimated projected line of motion as determined by the area showing on the surface where the submarine submerged.

However, when the plane's approach from the distance is unknown to the U-boat, then the aircraft will seek the nearest clouds in order to maneuver into the most advantageous position for attack. As soon as a favorable position is reached, the plane noses down at an angle so that it will fly over the submarine at proper bombing altitude.

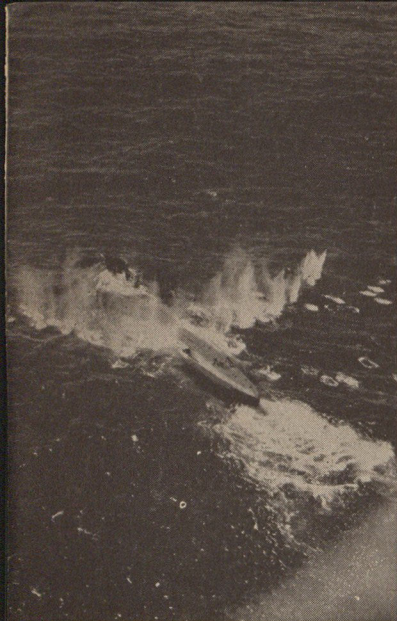
It is customary to release depth charges from extremely low altitudes. Gun fire of the plane is usually directed at the conning tower or at the submarine deck guns, if, as in rare instances, they are brought into play.

Many different situations may arise in the two or three minutes in which the attack is underway. If the skill of the pilot and crew results in an ideal approach, the pilot makes the customary low level bomb-run. However, the submarine may have crash-dived. In this case, a swirl, or turbulence, on the surface of the water is the only guide for the pilot and bombardier. The bombardier must be able to estimate the approximate location of the sub under water.

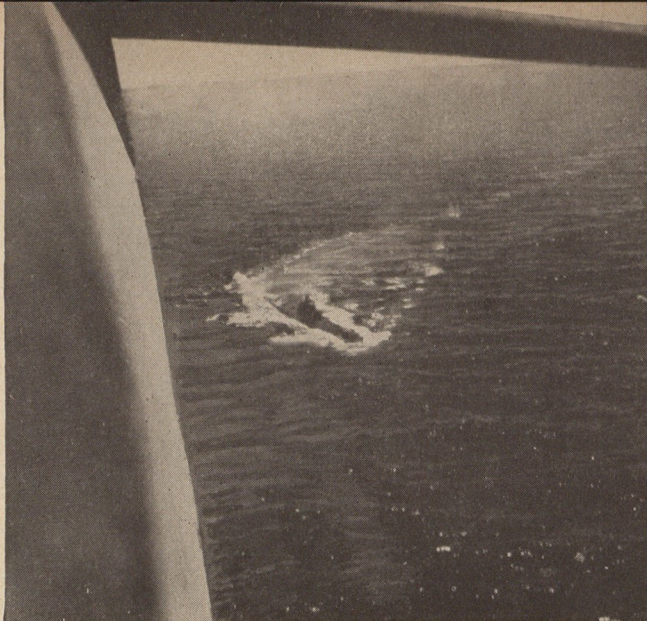
Quick action by the plane is imperative

AIR FORCE, May, 1943





the deck, the plane makes run. Note spray rising from bullets.



**EVASION:** A depth charge has been dropped. The submarine tries to evade it by turning sharply, as plane continues to strafe.



**EXPLOSION:** The sub is hidden by the blast of the depth charge but the U-boat's wake can be seen leading up to the explosion.

### New techniques in aerial warfare have been developed to combat the U-boat menace.

when a U-boat crash-dives because a submarine can descend beyond depth charge range in a very short time.

But the attack is not over by any means. A marker is dropped on the water and the exact location of the U-boat submergence is noted by the navigator. The plane continues to patrol a wide area in a radius from the point of the crash-dive. This is done because the number of hours a U-boat can stay under water and the distance it can travel under water are relatively limited when compared to the aerial coverage of an antisubmarine squadron in distance and hours. The area of the sighting will be kept under continuous surveillance depending upon the evaluation placed upon this sighting.

**ATTACKS** will often result in disabling the U-boat to the extent that it cannot submerge, but remains on the surface. This affords the plane an opportunity for a second attack which to an experienced crew is like shooting fish in the well known barrel.

If exit through the conning tower is still possible, the submarine crew may attempt to man its guns as a defense against a second attack. Likewise, when a submarine is surprised while surfaced to charge its batteries and a crash dive is not immediately possible, guns may be fired at the plane.

Such gunfire is usually quickly silenced by the return fire of the plane. By the time the aircraft comes back for another attack, the U-boat may have submerged to avoid further encounter with the aircraft. Of course, the U-boat may not have had any choice in the matter of submerging if the first depth charges scored either direct hits or near misses, near enough to cause a sinking.

Attacks by planes are not limited to daylight. Night attacks have been successful. The possibility of surprise is even greater

than in daytime because a submarine will surface under cover of darkness to perform the highly necessary job of recharging its batteries. Searchlights or flares from the aircraft spotlight the target in ideal fashion.

As in bombing raids conducted over ground targets, attacks at sea are assessed according to the results shown on the pictures taken at the scene of the action plus the mathematical analysis of all elements concerning the attack. When searching the area after an attack reveals debris, such as pieces of wood from what is supposedly the inner part of a U-boat, that is not necessarily an indication that severe damage has been inflicted because enemy submarines have been known to shoot debris and even oil to the surface in order to deceive attackers.

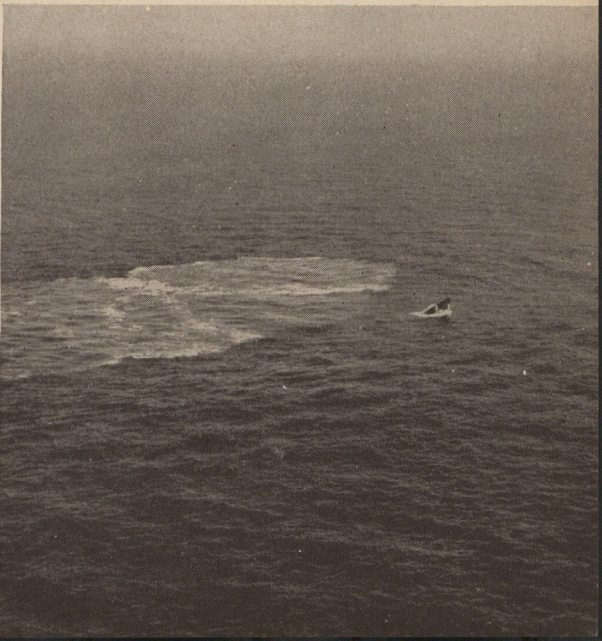
However, when debris, oil and the bodies of the submarine crew come to the surface, then the results can be ascertained as a kill. It is probable that a submarine may have been sunk when only debris and oil come to the surface. But because no definite proof is evident, the Army and Navy chalk up such an encounter as "probably damaged".

The use of planes in antisubmarine warfare has resulted in important tactical advantages for the Allies. Planes force U-boats to stay under water where their ability to destroy is greatly reduced. In addition, the longer the submarine is forced to stay under water, the less time it has for recharging its batteries on the surface.

Morale of enemy crews suffer from repeated crash-divings when planes are sighted. U-boat crews fear aircraft because of the death and destruction resulting from a surprise attack. Surprise is the kind of medicine that the sub has always relished dishing out and to get some of its own medicine is not particularly relishing to the U-boat crew. ☆

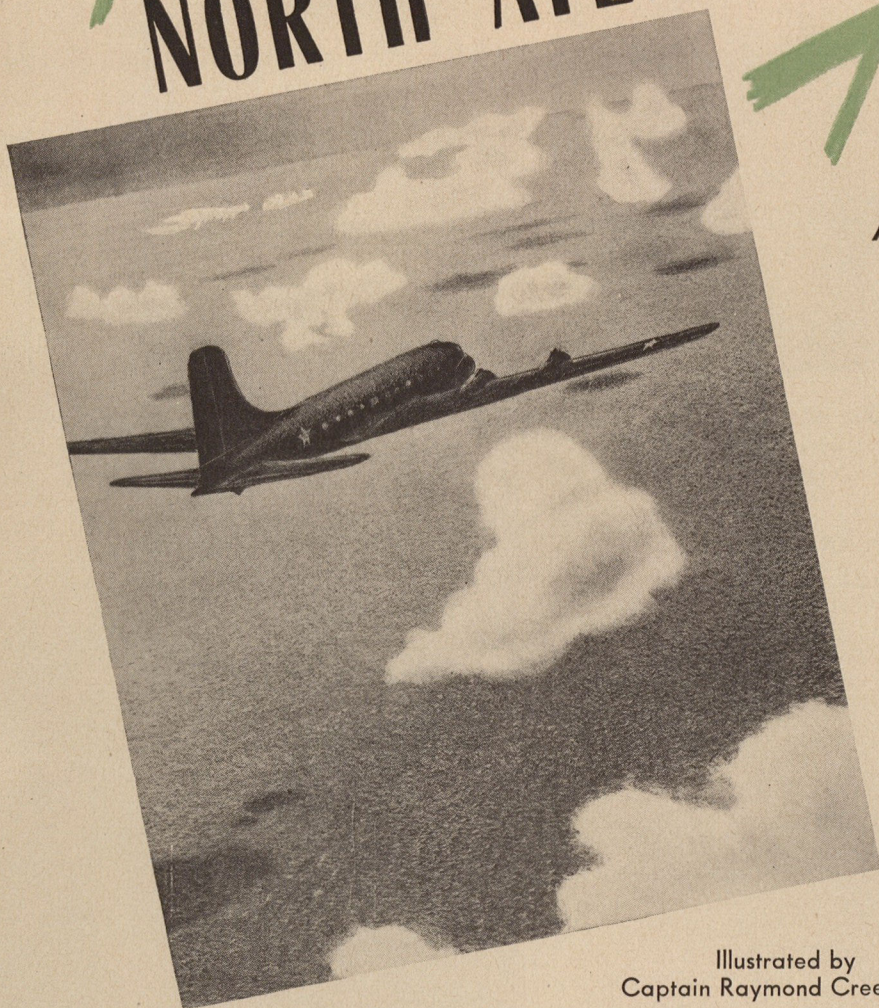


**THE KILL:** A portion of the submarine, barely visible, projects from the water as the full force of the explosion spends itself, subsides. Passing low over the attack area, (below) the plane's crew gets this picture of the sub settling, part of it piercing the surface.





# The NORTH ATLANTIC Hop



Illustrated by  
Captain Raymond Creekmore

By Captain Robert B. Hotz

AIR TRANSPORT COMMAND

miles of them and altered our course. As we drew almost opposite the escort I saw a series of flashes from her front deck. It looked almost like the challenge signal of the hour. We answered and kept on going.

"Suddenly we noticed two big columns of spray rise from the sea ahead. The next minute the plane rocked violently from a burst of flak around us. What we thought were signal flashes were the guns of the escort's forward battery ranging us with solid shot. When they opened up with flak they had us bracketed perfectly. The next salvo would have torn us apart.

"We jammed on full power and dove down to water level, dodging and working away from the ships. I felt like a duck over a pond on the opening day of the season. We used all the recognition signals in the book but they fired about fifty rounds at us. Luckily we were going away fast and they never came close again. Two hours later, while we were cruising between cloud layers at 4,000 feet, more flak began bursting off the left wing. We got out of there in a hurry, too. I have never been curious about a convoy since."

Gunners were more accurate on the Stratoliner piloted by Stanley Stanton. Somewhere south of Greenland, Stanton's plane was plying through broken clouds and scud at about 1,500 feet. As the plane emerged into a clear opening, a surface vessel below opened up with .50 caliber and 20-mm. anti-aircraft guns. A chain of .50 caliber slugs lashed across the tail fin and elevators. A 20-mm. explosive shell ripped a big gash in the metal skin at the base of the fin near the rudder control cables. Stanton pulled up into the overcast before further damage was done.

Another veteran, Earl Fleet, found himself in a Stratoliner over British warships one day.

He ordered the radio operator to fire the Colors of the Day. The operator discovered that the Very pistol they were carrying wouldn't fit the plane's flare chute. Finally the pistol was fired through the open cabin door. A flareback resulted, setting the rag wrapping of the pistol on fire and burning the operator. Meanwhile, the boys in the cockpit were spending some uncomfortable seconds waiting for the Colors of the Day

CHRISTMAS mail has filtered through to the most remote airdromes along the North Atlantic hop. The boys at some of the stops are beginning to dig out of the winter snows. Wing Headquarters in Maine reports the temperature almost above zero. The signs are unmistakable. The North Atlantic route is thawing out.

If you are interested in a few tips that may make your big jump across the pond a little smoother, pull up a chair in the briefing office where some of the veterans gather to thumb new route guides, check radio changes and do their hangar flying.

These particular veterans are civilian pilots of the Air Transport Command. They all learned to fly in Army and Navy schools, most of them in the dim, distant pre-Randolph days. All of them put in thousands of hours pushing DC-3s around the domestic airways before joining the command. Since then they have made from ten to twelve round trips apiece across the North Atlantic and shuttled Douglas C-54s and Boeing Stratoliners to Africa and India. All of them have been in trouble at some time or other over the waves and all of them have pulled out of it.

The North Atlantic is a well organized air route. RAF cooperation is good. There are facilities to take care of almost every problem encountered by aircraft — from radio navigation aids to protection against enemy activity.

The system will work if you know how to use it intelligently. It will make a routine crossing comparatively simple. If you run into trouble it will save your neck and your airplane if you give it a chance. Pay strict attention to your briefing officers.

Don't be fooled by the H.P.'s who come back from one eastbound crossing and hold forth in the BOQ on what a cinch it is to fly the North Atlantic.

You can gain from the experience of men like Larry Trimble, who made some of the first crossings in the Boeing Stratoliners and now has a dozen round trips to his credit. Once, Larry was barging along at 800 feet under a 1,500 foot ceiling somewhere west of Scotland. It was late afternoon.

"We sighted a big liner about 25 miles away with a bone in her teeth," Trimble relates. "About four miles to the port was a camouflaged escort vessel—a destroyer or light cruiser. We passed within several



fireworks to burst. Moral: Stay away from convoys and ship concentrations. Make certain that all your signalling equipment is in order and that your crew knows how to use it. Flak gunners aboard ship have orders to shoot first and ask questions later in case of doubt on the identity of aircraft. Your identification signals may not always be read by surface vessels. Avoid the possibility by giving convoys and ship concentrations a wide berth.

Always make positive identification to the RAF Fighter Control through procedures outlined by your briefing officers. You are an unidentified aircraft if you don't, and you get no consideration. Don't let an overcast give you a false sense of security. You can be shot down in a cloud while on instruments.

**REMEMBER** that flying the North Atlantic is a precision operation. You have to hit what you aim at. Most of your alternate fields outside a relatively small area in England and Scotland are in Eire (neutral) Norway (enemy) and France (enemy). One of the enemy's favorite tricks is to help you along to a landing at these alternates. Radio navigation facilities are good along the North Atlantic routes but the farther east you travel the more they are susceptible to enemy jamming.

Larry Trimble gives you a good idea of what can happen if you doze over your radio. He made one eastbound crossing in the midst of heavy traffic. The weather forecast was good and he avoided a front by laying a rhumb line course based on the forecast. His course took him through layers of clouds most of the way. He flew eleven hours on instruments without a star shot above or a drift reading below. In the morning he descended to sea level. There the navigator took a double drift reading. He found they

## Your flight over the big pond may be smoother if you listen to these veteran pilots of the Air Transport Command

had a terrific south wind indicating that they had been blown considerably north of their planned course. He asked for a QDM and quickly got a bearing that indicated he was south of his destination. Trimble stuck to his drift data and flew south for thirty minutes. He asked for another QDM. It came back in a flash. Perfect service, but the bearing indicated he should fly even more of a northerly course to his field. He became suspicious and challenged the DF station. There was no answer. Then he was certain it was an enemy station sending false bearings to lure him north over the top of Scotland toward Norway. He continued to fly south. In another half hour he began to pick up faint signals from the beacon that would bring him into his destination. He asked for another QDM and got a bearing even farther north than the other two. Shortly afterward he picked up a warning from an English station: "Don't use radio bearings. Enemy transmission."

Several planes in the flight the night before were finally pulled in by authentic QDM bearings. Others landed all over England. Two were missing.

"The North Atlantic is a war zone—you can't forget that," cautions Trimble. "You must appreciate the ingenuity of the enemy and act accordingly. You can't leave any loose ends in your operations. You'll wind up in a prison camp or a rubber raft if you do."

When you hear a high pitched scream, a

band blaring Yankee Doodle or a voice counting in German on the stations you are trying to work, switch to another one immediately. Don't accept radio bearing without authenticating them by challenge. Your briefing officer will tell you how to do it. Study your list of alternate radio facilities before you take off. It may be too late for study when you find the enemy is jamming the stations you planned to use.

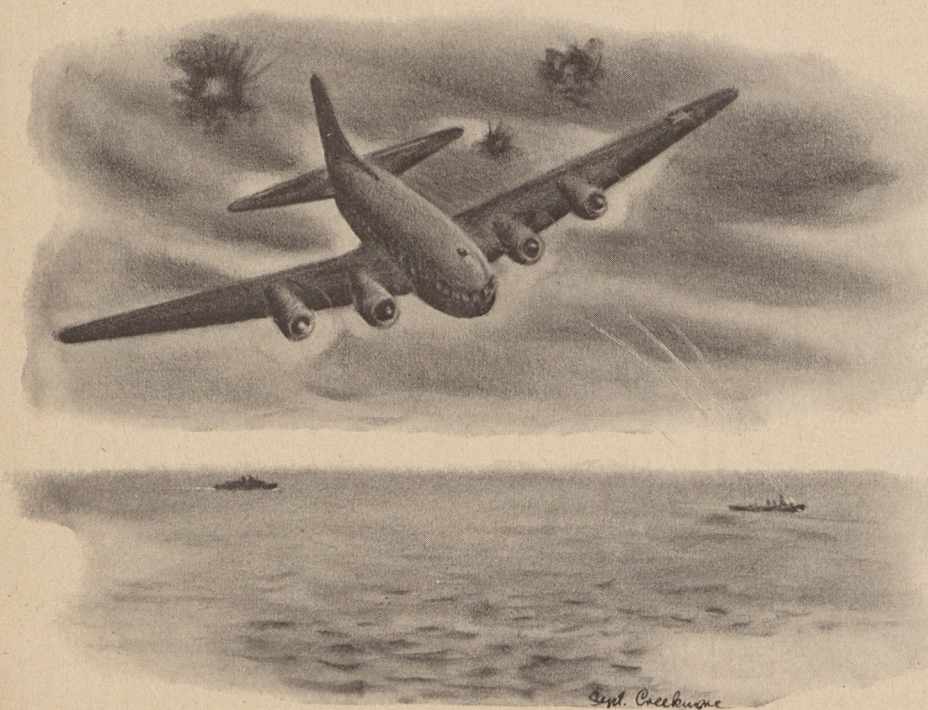
Even on the best days over the North Atlantic you will always run into some weather. A major front and several secondary fronts are the minimum for a crossing and often you will hit two or three big fronts. Weather reporting facilities are good along most portions of the route but forecasts are far from perfect.

Take the case of Don Terry and Lawrence Chiappino who made one of their numerous eastbound crossings in C-54s on the same night last fall. The forecast showed a high centering around one point on the route. Chiappino flew the direct route to England. Terry decided to go farther north via Iceland to take advantage of the supposed good weather in that area. Chiappino had a good crossing, encountering only a mild front with rain, some turbulence and icing conditions at 3,000 feet. He emerged into a broken overcast on the other side of the front and was able to get good star shots for celestial fixes. The icing level went up to 6,000 feet.

On his northward track, Terry ran into a swiftly growing cold front uncharted in the forecast. He hit freezing rain down to 400 feet, and severe turbulence. Terry managed to beat the front into his planned stop. The front moved in with freezing rain to the ground before he was ready to take-off for England. He was able to get away only because of a temperature inversion from 200 to 500 feet. On his westbound trip beyond the point of no return, Terry encountered an occluded front not forecast, which forced him down below 400 feet to lose a heavy ice load picked up during the first ten minutes in icing conditions. His wing and prop de-icers functioned well but an inch and a half of solid ice formed on the windshields beyond reach of the wipers. Turbulence became so severe that both Terry and his co-pilot had to exert pressure on the controls. For two hours the C-54 ploughed along between 250 and 400 feet with temperatures from 29 to 33 degrees Fahrenheit. There was a heavy sea running below. Salt spray splashed across the cockpit windshields and over the window in the navigators compartment. For two and a half hours the C-54 pitched, rolled and careened through severe turbulence with ice less than 100 feet above and the tops of the cold salt waves less 200 feet below.

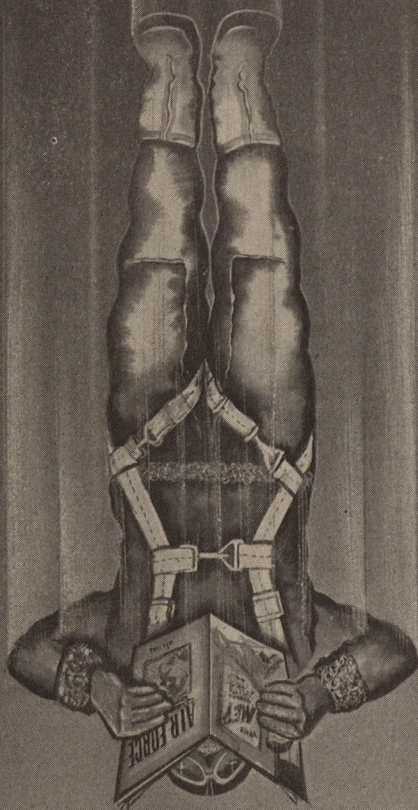
"It was too tight a squeeze," says Terry. "For two and a half hours I thought I was making my last flight. It was the worst experience in my twenty years of flying."

The C-54 finally emerged into heavy cumulus clouds with only mild turbulence and light icing conditions. Terry topped the





# PARDON US...



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cumulus at 12,500 feet and completed the trip without further incident.

"You have to plan your flight according to the weather forecast," adds Chiappino, "but you must check weather in flight against the forecast. There are terrific wind shifts and icing level changes in cold fronts over the North Atlantic. If you don't check actual weather against the forecast you are heading for trouble.

"Watch changes in cloud formations, turbulence and temperature to spot the beginning of frontal conditions. Then you can find out where the front actually is and plan for the wind shift and conditions ahead. You may have to change your plan several times because of weather but unless you have an original plan on which to base your changes you can get wound up in a hurry."

Fred Richardson warns against allowing lack of clouds to fool you about the presence of a front. "Secondary fronts often lose their cloud formation after they get out to sea," he explains. "All you get are a temperature change and a wind shift. Sometimes you can spot the wind-shift line along the waves below without a cloud in the sky."

"Ice is one of the biggest problems over the North Atlantic," comments Chiappino. "You can find ice somewhere during every crossing. The worst icing conditions generally lie in a layer about 15,000 feet thick. Often it gets right down to water level. If his plane can't top the upper icing level, a day of rest will be beneficial for any pilot.

"If the lower icing level is a couple of thousand feet above the sea level," he adds "you have to figure the possibilities of it coming down or ascending according to the forecast. Plan to top the ice and use star shots to check your course or stay below and rely on drift readings to figure your track. Ice can build up fast over the North Atlantic—as much as an inch in 60 seconds. If the weather is good, a crossing can be made under 1,500 feet. If it isn't, it would be tough to be below an icing level closing down to the wave tops."

"Generally, the weather gets better during eastbound flights and worse as you near home on the westbound trip," says Richardson. "You don't have to worry too much about weather at your eastern terminals."

"Don't be in a hurry to land. Remember that all the airdromes in the British Isles are well camouflaged. Make sure you are landing on a runway before you sit down.

"The weather is never bad everywhere in England and Scotland. If your reports indicate that the west coast of the British Isles is going sour it is generally a sign that the eastern coast is open and vice versa. The whole island is never socked in at the same time. It pays to plan alternates accordingly."

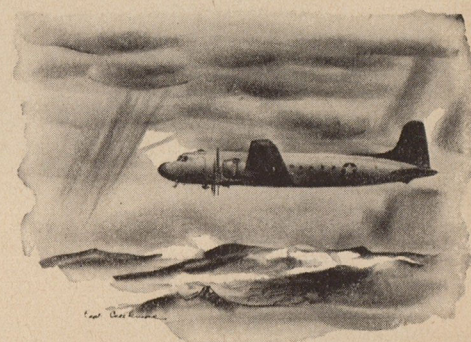
"That's not true of the western terminals," adds Trimble. "I learned that lesson the hard way. We were westbound in a Stratoliner without radio contact due to skip for 11 hours before we made a landfall. The forecast called for perfect weather. Fifty miles from our western terminal we got a weather report of a 100 foot ceiling

there with a 1,500 foot top. We had a definite alternate picked out but had been bucking headwinds all the way across, so decided to go down for a look. We were about 100 feet over the field when the tower called and said visibility had closed to 75 feet. We finally made our alternate but it wasn't fun.

"Another flight coming in behind us had been flying at higher altitudes in stiffer winds and had even less gas than we did. He finally made it in to another alternate under a 100 foot ceiling with his gas going fast. If we both hadn't had a lot of experience with the fields where we finally sat down there would have been real trouble."

"You can't always depend on your radio even if the Jerries aren't jamming," reminds Ross Weaver. "Aurora Borealis does some fine natural jamming. Weather conditions often produce a skip zone in which no radio signals can be received. Rugged terrain makes all but the over-the-water legs unreliable. Look out for false cones of silence in the same territory."

"Never carry less gas than you can squeeze aboard," cautions Trimble. "Those extra gallons can be the most precious cargo in the world sometimes. Personally make sure the gas you ordered is actually in the airplane before every take-off. I remember what happened to one pilot who didn't. He was taking a B-17 from a jump-off field in South America. Two and a half hours



out the field got a frantic radio call. He was out of gas and going down. A checkup revealed that he had forgotten to check on the servicing of his plane. He assumed it had been gassed. It wasn't. The plane and crew vanished in the South Atlantic. It hardly seems possible to make a mistake like that but there is a quarter of a million dollars of airplane and nine men missing to prove it can happen.

"Another pilot ferrying PBY's across fell victim to the same error. At the last minute he was ordered to ferry a different airplane. He climbed in with his crew and took off without checking to see whether the new ship had been gassed. It hadn't. He was lucky that time. He sighted a tanker while sputtering on his last gallons and landed beside it on a fairly calm sea. The tanker happened to be carrying high octane gas. He refueled, took off and made it to the Azores.

"I heard about the same pilot again just the other day. They found him in Africa, directly on course to his destination. He was plastered 4,000 feet up on the side of a 6,000 foot ridge." ☆



# Precision BOMBING

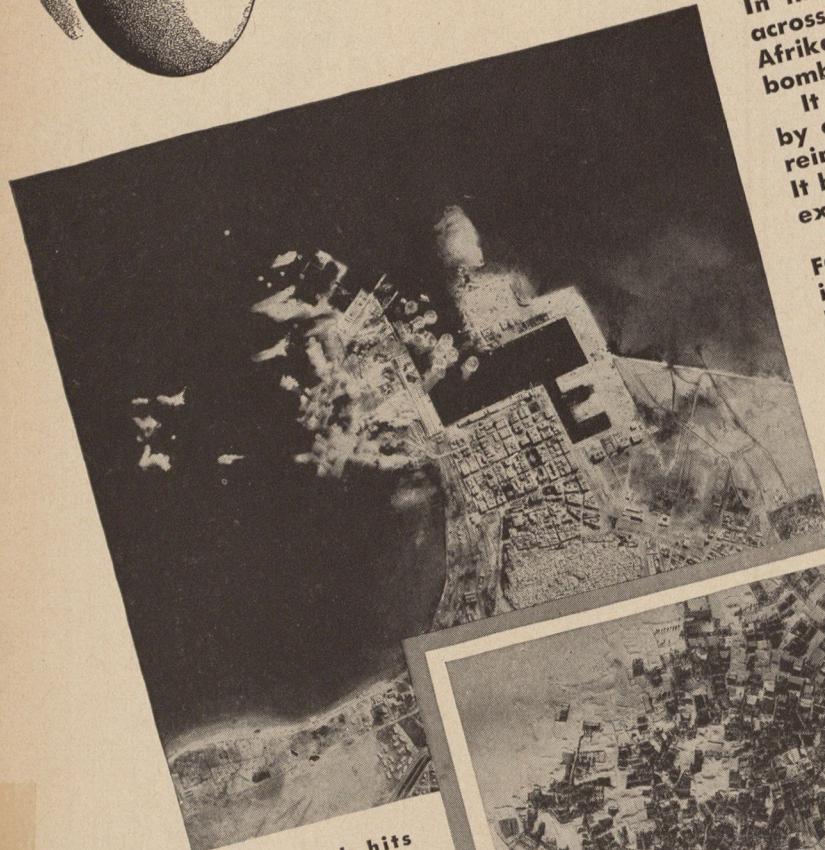
## DOES THE JOB

In the smashing drive of the British Eighth Army across North Africa and in Allied assaults on the Afrika Korps' stubborn Tunisian defenses, precision bombing by our Air Forces has played a vital role. It has paved the way for advancing land armies by crippling enemy defenses. It has smashed Axis reinforcement ports along the Mediterranean coast. It has shattered enemy airdromes with tons of high explosives.


On this page and on the two following pages AIR FORCE presents a pictorial study of attacks on three important objectives in the North African theater. These photographs were taken with cameras aboard the attacking bombers.

These particular missions were carried out by the same bombardment group, employing B-17s, to which a raid on enemy targets hundreds of miles away from home station literally has become "all in a day's work"—almost every day.


(Continued)



**D**irect bomb hits from B17s flying at 24,000 feet blast the Tunisian seaport at Sfax where the Axis had unloaded thousands of troops and tons of equipment. Smoke and debris rise from the battered docks as other bombs leave their telltale bursts in the harbor.



The pictures above could well represent an aerial warfare "before and after." The Libyan fortress at Gadames (arrow) escapes the full effect of the first sticks of bombs but is literally erased by a series of direct hits a moment later.





One sure way of avoiding excessive fighter opposition during an offensive, of preventing poundings from enemy bombers, is to knock out the enemy's airfields.

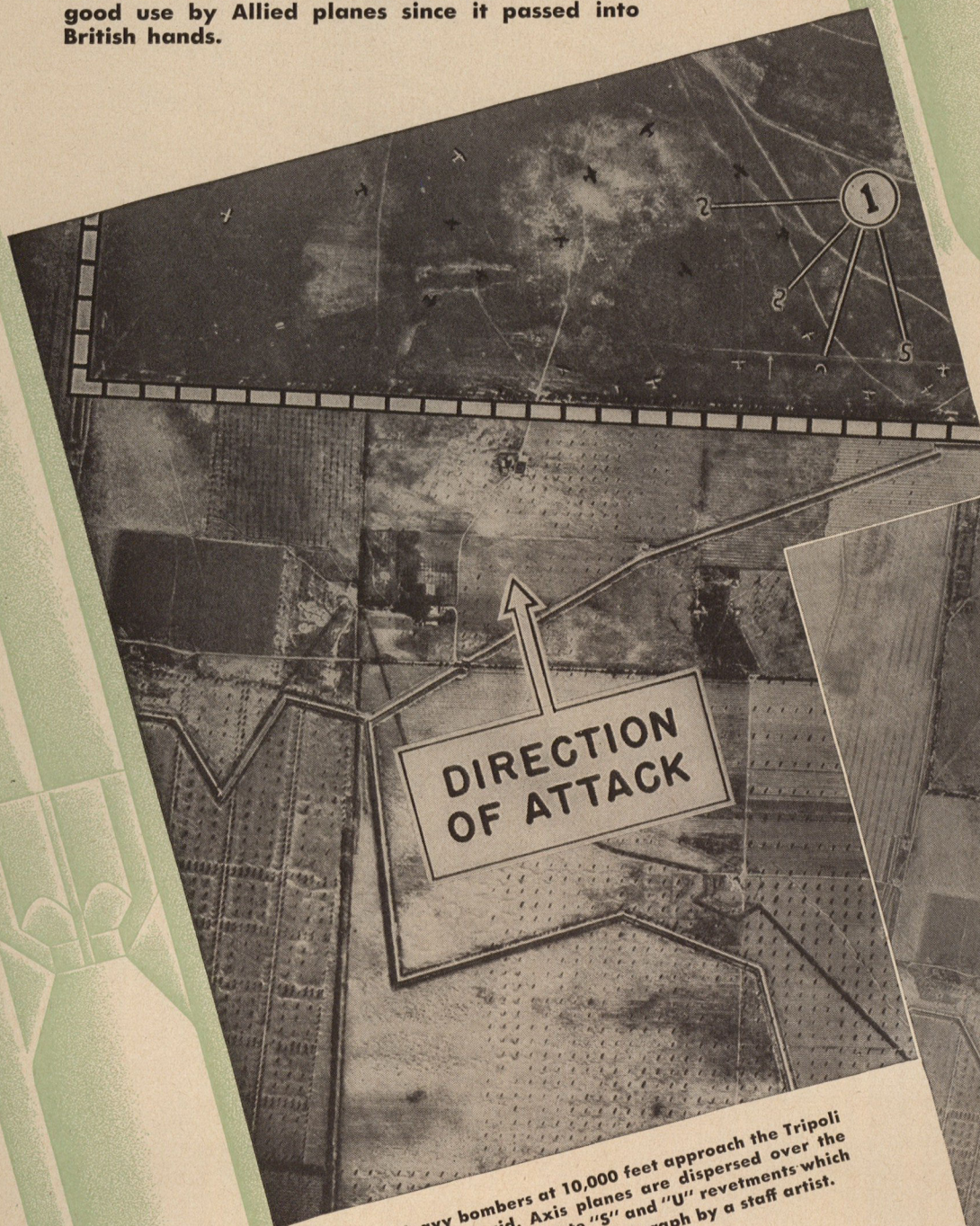
The series of photographs on these two pages tells the dramatic story of what happens when American heavy bombers set out to accomplish such a purpose. This airdrome at Tripoli was pounded time and again before the British Eighth Army moved through the city in its chase of Rommel's forces.

Hangars and other field installations were hit, and then hit again before the enemy had a chance to completely rebuild.

Later, intelligence photographs showed this particular raid resulted in the destruction of a number of Axis aircraft on the ground despite protective measures taken by the enemy.

The Tripoli airdrome, long recognized as one of the finest in all of North Africa, has been put to good use by Allied planes since it passed into British hands.

# RAINING BOMBS ON

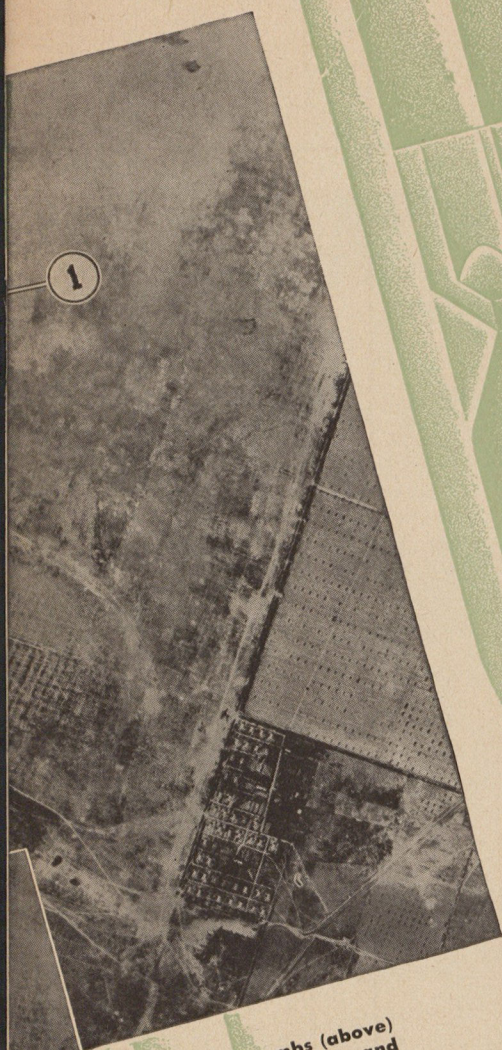


**A.** (above) Heavy bombers at 10,000 feet approach the Tripoli airdrome on a mass raid. Axis planes are dispersed over the edge of the field, some in concrete "S" and "U" revetments which have been accentuated (1) in this photograph by a staff artist.





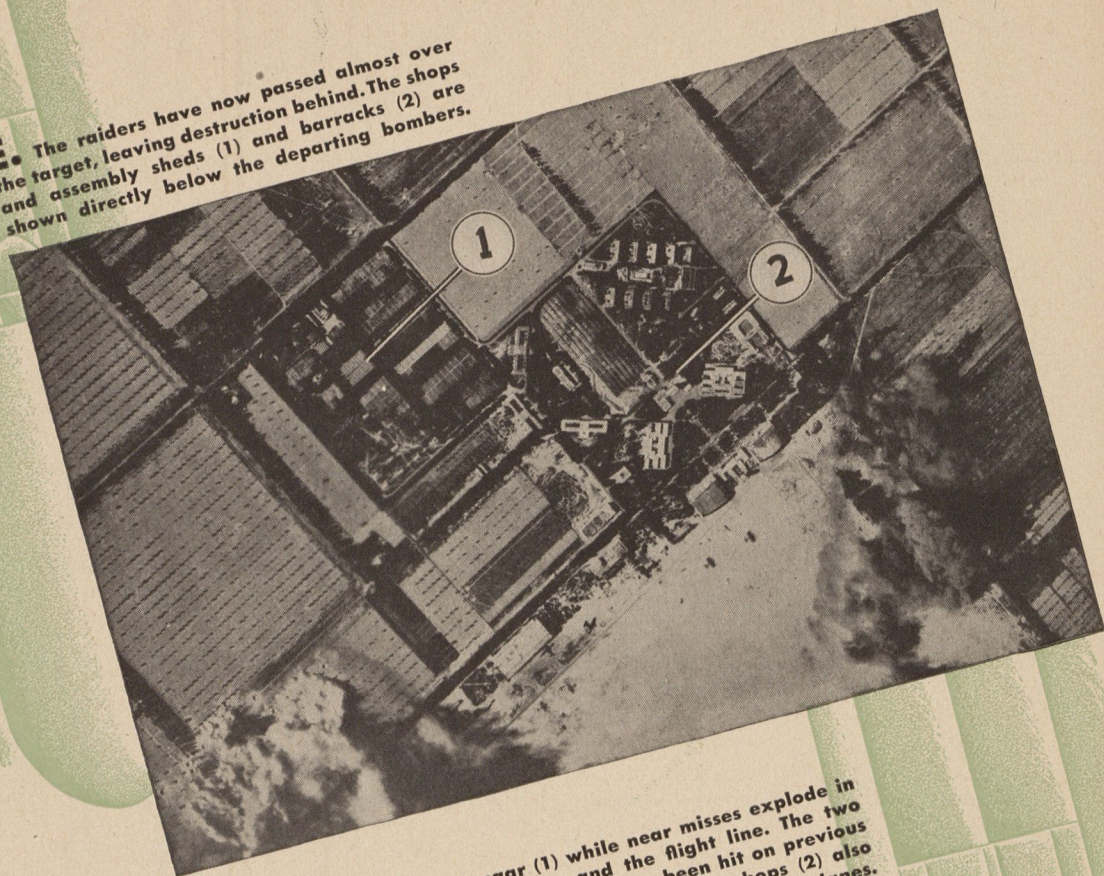
# TRIPOLI AIRDROME FROM 10,000 FEET



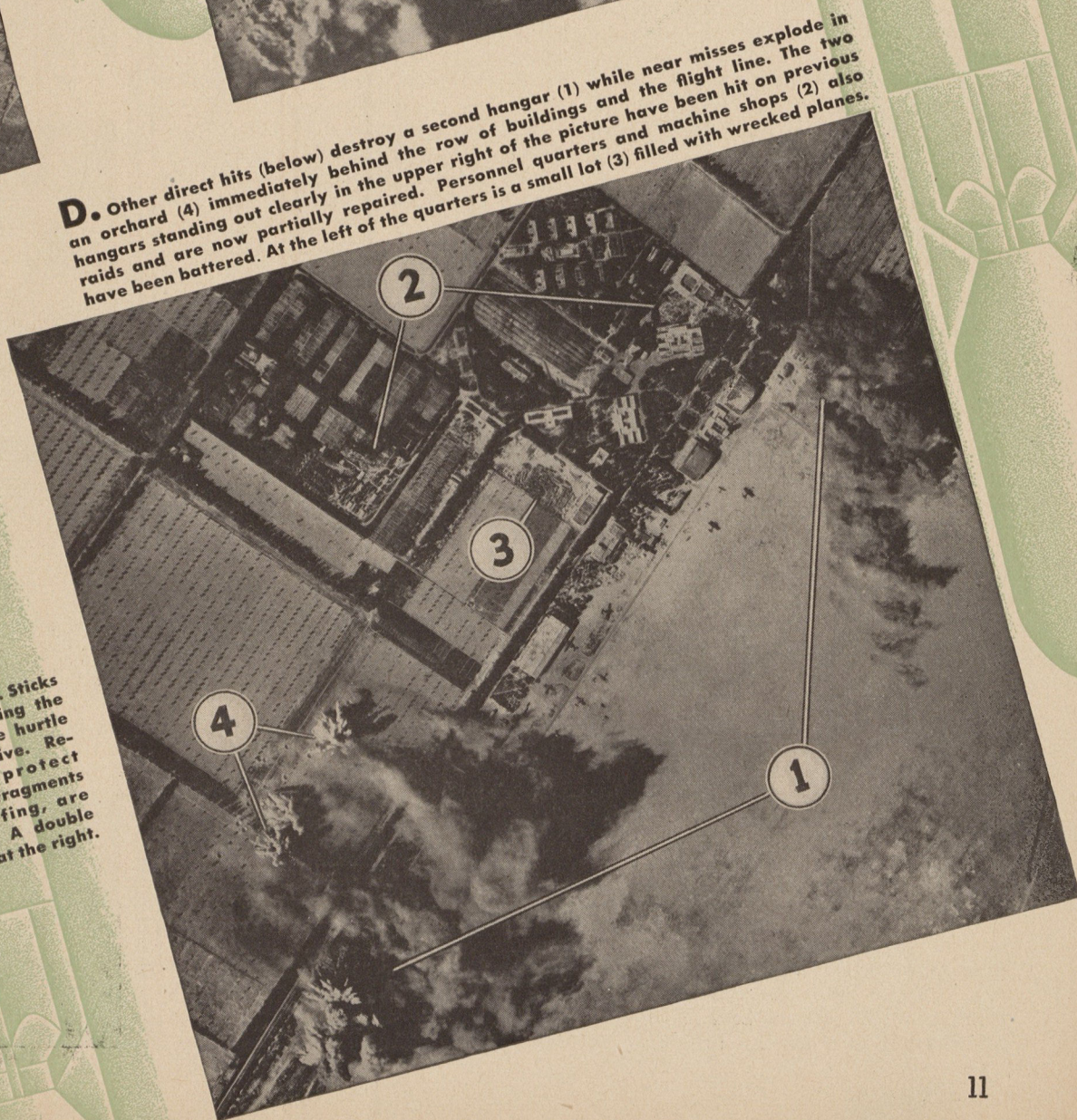
**C.** The first bombs (above) find their mark. Smoke and dust billow from a hangar and other structures (1) as a result of direct hits. Fighters and bombers are among the enemy planes scattered over the field and along the tree-lined edges of the airdrome.



**B.** Bombs away (left). Sticks of bombs (1) extending the length of the picture hurtle toward their objective. Revetments, which protect planes from bomb fragments and ground strafing, are shown again (2). A double "U" may be seen at the right.



**E.** The raiders have now passed almost over the target, leaving destruction behind. The shops and assembly sheds (1) and barracks (2) are shown directly below the departing bombers.



**D.** Other direct hits (below) destroy a second hangar (1) while near misses explode in an orchard (4) immediately behind the row of buildings and the flight line. The two hangars standing out clearly in the upper right of the picture have been hit on previous raids and are now partially repaired. Personnel quarters and machine shops (2) also have been battered. At the left of the quarters is a small lot (3) filled with wrecked planes.



# COMPRESSIBILITY

## IV — Its Influence on Tomorrow's Planes

*By Colonel Ben S. Kelsey*

PRODUCTION DIVISION, WRIGHT FIELD, OHIO

EARLY in the game, when local compressibility effects were first appreciated, it seemed that the rapid build-up in drag of a number of small items, such as windshield corners, air scoops, fillets, and so forth, might very well build up drag to such an extent that they would in themselves definitely put a top limit on speed.

It would appear now, however, that some of these local compressibility effects have actually gone through the transition stage and may be operating out in a range corresponding to the type of airflow which we expect from bullets, where drag co-efficients can again be measured and held to higher but reasonable limits. If this were not so, we would some time ago have reached a fairly uniform dive performance for all airplanes. Actually, diving speeds seem to be going on up in a fairly steady manner. In the same way, airplane speeds would have shown a dropping-off in progression from year to year, and this is not apparent.

We are obviously in trouble on all present airplanes to some degree when we approach very high speeds, and the terminal velocities in dives are definitely retarded by compressibility effects. But there seems to be no absolute wall, which had been expected some time in the past.

Aside from the wake behind local compressibility effects, which may affect other parts of the airplane or which may add up one with another to produce alarmingly large effects, the biggest problem is that connected with lift; and, secondly, as another phase, control.

Lift on an airplane wing as it is now known depends upon giving the air a downward shove as the wing goes by. This means that the air has to accelerate to flow aft over the top of the wing and has to accelerate forward on the bottom. This again is tied up with curvature, displacement, and the speed of passage of the wing.

As would be expected, there is an early and marked change in the characteristic of lift and pressure distribution over the top of the wing, since the greatest curvature and speed-up occurs here. The inability of the little air particles to maintain smooth contact with the wing, and their tendency to set up waves, produces a condition not very different from the normal stall at low speeds, since at high angles of the wing the particles are unable to accelerate fast enough to get out of the way and back into line to follow the wing surface. This might be

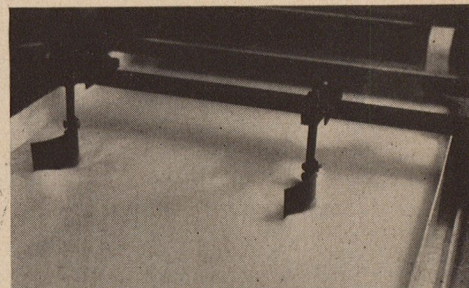
likened to a cam on the cam shaft of an engine on which the valve spring is the elastic force corresponding to the elasticity of the fluid particles. For a given steepness of cam there is a limited speed for the cam shaft, beyond which the cam follower will not maintain contact with the cam but will bounce or cause excessive impact loads.

If the speed is low, the cam can be made steeper, but it is still possible to build such a steep cam that the same effect results as though the more gentle cam were run at much higher speeds. Although there is no apparent "shock wave" at the lower speeds and high angles, the effect on lift of the breakdown of smooth flow is much the same. The airplane, in effect, stalls and goes through much the same change in moments and forces due to excessive speeds as it does due to excessive angle.

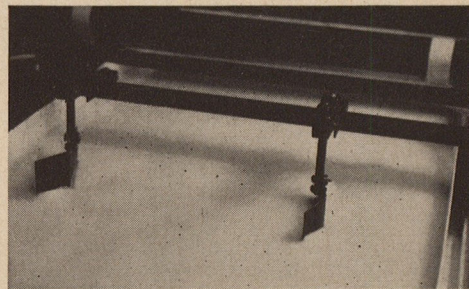
Since the conventional wing maintains its sharpest curvatures up close to the nose, one would expect a breakdown to occur here first. This actually occurs, with quite a drop in the suction obtained over the forward portion of the upper surface. As speeds increase, the suction increases farther back on the wing and decreases up forward until a fairly average value is obtained over most of the upper surface, also, the wing stubs its toe and gets high positive pressure on the top of the exact leading edge.

The change on the lower surface, as would be expected, is less pronounced but does change in character. The positive pressures move forward in what amounts to a planing effect. Apparently the inertia imparted to the little particles causes a kind of separation farther back which, at very high speeds, may amount actually to suction on the aft half of the bottom surface. The overall result is that the total lift drops off very rapidly for any given angle as speeds of 80 to 90 per cent of the speed of sound are reached. Also, the redistribution of the loading gives a diving tendency.

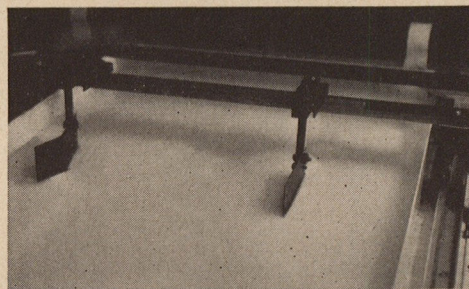
Going again to bullet design, boat hull design, and the general considerations already discussed in this series of articles, it is evident that thick wings with very rounded surfaces just after the leading edge are going to be the worst offenders and produce the results sooner. Wing forms are now available which help a little bit in delaying or reducing the intensity of these effects. Their maximum depth will be somewhat farther back than the wings to which we have been accustomed. The exact lead-



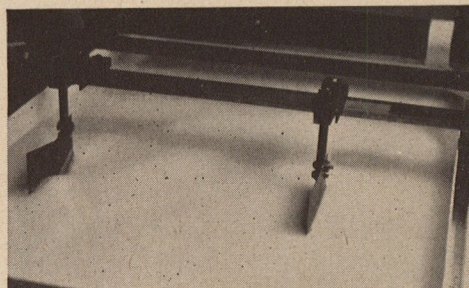
Above is shown the increase in wave formations with increasing displacement.



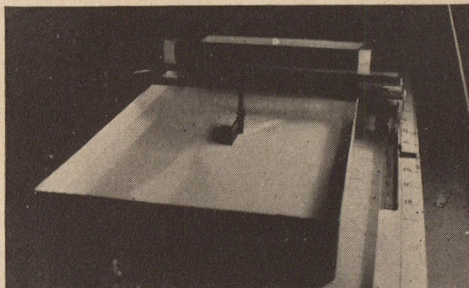
When the angle of the object sharpens at the same speed, the waves increase.



Here is shown the early formation of a wave at a discontinuity in the surface.



Above shows the increased wave at higher speeds compared with the preceding photograph. Below, waves form at the bump on the top of the liquid.





ing edge will be rounded but of fairly small radius, with very gentle curves from there back. It is, of course, possible to use a very thin wing with a sharp nose designed to operate under some particular conditions where the effect may be considerably reduced. But the over-all efficiency of such a wing would probably be fairly low.

Obviously, any discontinuity in a surface which has a pressure gradient over it will add another bump to the pressure hill, with the result that a compressibility effect may occur at that bump. This is not very different from putting a small ski jump in the middle of a hill. Since most of our control surfaces control their lift by bending the surface, they in themselves are apt to be guilty of early compressibility effects if any large displacement of the controls is required or used. Such effects may be concentrated at the point where the bump or bend occurs.

By considering the discussion ahead, it should be possible for a pilot or engineer to make some fairly good guesses, even on the basis of our present limited knowledge, as to the suitability of an airplane for high speed and interpret, to some extent, the proper operating technique. Thick wings and wings with blunt leading edges ahead of the front spar will, in all probability, produce very marked and probably sudden changes in lift and trim.

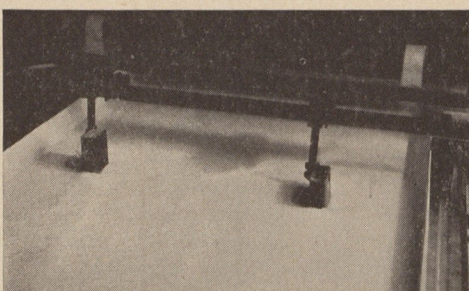
Whenever two bumps or bulges occur at the same distance aft on the airplane, and close enough together so that the local relative speeds and pressure hills are added, we can expect a bad spot. Any sudden discontinuities in the line, such as a sharp intersection of the windshield with the fuselage, or a sharp break between the windshield and the rest of the canopy, or an unfaired junction of a scoop or a control surface, will in all likelihood produce a local wave. It is true that its effect may be limited largely to making noise. Control surfaces with bad discontinuities may be expected to produce erratic characteristics at high speeds. As the wave effects have not been fitted to the surface, which is still an impossibility, there is no telling exactly what the change in forces may be which the pilot feels. This effect, particularly on balanced control surfaces, is separate from any over-all change in trim on the airplane. Obviously, the more scoops and the more obstructions or bumps on the whole airplane, the greater the probability of compressibility effects, with particular reference to increases in drag.

To date, compressibility effects have tended to provide terminal velocities either in level flight or in dives, which in itself has tended to prevent the attainment of speeds where the more violent forms might be expected. One perfectly legitimate approach to the situation is simply to provide additional braking effects to prevent running over into supersonic regions.

Luckily, these supersonic regions are still somewhat above level flights obtainable and are sufficiently far away to permit relatively unrestricted use of airplanes, even in combat. This obviously is not the permanent cure for the trouble. If the individual items

going into compressibility effects are carefully modified, it is possible to move the critical speeds of each up to a point corresponding to what might be termed the over-all critical speed of the airplane.

There are several ways of tackling tomorrow's problem. One is to work on the control of the pressure distribution over the airplane by shape design and thus, by controlling the pressure hills, influence the waves and forces. There is some promise, already in evidence, of the ability to control the pressure distribution around the wing, by use of auxiliary gadgets so as to counteract some of the lift and moment effects. Anticipating that there must be wave formations of some sort at supersonic speeds, it will be necessary to fit the waves and the airplanes together, minimizing and predetermining the wave formation, perhaps even fitting the dimensions and curves of the plane and its parts to the wave and speed expected.



**Illustrating a blunt windshield with a corner at the junction of the canopy, compared to one that is better faired.**

Obviously, one of the most serious situations is that the conventional airplane drags a lot of its essential structure and control elements behind the portions making initial entry, with the result that in the event of wave formations, or "compressibility burble", some of these parts may be wading through turbulent air that would put the Niagara Rapids to shame. Consequently, the geometrical arrangement of the parts may be determined as much by compressibility as any of the factors now in effect. Control and lift may be obtained by supplementary apparatus which control pressure distribution around a basic body, rather than by changing attitudes or using remote lifting surfaces as we do today.

THE biggest problem of all has been neatly ducked so far. That is, how do we get the thrust to drag airplanes at these speeds? In dives, the weight of the airplane helps out considerably, particularly for dense, clean airplanes. In level flight, however, power has to be converted into thrust. And since the conventional propeller adds its rotational speed to the forward speed, its blades, which "lift" just as a wing does, are more subject to compressibility than is the airplane as a whole. To date, the propeller has been a remarkably efficient means of obtaining thrust, almost as good as though geared to the air, but we can't afford big losses in efficiency.

Perhaps as we find out more about the variations in forces at supersonic speeds, it

may still be possible to utilize the same general propeller principle. Jet effects, rockets, and so forth, offer considerable promise and there is, of course, the possibility that the propeller or some equivalent device might be either fitted into the wave pattern of the over-all airplane or used in a low speed airstream in some way so that the efficiency of the component parts is not reduced as radically as it is at present.

There is, of course, another serious consideration: that is, at high speed the actual air forces, themselves in pounds, become very large, with the result that the structural design of vehicles to operate at such speeds is no simple problem in itself. This, however, would be fairly straightforward if we only knew what the loads were.

The most serious difficulty probably is that we can't see air! Consequently, we can't see what it wants to do or what it refuses to do. Furthermore, it is not particularly safe to explore this region in full-scale flight—the penalties for mistakes are infinitely greater than at slower speeds, not only because of the short time available for a pilot's reactions but in the actual forces and accelerations involved.

Putting it simply, the human body needs the protection of the aerodynamic hull, and the flight path has to be under good control to reach bullet speeds. According to the stories of race-boat drivers who have been pitched out on water at speeds of 60 mph. or more, water feels like concrete. On the same basis, getting hit by a blast of 700 mph. air would probably feel like getting hit with so much soft pine, so that stepping out in a parachute isn't the simple emergency procedure that it is at low speed.

It is not that supersonic speeds are unattainable, but simply that we are now closely approaching a transition range from one kind of air reaction to another.

We know so very little about either the transition range or the range beyond that it is difficult now to put in exact form either the shape of future vehicles or to put into words the exact conditions which will exist.

It should be remembered that our present speeds were "impossible" ten years ago. It certainly is not very safe at the present time to operate willy-nilly in the transition range or in the high speed range. There have been and will continue to be a number of inadvertent ventures into this region and a great number of careful explorations. Such explorations will have their hazards. Undoubtedly, a great many brave pilots will be lost during the process of such exploration. The whole region of "high speed" will be apparent only when literally thousands of research projects, physical and mathematical analyses, and flight explorations have been correlated.

"High speed" is a challenge that will be beaten, but because we are only on the threshold we are apt to be over-impressed by the magnitude of the obstacles. As we get by them one by one, and as our knowledge increases, we shall look back to our present compressibility troubles and wonder what all the fuss was about. ☆





# CAMP WASHINGTON *W.C.*

*By Captain George Bradshaw*

**HEADQUARTERS WITH A CAPITAL H:** Of the million-plus men in the Army Air Forces probably not more than 10,000 have passed through Headquarters in Washington.

What's Washington like? What goes on at Headquarters? How does life differ from that at your own post out there on the desert or down in the swamps?

You're familiar with a flight line and hangars and barracks and dust and a PX and possibly one colonel. Well, Washington isn't so very different from that. It's just more so. More buildings and PX's and colonels. Especially colonels. In fact, in Washington even a two-star general won't scare you after a couple of meetings. He's too likely to smile and ask you how things are going.

Anyway, there are a number of Guides to This and Guides to That for the edification of a soldier, but no one has come up with a military Guide to Washington. The reason is obvious. You can outline the rudimentary problems to be expected in quiet spots like Africa and Australia and Britain and the rest—how to cope with the jungle; fundamentals of British slang; flight characteristics of the kangaroo; how not to talk to Moslem women. But Washington—well, here are a few notes on the town and on life in it.

**THE TARGET:** Washington is a little old southern city, grown out of size for the duration at least, situated in the District of Columbia—a 70-square mile plot wedged in between Maryland and Virginia. Washington is some 22 flying hours from Tokyo and 14 flying hours from Berlin. It is hot in summer, crowded all year round, and intense, if you know what we mean. Because

of what goes on there many people call it the center of the world today.

**THE BIG HOUSE:** No matter what brings an officer to Washington, unless it's a furlough, sooner or later he will find himself in the Pentagon Building. This is the new and already famous monster which houses the War Department, and is set on a muddy rise across the river in Arlington, Virginia. It is the largest office building in the world and properly so, to accommodate the largest business in the world.

An architectural Mr. Five by Five, the Pentagon is five sided, five storied and actually five buildings, one set inside the other. It has sixteen and a half miles of corridors, and eventually will hold some 40,000 workers. With a couple of days of orientation, after you have learned what "ring" and "corridor" and "bay" mean, you can, by using a little common sense, find almost anyone you want.

Each floor of the Pentagon is painted a different color. The second is green, the third is pink, and so forth, so you can tell at a glance where you stand. Such officers who, despite the tests, managed to slip their color-blindness past the surgeons are in a spot. They will have to be guided by the large numerals which are plastered on every conceivable open space.

The Corps of Engineers did the construction job. They moved more than 5,000,000 cubic yards of earth in grading and poured almost 500,000 cubic yards of concrete. Everything in the Pentagon runs big: 1,500 electric clocks, 650 water fountains, 21,000 desks, 140,000 chairs, 200 latrines, 700 janitors and charwomen.

It's a big place, but for all practical purposes an Air Forces officer can transact almost all his business on the third and fourth floors, with an occasional mission to the fifth. There the War Birds sit and deliver.

**CHOW LINE:** You can say that everybody who works in the Pentagon has lunch there. It takes too long and you have to go too far

for outside food. So, within the building there are seven cafeterias and two dining rooms. Forty-five thousand meals are served daily. For 40 cents you can get soup, meat, two vegetables, bread and butter, dessert, and a drink. And very fair food it is. In addition to the cafeterias there are six beverage bars, serving 12,000 people daily, where you can get drinks, sandwiches, apples, and so on. Figures on the amount of food consumed daily are colossal—about 30,000 quarts of milk will serve as an example. More than 750 employees are engaged in preparing and serving food.

## **OFF WE GO INTO THE WILD BLUE YONDER DEPT. :**

In winter an officer working in the Pentagon Building might conceivably spend six days a week without seeing daylight. If he lives at some distance—say a half hour's riding time—he gets up while it is still dark, arrives before the sun, works all day in one of the rings having no outside windows, has his lunch in the artificially lighted cafeteria, and goes home when it is already night. He gets two Sundays out of three off, and on those he is apt to wear dark glasses.



**LATRINE RUMORS:** During the first few weeks of occupancy, there were, naturally, numberless stories of lost persons who had failed disastrously to master simple navigation problems in the maze of rings, corridors, ramps, and bays in the Pentagon Building.

Quite hackneyed by now is the report on the fellow who entered the building a Western Union messenger and after 17 days came out a lieutenant colonel. The reverse is that of the officer who went in a lieutenant colonel and, caught in a rash of breakings, came out a Western Union boy.



## Life is hurried, hectic and sometimes like this around Headquarters.

Then there is the one about the woman who went running down a ramp and tried to get past the guard without an identification pass. She said it was upstairs and she had no time to go and get it. He refused to let her out.

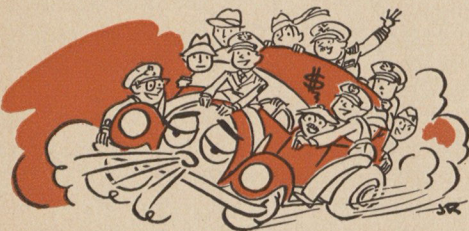
"You can't keep me," she cried, "I'm going to have a baby."

That still didn't move the guard.

"You'll have to have your card," he said, and then he proceeded to read her a small lecture. "You shouldn't have come in here in that condition," he said.

To this the woman replied, with some feeling, "I didn't."

**TROOP MOVEMENTS:** If you get a seat in a Washington bus or street car, you're just plain lucky. Staggered hours or not, everybody goes and comes from work at approximately the same time; only veterans of New York subway rush hours will feel at home in the pushing and shoving.



For a city its size, Washington has a very large number of taxis. The only trouble is, they are always full. On a rainy day or night you might as well pull up your pants and walk; you haven't a prayer. Doubling up is a universally practiced custom. Almost no taxi leaves Union Station any more without a full load, each passenger likely enough bound for a different destination. And each passenger pays full fare when he alights.

In connection with the Big House, 30,000 people come and go every day. About half of them use buses, the others private cars.

Visiting firemen take taxis to and fro. But not the old timers. It's six-bits at least to any downtown point.

**NIGHT MISSIONS:** In Washington, facilities for a hot time are not unlimited. Neither are women companions. There is the regulation number of bars, there are dancing floors in some of the hotels, and a moderate number of night clubs. There is no great spot of chic and glory like the Stork or the Camellia Room or Mocambo, but if circumstances require you to dance a bit and enjoy refreshments, you can always find a place. It will be crowded and pretty expensive, but that is situation normal.

Yet, the chances of your being kept awake by revelry by night or keeping someone else awake are not too bright in Washington. By midnight the streets are deserted and most of the joints shut up.

Soldiers and secretaries who have to get up

at six-thirty and fight for breakfast, fight for a bus seat and then work all day require more shut eye than jive. Of course, there are always a few hardy souls who can be found somewhere drinking them up, but the average lieutenant falls exhausted into bed and longs for the peaceful days when he was a carefree corporal—if he ever was one.

**WASHINGTON MESS:** You won't be in Washington long before you hear the story of a man who went into a hotel dining room, sat down, carefully studied the menu, and then said to the waiter, "I'll have the three-dollar dinner." Warily the waiter replied, "On white or rye?"

Food isn't easy to come by in Washington. There practically isn't such a thing as an empty restaurant. That applies to all price groups; if you're going to pay 45 cents or four dollars and a half, you're going to have to wait in line. When you do get a seat the service won't be electric; the waitresses are tired and often the food is, too. But you won't starve and the fare is probably a little more varied than it is in Stalingrad, to take a case.

Eating has become more of a routine matter than in the spring and summer of '42. Then everybody was new to the situation, and if they went into a crowded restaurant they left and tried another, and then another.



Now everybody waits at the first. You get fed sooner that way.

On the whole, Washington is a cafeteria town. At one time or another practically everyone serves himself. If there is a famous section of town in which to eat, it is down along the wharves, where a number of good seafood places stand.

**FOX HOLES ALONG THE POTOMAC:** Where do you sleep? This is the \$64 question. There are a hundred answers, none of which satisfy.

An enlisted man assigned to Washington may be attached to Bolling Field or Fort Myer. If so, he has no problem and lives much the same as he would anywhere else. But some of the boys are put on detached service and allowed to scramble for themselves. That means they must compete with the civilian population which, generally speaking, has more dough to spend. And let it be said here and now, the civilian population doesn't step aside for the military.

They've seen too many uniforms to be impressed by them; it's every man for himself. But after a long hunt a man can find a boarding house, apartment, small hotel or some kind of reasonable accommodation. It will take time, and he probably won't be satisfied, and it will cost the limit he can afford, but he'll have a bed.

An officer in Washington is up against the same problem. If he's lucky he may get a dark room in a hotel for which he must pay at least four bucks a day. If he has reasonable assurance that he is to stay in the town, he may find a small apartment and collect a bed, a chair and a table. Or he may crowd up with a couple of friends and live in one of the numberless warrens which exist all over town.



These are odd buildings which are called apartment houses and which from the outside put up a pretty good front. Inside you find bare corridors, decrepit elevators and sparsely furnished rooms, but they still cost plenty. They may, however, tend to be a lot of fun to live in, because it must be remembered that the civilian population contains a number of young females called "secretaries" who also must have a place to sleep, and who often double and triple up in such quarters.

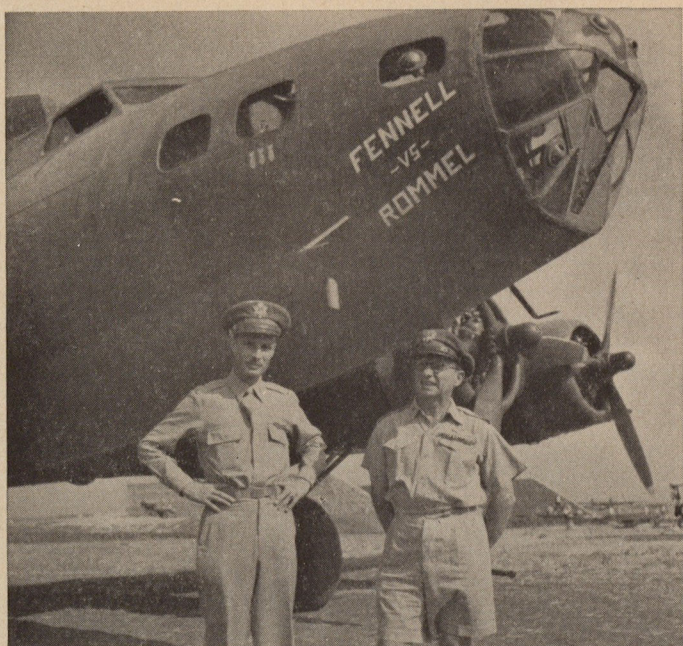
It is reported that several introductions have been effected between the girls and boys, and on occasion soft drinks have been consumed in company. This is only hearsay, of course.

A visiting officer may have the luck to get a bed at the V.O.Q. at Bolling Field. This is a hotel that has housed the flying great of the world, from generals to second lieutenants. Originally the V.O.Q. had accommodations for 43 officers, but has been expended to 60, with an addition for 180 more now under construction. Major General Doolittle's Tokyo crew lived there, if you want references.

The meals are good, and cheap at the V.O.Q. Also, a bureau is maintained to sort out the available entertainment in town and let the boys know about parties. Clubs, fraternal organizations, sororities flood the V.O.Q. with invitations—it's not hard to dance or go out to plays or concerts.

Here's a point to remember about V.O.Q.: If you are stuck for a place to sleep, the office will attempt to get you a hotel reservation or rooms by the week or month, off the field. The Washington Hotel Association cooperates by giving priority to flying officers and emergency requests. ☆





Major General L. H. Brereton (right) and the author in Africa

# We fought both NIPS and NAZIS

*By Major Max Fennell*

WE fought both the Japs and the Germans. For ten months, as part of the 7th Bombardment Group, we shuttled between the Middle East, India and China. We chased Germans from Tripoli to Tunisia. We bombed Crete and shipping in the Mediterranean, ran missions into Burma, and raided far behind Jap lines into occupied China. At the time, I happened to be C. O. of the 7th group's 9th squadron.

The first question everybody asks is, "Who's tougher, the Nips or the Nazis?" It's a fair question. The answer is—both.

Personally, I think the Germans are going to be harder nuts to crack than most people seem to think. It seems to me they are getting tougher instead of weaker as time goes by. When we first ran into the Germans around Tripoli, their fighters were content to make two or three passes and get out. But as we advanced, they would attack and stay with us for 30 or 40 minutes. Both the quality and quantity of their planes are holding up and their pilots are getting more daring all the time.

Don't ask me why, but some of our men rather expected the Germans to be relatively sportsmanlike in their methods of fighting. Remember those stories you used to hear of wing tipping to a fallen enemy and other displays of mutual admiration? They are definitely not true. Again and again, the Nazis—just like the Japs—would strafe our boys as they parachuted to earth.

In the North African theater, we ran up against ME109s and JU88s. That's all they seemed to have in that area but they were plenty good with those ships. Usually our bombing squadrons were outnumbered—before the battle. If our gunners were on the beam, the Nazis got hurt and hurt badly.

At first, the Germans came in on our tails but our turrets back there literally shot hell out of them. Their principal attacking method thereafter was a direct head-on approach. For a heavy bomb squadron there's

only one good evasive tactic against the MEs and that is good gunners. The entire success of your mission depends upon your gunners—they have to know their business. We found that if a gunner put a burst out in front of enemy planes as they started to come in, it would often break off the attack. The principal thing for a gunner to watch out for is his method of shooting ahead of his target. Lead your target by twice the distance you think you ought to and you'll get hits. Those MEs are very fast, but when you put some lead in their path and show that you've got them in your sights, they will often dive away without opening up at all.

The cannon in the ME is effective at about 1500 yards and the guns are usually opened at about 750 yards. However, the guns in our 17s and 24s are effective at 1000 yards and you can always outrange them. Some of their pilots would open at 750 and keep their guns going as they came right through our formation. The only thing we could do then was turn right into them. This would cause them to break off their attack, and they would generally go under us into a steep dive.

If you are ever caught alone, your best bet is cloud cover—and there is usually plenty of it over the North African sector. If you are caught below 10,000 feet, "hit the deck." That is, get down low so they can't dive on you.

We usually flew in three elements of three planes each. When caught below 10,000, the lead element would drop down low with the second and third elements in echelon. Even then, many MEs dove down on us but they would have to break off at ineffective distances.

The ME is quite an airplane, fast and very well armored, and it will match the 17 in getting up to higher altitudes. If your gunner has a dead eye, he'll pick an ME's engine. The JU88s are much slower and

not so well protected. Of course, it is not the job of a bombing plane to shoot down fighters. You're supposed to drop your eggs and get back home. You may have heard that you can't hit a maneuverable target from 20,000 feet and higher. You sure as hell can—and with as few as nine planes, too.

I remember the day nine of us went after a troop transport in the Mediterranean. Each of us had six 1,000-pound bombs and we pattern bombed from 19,500 feet. We got four direct hits right on the deck and twelve near misses. That baby was maneuvering like the devil but we blew her up with the first salvo. No matter how maneuverable your target, if you use pattern bombing by elements you'll find that the ship just can't move fast enough to get away. We came in on a steep angle and damn few boats escaped.

Most of the boats carrying supplies to Rommel were covered with fighter protection. They would wait for us to make our runs and close in as we came up to the target. Bombardiers ought to get plenty of practice bombing on very short runs because the

The comforts of home are left far behind at this command outpost near the Tunisian front lines.



AIR FORCE, May, 1943



A.A. fire will get your range and it just isn't practical to make a long target run.

When flying on to the target, we used stepped-down javelin formations for better visibility and extra concentration of fire power. We generally stayed in formation, bombing in elements of threes. That formation is very maneuverable.

Occasionally, after dark, we found the Germans hanging around our fields, waiting for us to come in. However, the British had an excellent location system and they'd send up their Beaufighters. Believe me, those ships are deadly for night fighting.

The Germans did a lot of night bombing, using their JU88s. They have an excellent flare system and caused us quite a bit of trouble.

In December, we bombed Sousse and Sfax in Tunisia from an advanced field near Tobruk. Our headquarters was in Egypt and we'd move from there to the advance base and then go over the target. In our first raids we didn't find an awful lot of fighter opposition around these towns. Later, however, we ran into plenty of it—Hitler certainly pushed a lot of stuff down there to try to hold Tunisia.

I remember one thing in particular around that area. I was flying General Breton and Sir Arthur Tedder, the British Air Chief, over Sfax at 2,000 feet. We thought it was in Allied hands and never knew until we got to Algiers that the Germans had the town!

Generally, the weather around North Africa is pretty bad. Rain halted operations for some time and gave the mechs a headache. During the Winter you'll find icing conditions about 6,000 feet over the Mediterranean. The only thing to do is try to get on top of the cloud formations.

Here's a tip for B-24 pilots. You'll find that although your ship is pretty heavy, it's a good steady plane. Be damned sure you understand the hydraulic and fuel systems. Learn them backwards before you get into combat. There's a lot of piping in a 24 and if ack ack hits some part of your hydraulic installations, you can cut it off and still get your flaps down. Be sure you know how before you try it.

## Verbal snapshots about air war in China, India and Africa—by a pilot who was in the thick of it.

For quite a while, we were stationed in Palestine. It's really nice there, very much like Southern California. The weather is warm most of the time but during the Winter you're liable to run into lots of fog.

Because Palestine is populated by so many refugees, practically everybody talks four or five languages and you'll have no trouble making yourself understood. One evening we went into a night club and were informed that we were the first Americans who had ever been in there. When some of our Southern boys started singing "Dixie" we were amazed to find that the entire place joined in on the chorus. And they all knew the words, too.

Some of us were ordered into China from Palestine to do some survey work and, later, to run a couple of missions against the Japs.

**G**ETTING into China from India is no easy job. You have to go over the Himalayas through some of the worst weather in the world. All flying is on instruments and you'll have to get up to 22,000 feet some of the way. Our Air Transport boys, pushing supplies into China, are really the unsung heroes of our war over there. Sometimes during good weather they'll make the India-China round trip every day.

If you ever get down around that territory, don't depend on the Chinese maps. Actually, the mountains are always higher than they appear on the maps. You can follow the rivers, however, for they are accurately charted.

Should you get lost over Chinese territory, all you have to do is circle the nearest village. The people will realize your circumstances and phone to the closest radio station—there's always one around—and they will let you know where you are and how to reach the nearest field.

If you are forced down in any part of China not occupied by the Japs, the best thing to do is stay exactly where you are.

No matter where you go down, the alert Chinese will have seen you and they'll come after you. One plane I heard about was forced down in an almost impenetrable wilderness—it took the Chinese two full months to rescue the crew but they got them all out alive.

One of our raids while on that assignment stands out in my memory. We flew 800 miles behind Jap lines to bomb the Linsi coal mines in Occupied China. There were six B-24s on the mission, each carrying six 500-pound bombs. We were in the air about 13 hours and didn't come across one enemy fighter. We flew at 16,000 feet and came down to 14,000 for the bombing run. Over the target we ran into some AA fire which didn't do any damage at all. The power house was our target. A string formation was used, we bombed individually and all of us made two runs over the target.

The mission was arranged so that we could fly back under the cover of darkness. When we returned, the Chinese lit a flare path for us and put an AA searchlight over the field. The entire flight returned safely.

Some time later, six B-24s made an eight-hour flight from Calcutta, India, to bomb Rangoon. We didn't run into anything—neither enemy aircraft or ack ack fire. Each plane carried five 1,000-pound bombs and we hit the target from 27,000 feet. One crew had to bail out because of some electrical difficulty but we all got back safely.

China is really wonderful. We had plenty of chicken and steaks, prepared in American style by the Chinese, who are the best cooks in the world. For breakfast, we always had scrambled eggs, toast, and coffee.

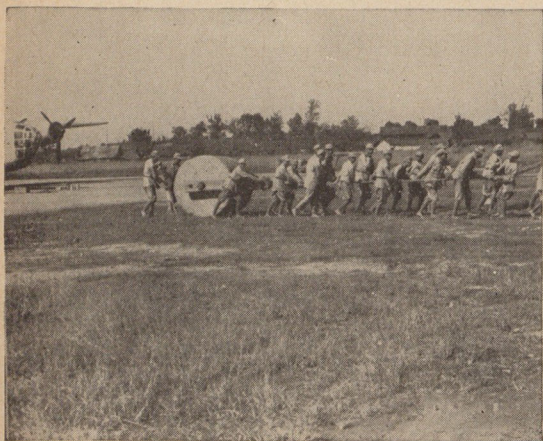
One of the most revered customs in China is that of drinking tea with your host before any business is transacted. If you ever have occasion to visit a Commanding Officer of a Chinese outfit, don't discuss business until after you've had tea. But once tea is over, the Chinese go to work with a real vengeance. War is in their hearts and they'll do anything you want done. Most every place you will find an interpreter provided for your convenience.

Many of the Chinese women are very beautiful, but if you pay too much attention to the young girls, you'll find that they consider the matter a very serious one.

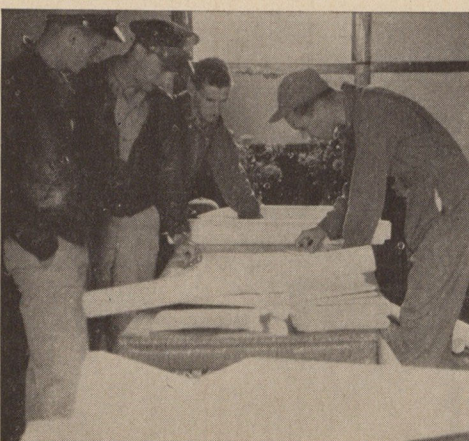
One of the peculiar things in China is their system of money. Under the rate of exchange, one American dollar gets you ten Chinese dollars. When the boys played poker, Chinese money was always used and it was nothing to hear somebody say, "bet you a hundred." Money was piled high on the table and the winner usually needed a knapsack to carry his money out.

One day—soon, I hope—we're going over Tokyo and that's the ride I want to be on. Once you've been in China, you learn to really hate the Japs. Please don't consider this bold—but this is my personal request to be counted in on the next Tokyo run. Nobody is fooling in China when the usual American farewell of "so long" is replaced by "See you over Tokyo." ☆

**A Chinese labor army employs primitive methods to construct an airfield at an advanced base.**



**Crew of a B-24 study maps in preparation for a bombing raid on coal mines in Occupied China.**



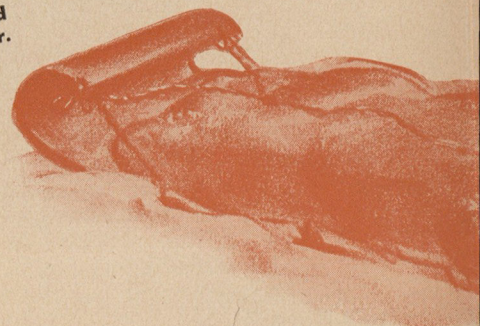


# "in case of accident"

*(Editor's Note: On Feb. 5, during a routine flight Flight Officer Wilczynski, then a Staff Sergeant, and a companion suffered compound leg fractures in a crash which killed both pilots of their plane. This is the story of how they endured sub-zero weather, exposure, and bitter disappointments, finally to be rescued. Both Flight Officer Wilczynski and Lieutenant Maban are members of the Alaskan Wing, Air Transport Command.)*



In this battered hulk, the author and his companion met their darkest hour.



**M**Y BIGGEST worry was whether I'd ever be able to fly again. I wasn't so scared of dying as I was losing that leg. I knew a wooden-legged pilot couldn't fly for the Army, and the one thing I want to do is fly.

You know, the day we got back to the hospital here in Edmonton, I got the two best pieces of news I ever expect to hear. One was, they wouldn't have to take off my leg. The other was that my Staff Sergeant days were over—I had got my Flight Officer commission. Can you tie that—after lying up there in the snow for nearly three weeks?

You want to know what we did to save ourselves. I'll tell it the best I can because it might help somebody else in a similar jam. As I figure it, the crash happened this way: We were in a cargo ship and the Captain, Pilot John Hart of Minneapolis, was making an instrument landing because of the snow that had been falling for several hours after we headed south out of Fairbanks. We had delayed a couple of hours looking for a lost bomber which later turned up.

When we got over the field where we were landing for the night, we were up about 8,000 feet. I was standing in the companionway just in front of our passenger, Robert Alexander of Denver, and telling him about how the instrument let-down was made. The last time we went over the field, I calculate we were around 1,000 feet and losing air speed fast. I could hear the co-pilot, Kenneth W. Jones of Elyria, Ohio, calling off our speed—100, 90, 80 and so on. That was when I first got worried and thought we would crash. The last count I heard was 60 and then we stalled. We fell off on the left wing, but the Captain brought her out of the spin and she was going nose first and level when she began to clip off the trees. This made a noise like spanking the wings with the palm of your hand. Then she hit a big tree that didn't clip off. She stopped—and sudden.

I had started to back up in the com-

panionway when I first saw we were in for it. I kind of pushed Alexander to the rear so both of us could lie down. We were flat on our backs with our feet braced, and I guess that saved us. Afterward, my left foot was so tangled in wires and controls around the instrument board that I had a devil of a time getting it loose. My head was alongside the front baggage door which had been torn off. The plane's nose was cut off from the front edge of the pilots' seats. They had been killed instantly.

**M**Y first thought was to get out of the ship. I didn't feel any pain and didn't know my leg was broken till later. I put my hands out through the baggage doorway and tried to touch the ground but it was too far—three feet, I guess. Then I scrunched forward out of the door and let go. That's how I hurt my shoulder, which is better now.

Gasoline was leaking like it was coming out of a water faucet. I was afraid of fire. I dragged myself 10 or 15 feet off to the side and then stopped and hollered, "Anybody else alive?" There was no answer. I yelled again. Alexander, who was still in the plane, called back, "Can somebody give me a hand?" I started to crawl to the back of the plane thinking I could help him out of the rear door, which would be lower to

the ground. I bumped into the trailing edge of the left wing and somehow caught some de-icer fluid in my mouth. Did it burn!

It was Arctic-dark and I was afraid to light matches. While I was lying there, Alexander found the same door I came out of. We listened to the dripping gasoline until we decided it wasn't going to catch fire and then we crawled back into the plane.

We didn't sleep that night. We figured we had crashed at 11:20 p. m. and it was a half hour later now. We were dog-tired from the shock and everything (crawling isn't any picnic as we found out later), but we were afraid we'd freeze to death if we went to sleep. Every fifteen minutes one of us would call to the other to make sure he was all right. By this time I knew my leg was busted and I wondered about that, too. What would I do with a wooden leg, anyway? Alexander didn't know his foot was hurt at first. It was numb and he thought one of his Arctic boots wasn't zippered up right. I tried to fix it for him—one of his arms had been paralyzed from a



previous sickness—and then I told him, "Your foot is broken, too."

The next day we just tried to keep warm. It was still snowing—and kept at it off and on for five days. I heard from the airport later that it was 40 below that second night. We did manage to find the Army emergency rations and we nibbled at them for all the nineteen days. For water, we ate snow. I'd scoop it off the wing through the emergency window but it was full of pine needles and bark.

When no more snow was in reach, I beat the ceiling of the plane with a shovel and knocked more of it down off the roof. We didn't get enough and we were all dried up when they brought us in. I might add that we found the Army emergency bottle of brandy. It was frozen, but at the rate of two

**When you're lost for 19 days  
in northern snows, you can  
still crawl home — even with  
a broken leg**

or three "teaspoons" every hour we finished that in one day—for frostbite, you know.

Funny how an experience like this changes your way of looking at things. Once I got a can of snow and tried to boil it on a little stove there in the plane. The hot can fell right side up on the back of my hand. Instead of jerking my hand away to keep it from burning, my instinct was to save the water. That's how I burned my hand.

We found a bed-roll in the plane and used it for a mattress. Alexander got the wing

covers which we put over us and that way we kept fairly warm. Anyway, it saved us from freezing. This second night we heard airplanes go over. I discovered we were so near the field that in the quiet of the woods I could tell when they taxied out to the end of the runway and revved up the motors. It was awful to lie there in the wilderness and hear civilization pass you by. Each night several planes would go. I got to timing the take-off and would calculate how long it took them to pass overhead. I figured 120 miles per hour, counting take-off and climb, and it took them three minutes to come over. This would mean about six miles to help. We thought they'd find us sure.

Trouble was, the new snow covered up the plane. Then, too, the right wing was broken off and was (Continued on Page 32)

*By Flight Officer  
Eddie Wilczynski*

AS TOLD TO  
LIEUT. LYNN C. MAHAN



Only six miles from base but unapproachable from the air. Above, a view of the wreck, and at right, a sample of the terrain through which the survivors crawled for four days.





# ORGANIZATION OF

**DON'T tear out these pages. You may be preventing others from reading the official service journal. Additional copies of this organization chart will be mailed promptly, without charge, upon request to the Service Division, AIR FORCE Editorial Office, 101 Park Avenue, New York City.**

COMMANDER  
ARMY AIR  
GENERAL H

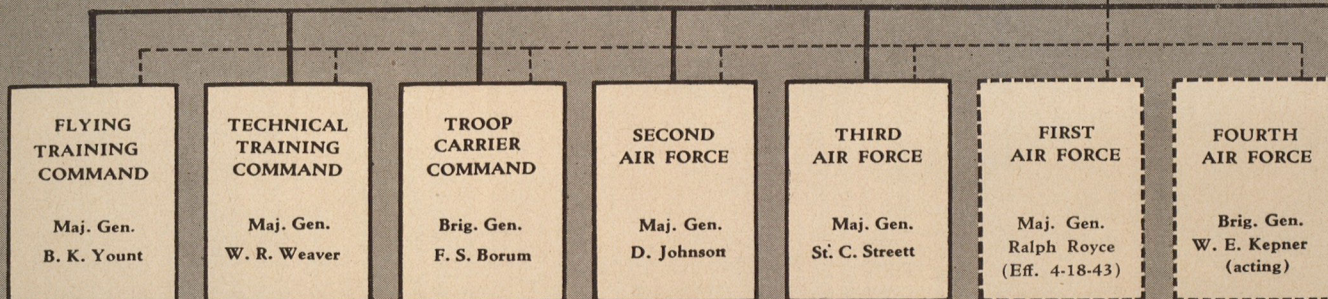
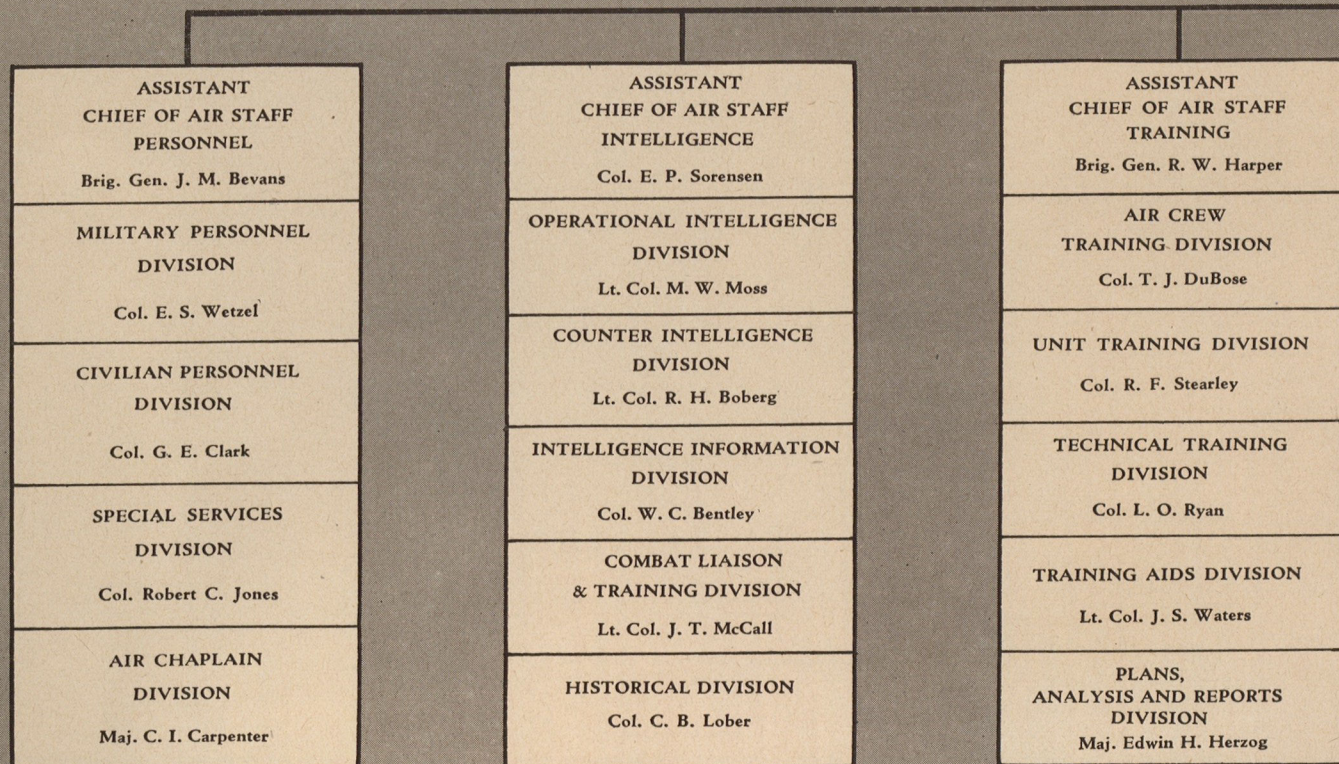
CHIEF OF T  
Maj. Gen. G

## ASSISTANT CHIEFS OF AIR STAFF

- (1) ADVISE CG AAF
- (2) ACT IN CG'S NAME
- (3) SUPERVISE CARRYING OUT OF CG'S POLICY
- (4) RECOMMEND NEW POLICIES AND CHANGES IN POLICIES TO CG

DEPUTY CHIEF OF THE AIR STAFF  
Brig. Gen. L. G. Saunders

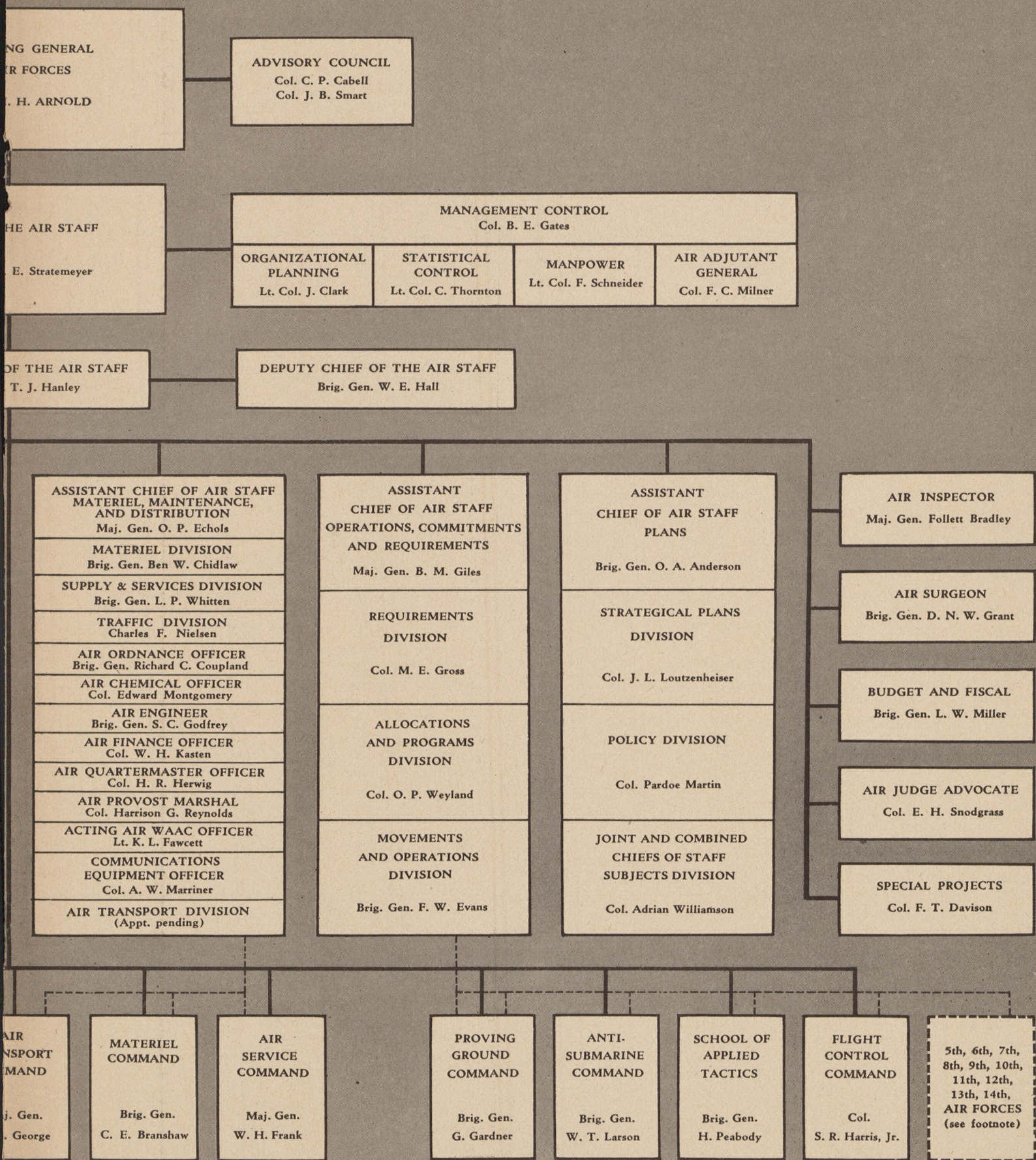
DEPUTY CHIEF  
Brig. Gen.



MARCH 29, 1943



THE ARMY AIR FORCES



Footnote

5th Air Force Lt. Gen. G. C. Kenney  
6th Air Force Maj. Gen. H. R. Harmon  
7th Air Force Maj. Gen. W. H. Hale

8th Air Force Maj. Gen. Ira Eaker  
9th Air Force Maj. Gen. L. H. Brereton  
10th Air Force Maj. Gen. C. L. Bissell

11th Air Force Maj. Gen. W. O. Butler  
12th Air Force Maj. Gen. J. H. Doolittle  
13th Air Force Maj. Gen. N. F. Twining  
14th Air Force Maj. Gen. C. L. Chennault





*By Captain Charles D. Frazer*

**GATEWAY TO THE AMERICAS.** Since the Spaniards discovered the New World, the coral and volcanic islands of the Antilles have been recognized as the natural stepping stones to the Western Hemisphere. Conversely, in time of war, they become the natural barrier against enemy invasion.

The Greater Antilles include Cuba, Haiti and Dominican Republic, Puerto Rico and Jamaica. Well-known among the Lesser Antilles are such British possessions as Antigua, St. Lucia, Barbados, and Trinidad, and the French colonies of Martinique and Guadeloupe.

This vast loop of islands from Florida to the South American coast is today guarded by both Army and Navy forces—and by the Antilles Air Task Force, part of the over-all Caribbean Command, headquarters of which is in Panama, Canal Zone.

Some bases of the Antilles Air Task Force are modern, permanent stations. Some are small, remote, one-runway affairs, hemmed in by jungle and bamboo forest. Together, manned by fighter and bombardment squadrons, they are like a chest stuck out into the Atlantic against enemy air or sea attack on the vital approaches to both Americas, the Caribbean and the Panama Canal.

**COVERING THE WATERFRONT.** Squadrons based on the Antilles are of two types. Defensive and offensive. Fighter squadrons, equipped mostly with P-39s and P-40s, carry on the defensive work, with constant patrols and other tactical missions.

Bombardment squadrons are organized to

hunt U-boats. This is the most important function of the Antilles Air Task Force, since the submarine is a vicious, ever-present menace to shipping through the Caribbean. Subs have even shelled some of the islands.

All Army air operations are carried on in full cooperation with Navy surface vessels and PBVs. Tactical plans are developed by joint commands and control is exercised by collaborating Navy and Army officers at various headquarters.

The large fields in the Caribbean area serve also as important way stations for the Air Transport Command and through them passes the greatest volume of military air traffic of any region in the world.

**INTERNATIONAL SET.** There is, for example, Borinquen Field, Puerto Rico.

The bar of the Aquitania never in its palmiest days boasted a more colorful international clientele than does the Officers' Club bar at Borinquen. Elbowing and shoving their way up democratically for a rum-coke or a daiquiri may be seen foreign diplomats and military aides, ferry pilots and war correspondents, "brass hats" of all the United Nations and ordinary seamen—survivors of torpedoed ships—dressed in the garb of the rescued sailor, a cheap seer-sucker suit.

In the passing parade at Borinquen, you can see a wider variety of uniforms than in an operetta. Combat and ferry pilots of the Army Air Forces mingle with flyers from Britain, the Netherlands, Free France, China, Russia, and many other nations.

Prominent in the crowd will always be the gay and vivacious airmen of Latin America.

Not all celebrities are uniformed, by any means. A sombre business suit may call attention to a Wendell Willkie or a screen actor on U.S.O. tour or other globe-trotters, en route to or from the States.

Conversation takes place in so many languages in this Club that, to a casual listener, it sometimes sounds like a Berlitz school gone mad.

For foreign notables and general officers, Borinquen has special quarters near the Officers' Club. For lesser travelers, there is a spacious Hotel de Gink with a sign at its door reminding all comers to unload firearms before entering. Sleep is not easy to come by in these visitor quarters, because early starts are the rule, regardless of whether a ship is coming from or going to the States. From two or three a.m. on, alarm clocks are going off and people are stumbling around in the tropical dark. An hour after sunup, most transients will have left Borinquen.

**SO NEAR, YET SO FOREIGN.** Duty in the Antilles is foreign duty in every sense of the word. Thus, life is apt to be both interesting and difficult.

While only a wing-tank hop from the U. S., many of these islands present all the discomfort and primitive problems of a nook in the Southwest Pacific.

Malaria, venereal disease and amoebic dysentery are Three Horsemen of the region. You sleep under mosquito bars in many places and drink only boiled or purified water.

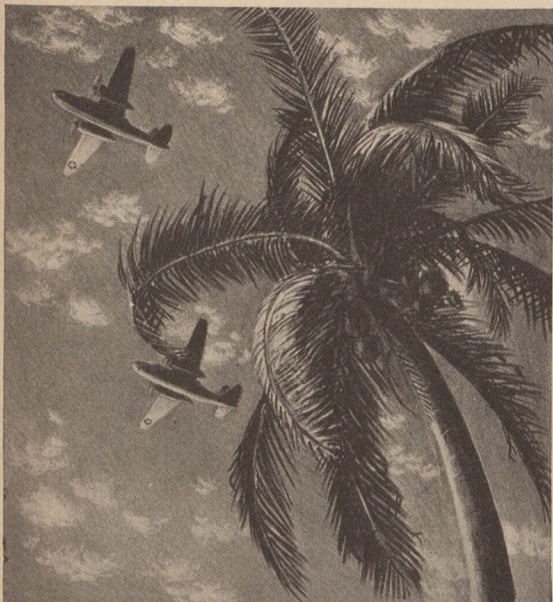


Drainage is a serious matter, for in this world of soft, green hills and dazzling white beaches some rain falls nearly every day. Everyone agrees that engineers attached to Air Forces units have had a difficult job and have done it well.

**SCENES FROM SOMERSET MAUGHAM.** In these islands you can find all the authentic "atmosphere" of a tropic novel.

Lush jungle presses in upon barracks and airfields, native thievery and mystic doings are not unknown, and there is an engaging variety of snakes, ants, parrots, monkeys, and other fauna.

Snakes, particularly. There are tiger snakes, black on top, bright yellow under-



neath, handsome and deadly poisonous. The coral snake is another bright-colored beauty, frequently found swimming in the pale blue water of the Caribbean. It is known as the "15-minute snake," since that's about par after a nip or two.

At one field a 23-foot anaconda was killed less than 50 feet from a Captain's quarters. This delicate specimen has been known to crush a cow in its coils and swallow the victim whole. Usually, however, the snake will reconnoiter in a two- or three-mile radius before the meal, to be sure that no army ants are near. These ants are something. Parasol ants of the army ant family sometimes travel in crawling masses 20 feet high, devouring everything in their path.

**PLANES VS. JACKASSES.** One airfield is especially bad at night when its runway becomes crowded with the wild jackasses abounding on the island. They can be chased away, of course, but they scamper back with all the stubbornness of a jackass to make landings hazardous.

Flying weather on the Caribbean Sea Frontier is generally excellent. Rain moves in squalls and you can fly around it or stay up till it stops. Afternoon usually brings some mists but most of the average day is CAVU.

Trouble, however, is likely to be real trouble. Most flying is done over limitless reaches of water. A forced landing may bring you down on the sea, in which case you will have to contend with a terrific tropical sun and with sharks and barracuda.

Down here, there is no academic nonsense about whether sharks will attack a man or not. People anxious to live don't test the question. If they swim in the sea at all, they learn to pick a shallow bay well protected by reefs.

Or you may be forced down in the jungle, which is worse. Much of it is trackless and impassable. Revolvers, knives, axes, emergency rations, water purifiers, emergency radio equipment—all these things are as important to a Caribbean flyer as his parachute.

**LANGUAGES, DIALECTS, AND DOUBLE TALK.** An Air Forces man stationed in the Antilles must soon acquire some knowledge of languages. On many islands, Spanish is the common usage. Other spots in the Indies are more difficult.

So polyglot is the population of one island, for instance, that there are 15 to 20 different languages and dialects in which a native can feign to misunderstand you.

Pidgin English can get you by, in most cases. Some of the natives have developed a medium of conversation known as "talkee-talkee" which is enough to help you get laundry done.

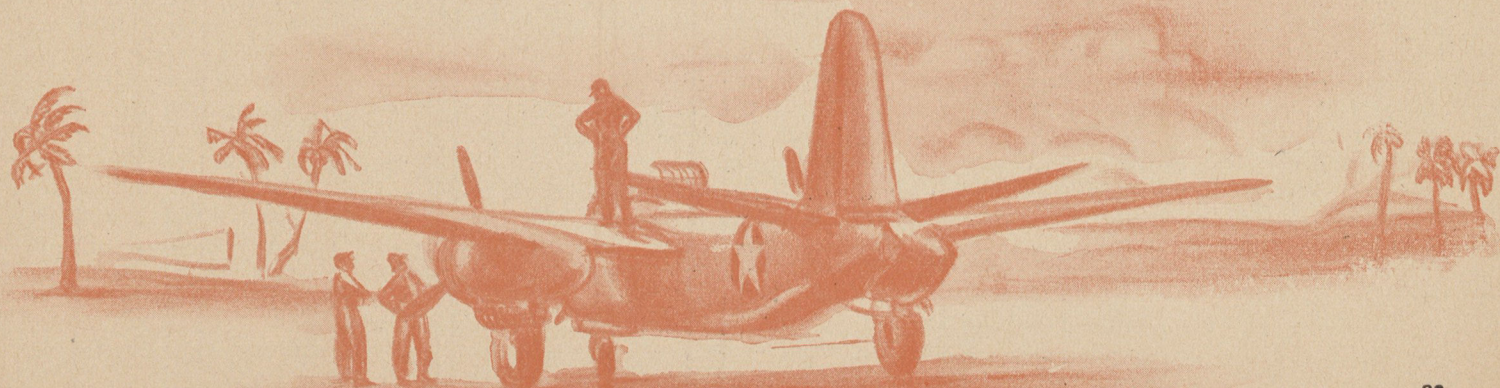
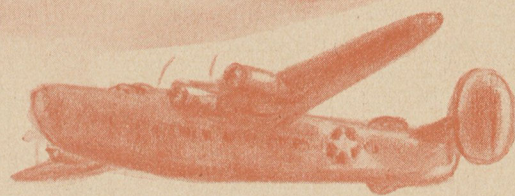
Incidentally, the laundresses of one island caused a bit of trouble at the beginning. They were accustomed to wash clothes in a very simple manner—by standing in a river stark naked, from the waist up, at least, to do the washing. This spectacle resulted in a number of man-hours lost among inquisitive G.I.s until the girls were prevailed upon to wear a little something over their impressive chest formations.

The double emphasis of talkee-talkee seems to fascinate the people of the Caribbean, for they use the trick to describe many things. A famous tree, for example, is the "divi-divi"—a strange looking growth with its upper branches and leaves standing out at right angles to the trunk, due to the constant pressure of 40-mile trade winds.

Nowhere in the world, probably, can there be found people of such varying colors, religions, and races as in certain of the West Indies and local customs are frequently quite odd.

**VIRGINS.** You know you're a long way from home when you discover that Hindu virgins are advertised to the passerby.

There are many Hindus in these islands and almost every tiny front yard has its bamboo flagpole. (Continued on Page 32)





# Why BLACK-OUT?

*By Major G. W. Holt*

FLIGHT SURGEON

**F**LYERS learn early in the game that one of the important stresses affecting the human body in modern high-speed aircraft is acceleration. The forces produced in some maneuvers act with dramatic suddenness and result in momentary though profound sensory and physiological effects.

Acceleration may be defined as the rate of change of velocity in direction or magnitude, or in both. It is most simply thought of in terms of the accelerations of gravity.

Any body having mass and located in the earth's vicinity is attracted to the earth by the force of gravity. This force is such that a body falling toward the earth would accelerate—were it not for air resistance—at a rate of 32.2 feet per second for each second of fall.

This magnitude of the acceleration of gravity—represented by the symbol *G*—is a convenient unit with which to measure acceleration.

Because the law of gravity holds true only when an object is falling through a vacuum, a parachutist free-falling through the air with chute unopened does not accelerate in exact accordance with the law of gravity. The resistance of the air is such that in free-falling from a stationary blimp, one's speed would increase to about 120 miles an hour and then remain constant.

This constant velocity results because the force of gravity and the force developed by the air resistance are equal and oppositely directed. The constant velocity of free-fall is referred to as terminal velocity.

Speed in itself is a much less important flying stress—from the standpoint of physiological effect—than a change in direction or magnitude of speed. A plane diving at a constant speed of 650 miles an hour causes no sensation when the pilot is protected from the slip stream. Only when there is a change in direction or magnitude of the 650-mile-an-hour dive is a sensation produced.

A full explanation of the forces of acceleration developed in flying is apt to become very complex. To simplify the discussion, three general types of acceleration may be considered: linear, radial and angular.

Angular velocity is measured in degrees of a circle traversed per second. Thus, the

second hand on your watch goes around a complete circle (360 degrees) every 60 seconds; its constant angular velocity is six degrees per second. If this angular velocity were to increase by a certain number of degrees each second, we would refer to the motion as angular acceleration.

A man sitting in a revolving chair can be turned at a constant angular velocity without experiencing any sensation if his eyes are closed. However, if the angular velocity is changed (as in starting and stop-

## **How acceleration creates unusual sensory and physiological effects in flying personnel**

ping the chair) so that the man is subjected to an angular acceleration of at least three degrees per second each second and for a period of at least five seconds, definite physiological effects are produced.

Consequently, whenever aircraft motion is such that a pilot is turned around an axis passing lengthwise through his body (as in a revolving chair) he may suffer adverse physiological effects that are caused by stimulation of the organs of equilibrium located in the internal ear. Actually this reaction seldom occurs except during a spin.

The radial and linear accelerations, however, are encountered in sensation producing degree with regularity. In general, radial acceleration is present in circular flight; linear acceleration, in level operation.

For the purpose of illustration in this discussion, we will consider that the pilot and other personnel are sitting upright in the aircraft.

**I**N linear acceleration, the speed of a plane is changed not in direction but only in magnitude. An example is the acceleration experienced in a ground run prior to take-off. Linear deceleration occurs in a landing ground run. The rate of change in magnitude of the velocity here is so small that little if any sensory effect is produced. However, linear acceleration may reach sensation-producing, and even dangerous, magnitudes in catapult take-offs and crash-landings. Thus it is seen that linear acceleration and de-

celeration occur in straight line paths of motion. Dangerous linear decelerations also occur on opening a parachute immediately after bailing out from a plane diving at speeds very much greater than the terminal velocity of 120 m.p.h. and in crashes.

On the other hand, when a plane follows a circular path, the plane and its occupants are subjected to a centrifugal force directed along the radius of the curved path. This centrifugal force is that of radial acceleration and is developed in most aerial acrobatics involving high-speed circular flight and especially in rapid recovery from a power dive.

The effect of this centrifugal force on the human body depends on four factors:

1. Magnitude of acceleration, or number of *G*'s developed.
2. Direction in which the acceleration acts.
3. Length of time the acceleration lasts.
4. General condition of the individual.

Thus in recovery from a power dive, the extent to which the pilot is affected depends on the number of *G*'s developed, the direction in which forces of acceleration are applied to his body, the length of time he is subjected to these forces, and his general physical and mental stamina at the time.

Positive acceleration refers to accelerative forces which are applied from head to foot, such as those produced in a sharp recovery after a steep dive. The physiological effects of positive acceleration consist of such dramatic episodes as grey-veiling of the field of vision and black-out.

In sufficiently severe positive accelerations, with a high number of *G*'s and a duration of many seconds, there may be momentary loss of consciousness—and the individual may not necessarily remember the loss. This fact has been proved to pilots who insisted they did not lose consciousness by showing them cockpit motion pictures of themselves in such an unconscious state.

In recovery from a dive or sharp pull-up, the body is pushed upward by the airplane and moves with the ship. The blood in the vessels, particularly the great veins in the abdomen, reacts as a fluid within a distensible system of vessels and thus tends to col-



lect in a pool in the veins of the extremities, abdomen and pelvis. The blood is not able to return to the heart, and X-rays have shown that in such maneuvers the heart is practically empty during the acceleration.

The heart thus is prevented from pumping any oxygenated blood into the arterial circulation and, therefore, little if any fresh blood reaches the brain. Blood pressure decreases rapidly in the arteries of the neck, brain and eyes.

The structure of the eyeballs is such that it contains fluid under pressure. This pressure within the eyeball normally has to be exceeded by the blood pressure in order to supply the eye with arterial blood. Since the eyeball requires normal blood pressure for vision, it naturally follows that sight will fail in high positive acceleration maneuvers. Moreover, the blood supply to the eyes is more profoundly affected by positive acceleration than is that to the brain tissues due to the intra-ocular pressure working against the blood pressure. For this reason loss of vision occurs before loss of consciousness.

**T**HE threshold value for positive acceleration—that is, the magnitude and duration of the acceleration which causes the average individual to black-out—is thought to be about 5.5 G's for four or five seconds.

Such acceleration has other effects on the body. Since the body reacts according to its weight, the number of G's multiplied by the individual's weight will give the relative reaction in a given positive acceleration. For example, if a pilot weighing 150 pounds pulls out of a dive with five G's, his relative body weight and the pressure he exerts on the seat will be  $5 \times 150$ , or 750 pounds. The blood also will exert pressure in the direction of head to foot as though it were as heavy as mercury at one G. In high G maneuvers a pilot's body may be momentarily immobilized due to the forces produced in the acceleration involved. After violent acrobatics, some flyers have experienced a complete temporary inability to move or lift their hands or feet.

These physiological effects of high positive G are temporary, and are not regarded as having any permanent untoward effects on the individual. They are just a part of the day's work. Nevertheless, these effects do represent a potential menace in combat. Many anti-G mechanisms are being studied with the purpose of preventing grey-veiling black-out and loss of consciousness.

One device consists in the alteration of the pilot's position by using a tiltable seat. This seat tips backward as the ship begins recovery from a dive and the pilot lies in the long axis of the aircraft. The forces of positive acceleration consequently are directed at right angles to the long axis of the pilot's body. The pooling of blood and delayed filling of the heart are minimized and black-out is proportionately decreased.

Another means of increasing an individual's tolerance to positive G is for him to assume a crouch position. This move is

made relatively easy by placing a step on the rudder bars. Crouching reduces the length of the venous column of blood above and below the level of the heart, thus facilitating the return of blood to the heart and increasing the ability of the heart to pump blood to the eyes and brain.

Negative acceleration occurs in maneuvers in which the forces are directed in the long axis of the body from seat to head, or in the opposite direction to those of positive acceleration. Forces of negative acceleration are developed in such maneuvers as push-downs, outside loops, outside spins and inverted flying.

In negative acceleration, since the force is directed from seat to head, there will be a pooling of blood in the head. With high negative acceleration in the neighborhood of three to five G's, suffusion of the face, congestion of the conjunctival membranes of the eye, and redding of the fields of vision may occur. Rupture of a cerebral blood vessel has been produced.

Transverse acceleration refers to an acceleration in which the forces are applied transversely across the body. Since this type of accelerative force is applied in a direction at right angles to the long axis of the great blood vessels, there is a far less tendency toward the pooling of blood in one end of the body. For this reason, much greater transverse G can be tolerated than positive or negative G. The tiltable seat changes accelerative forces from positive to transverse.

High transverse G may occur in catapult take-offs and crash-landings. Although it is true that the tolerance to black-out is

greater with transverse than with positive G, injury can result from either catapult take-off or crash-landing if proper protection is not taken against impact deceleration.

Retarded acceleration, properly spoken of as deceleration, is an important consideration of crash injuries. Most fatalities in plane crashes, excluding burns, are due to sudden impact injuries to the head. The resultant concussion frequently prevents a plane's occupants from escaping before the ship catches fire.

In crash landings at sea, concussion resulting from impact head injury has frequently resulted in the drowning of personnel. Thus it can be seen that high G values of deceleration and the resultant effect on the head and brain are of primary consideration. By conversion of high G decelerations of the head to low magnitude decelerations, it is possible to prevent concussions and many severe—and often fatal head injuries in crashes.

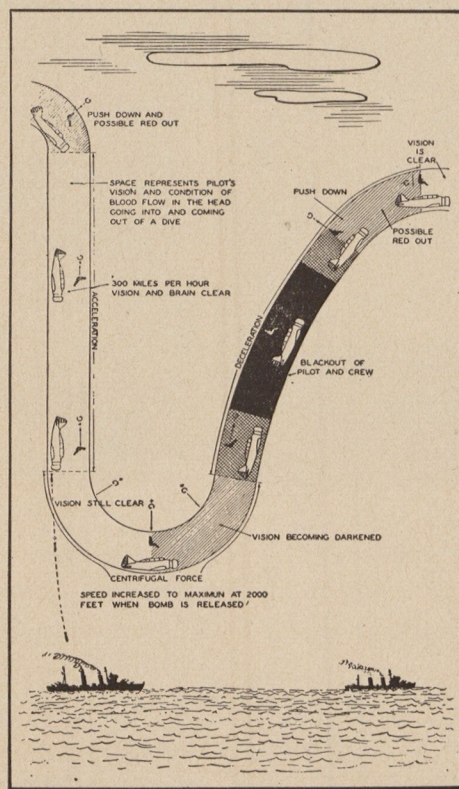
A simple means of decreasing the high G of impact head injuries is to place the arms against a portion of the plane's structure and rest the side of the head firmly against the arms. A parachute pack between the structure of the ship and the head is also effective in this respect.

Occupants in the tail or rear cockpits frequently walk away from crashes while those in the front compartments are killed or gravely injured, due to the fact that less deceleration is sustained in the rear portions of aircraft. Other safety methods by which high decelerative injuries must be reduced include recessing all projections, especially those with small surface area; increasing the surface area of any projecting instrument or knob which cannot be recessed, and covering projections with sponge rubber. Crash helmets are also effective. Such methods of improvement are always being studied and applied by aircraft manufacturers.

## CONCLUSIONS:

1. Acceleration is of primary importance in consideration of flying problems.
2. Threshold or black-out tolerance to positive acceleration is about 5.5 G's for four or five seconds for the average man.
3. Negative acceleration sustained in outside loop maneuvers is dangerous in excess of three G's.
4. Tolerance to acceleration is partially dependent on general physical condition of the individual.
5. By assuming a crouch position or by using tiltable seats or other anti-G devices under development, flyers can increase their tolerance to acceleration.
6. Deceleration of high magnitudes is a major cause of serious—and often fatal—head injuries, the resultant concussion frequently preventing occupants from escaping crashed ships which burn, or sink at sea.
7. Measures may be employed in reducing magnitude of deceleration in head injuries to a point where such injuries are negligible. ☆

The chart below illustrates the effects of acceleration, deceleration, centrifugal force and "push down" on pilots of dive-bombers.





# ON THE LINE

## WHAT'S WRONG WITH THIS PICTURE?



**H**ERE are a few maintenance boners that always follow light aircraft—fighter planes included. "If you're a keen observer, you'll immediately spot six, yes, six mistakes—all due to carelessness and all easily correctable," said Staff Sergeant Raymond C. Raduege who selected this month's boners.

The picture above was posed by (left to right) Pfc. Sidney Wachtel, Sergeant Harry C. Hartleben, Staff Sergeant Francis M. Seitz and Staff Sergeant George S. Jonas, all of Headquarters Squadron, Air Service Command, Patterson Field, Ohio. The answers, if you need them, are on the opposite page.



#### TECHNICAL DATA FROM MANUFACTURERS

Have you ever wondered why your letters to Airplane, Engine and Accessory manufacturers requesting books or other technical information often go unanswered? If so, here is the answer.

The manufacturers have all been instructed to forward to the Air Service Command for necessary action all requests from service activities for technical data.

Manufacturers are obligated by contract to supply technical data to the Army Air Forces. In supplying this technical data and revisions as necessary, the contractor fulfills his obligation to the government. It then becomes the responsibility of the Air Service Command to reproduce the material and supply it to the service. Quite frequently the equipment is altered by the Army Air Forces or specific instructions for the operation or repair are changed.

Obviously, then the technical data as supplied by the manufacturer must be reviewed and edited before release to the service. In the case of Technical Orders, these data are published and become a part of the Technical Order file and are listed in the Technical Order Index (T.O. 00-1) which is published monthly and lists all active Technical Orders, Charts, etc.

Technical Orders are distributed to all activities of the Army Air Forces according to the distribution table in T.O. 00-25-3, which also gives specific instructions for requisitioning additional copies. Drawings are distributed in accordance with AAF Regulation 5-17. That regulation also outlines the procedure for requisitioning drawings.

All of your questions regarding main-

tenance, repair and operation of Army Air Forces equipment can and will be answered if you direct them to the right place.

#### RUBBER CONSERVATION . . .

You men ON THE LINE can be a great help in the vital rubber conservation drive! Here's a ten (10) point program that will really save rubber:

1. Prevent oil leakage and spillage on tires.
2. Keep tires properly inflated.
3. Inspect casings for early failure.
4. Keep runways clear of debris.
5. Use proper tools in mounting and dismounting tires.
6. Mount late production tires on fast planes.
7. Discourage improper braking on airplanes.
8. Maintain inspection routing on tires.
9. Protect casings standing in the sun from deterioration.
10. Take precautions on the proper storage of rubber articles such as bullet sealing gasoline cells, life rafts, de-icers and bullet sealing hose.

#### JACK NOTES

For your own safety, it's imperative that the capacity of all jacks be marked. Stencil the information right on the main barrel; this will prevent picking up a low capacity jack when a high capacity is needed! You'll find this especially helpful in the case of the one and one-half and five ton jacks which look so much alike. Incidentally, over-loading jacks that do not have safety valves is especially dangerous to personnel and equipment.

**A monthly roundup and exchange of hints for mechs — some old, some new — in the interest of better maintenance.**

#### MISTAKES ON OPPOSITE PAGE

Reading from left to right

**1.** No, no, no! Never lift an airplane by means of the stabilizer. Use your head—not your shoulders; you'll dent the leading edge and perhaps warp it out of shape. Take it easy there, you on the end; that stabilizer tip is fragile. This type airplane should be raised by means of a lifting bar inserted through the hole provided and marked for that purpose. Reference: Common sense.

**2.** Look out above! You men are going to crumple that rudder and, at the same time, slice through the de-icer boot or smash the landing light on the C-53 wing right above you. Move your plane forward before you raise it and always be sure it is in the clear. Reference: More common sense.

**3.** Did you catch this one? Airplanes should never be parked in this position. He calls attention to T.O. 00-15-1 in reference to the radio antenna and to T.O. 08-5-2. It is possible that intentionally or accidentally someone may turn on the radio switch. With the antenna being within twelve inches of another airplane, sparks may jump across, starting a serious fire.

**4.** Watch your foot, big boy. That oil spot on the floor is an invitation to a broken leg or other personal injury. Grease and oil on hangar floors should be cleaned up immediately.

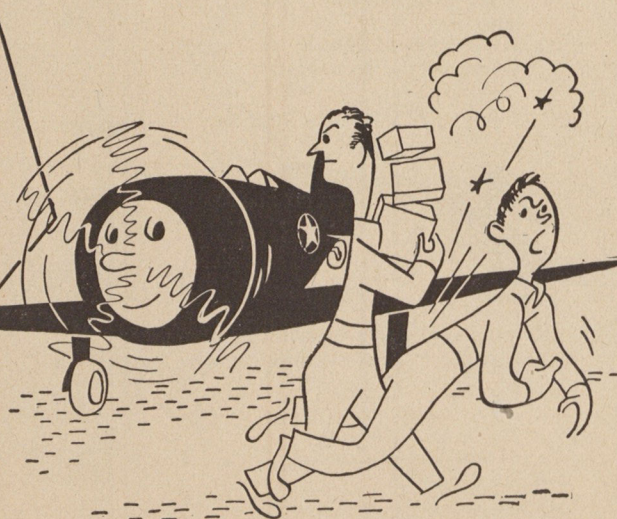
**5.** How about those shoes being worn by Pfc. Wachtel and Sergeant Hartleben? Flying boots are for flying—not for hangar or ground work. Refer to AAF Regulation 65-23 dated July 2, 1942, and you'll find the complete details in paragraph nine. In fact, the entire regulation will tell you lots of things you should know about Flying Equipment. Why not read it?

**6.** Wait a minute; are you kidding? That's definitely the wrong horse to use. It's a wing truss with the top slanted at a sharp angle; the fuselage will not be very steady or safe on that type of stand.

**KEEP YOUR EYES ON A WHIRLING PROPELLER**

(T.O. No. 01-65BC-1)

There's no need to tell you of the results of carelessness around whirling props. You know the story!





# What's your AIR FORCE

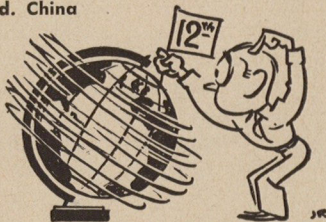


We're off, and the questions ahead look tough. Are you on the beam this trip? 100 is perfect—and very unusual; 90 is excellent; 80 is good; 70 is passing; 60 or less—and you're grounded! Answers on Page 40.

1. The C-54 is a ..... engine plane with a ..... retractable landing gear

2. The Andreanof Islands are  
a. In the Mediterranean, off the boot of Italy  
b. Five hundred miles west of Murmansk, Russia  
c. In the Aleutian chain  
d. North of Japan, between Vladivostok and Tokyo

3. The 12th Air Force is at present based in  
a. England  
b. Africa  
c. India  
d. China



4. What is the most obvious criticism of this report: "I was flying a C-46 and sighted three Me 109s. I climbed to 25,000 feet and dove at them out of the sun"

5. When saluting a senior in rank, you should bring your hand down  
a. When six paces past the senior  
b. Immediately, with precision  
c. When you feel like it  
d. When the salute has been returned

6. When marching at double time, the command: "QUICK TIME, MARCH" changes the rate of step from 180 to  
a. 200 steps per minute  
b. 120 steps per minute  
c. 90 steps per minute  
d. 100 steps per minute

7. The cargo version of the B-24 is the  
a. C-56  
b. C-87  
c. C-78  
d. C-54

8. The R.A.F. Bomber Command is headed by

a. Air Marshal Sir Arthur T. Harris  
b. Prime Minister Winston Churchill  
c. Lord Beaverbrook  
d. Air Vice Marshal Sir Arthur Tedder

9. At the position of ATTENTION, a soldier's heels are together on the same line and his feet are turned out equally, forming an angle of  
a. 20 degrees  
b. 30 degrees  
c. 45 degrees  
d. 60 degrees



10. Torque effect can be defined as

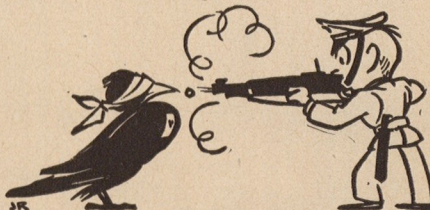
a. The reaction from typhoid shots  
b. The effect of strong headwinds  
c. The tendency of a plane to roll in the direction opposite to that of the prop rotation  
d. The tendency of the center of gravity to shift after a wing tank is empty

11. Which of these planes is best known as the Stuka dive bomber?

a. Heinkel 177  
b. Junkers 87  
c. Focke-Wulf 190  
d. Junkers 86

12. The tropopause is

a. An emergency landing field in the tropics  
b. The tradition of initiating ship passengers crossing the equator for the first time  
c. A rest period prescribed for flyer fatigue  
d. The boundary between the troposphere and the stratosphere

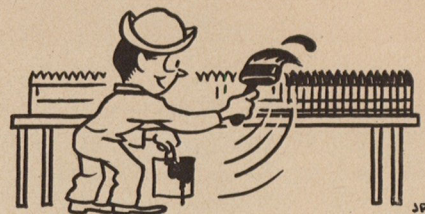


13. If you were ordered to shoot "pigeons" you would be going

a. On a strafing mission against the Japs  
b. Out to the skeet range  
c. To intercept enemy messenger pigeons  
d. On sub patrol

14. In a string of .50-calibre cart-ridges, the tracer projectile tips are painted

a. Green  
b. Red  
c. Blue  
d. Yellow



15. If you landed in Henderson Field you would be in

a. Cairo  
b. Port Moresby  
c. Guadalcanal  
d. Honolulu

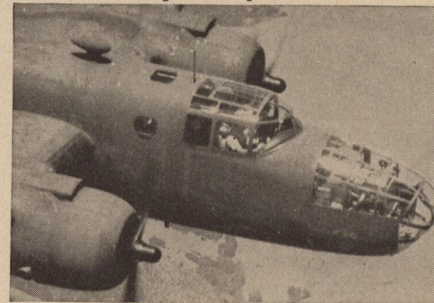
16. When a pilot is flying the "iron compass" he is

a. Traveling by rail to a new station  
b. Flying on instruments  
c. Diving on tanks  
d. Following a railroad track

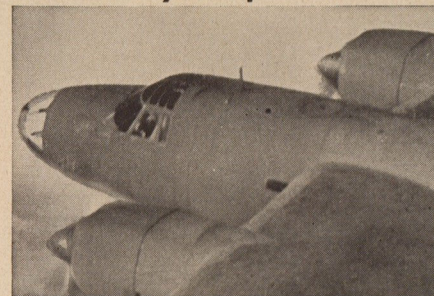
17. Which of these words is out of place in this group?

a. Barograph  
b. Thermograph  
c. Cardiograph  
d. Hygograph

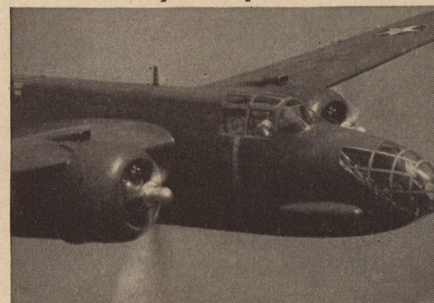
18. Identify this plane:



19. Identify this plane:



20. Identify this plane:





# DON'T JUST STAND THERE—

# Say Something!

**A working knowledge of foreign languages is easy to acquire and might some day save your life**

SO the day finally arrives and you find yourself, not in California, but in Cairo or Canberra or Chungking or Christmas Island. You've got a lot of problems both in tactics and supply. You want to get things done, you want to ask questions. Some of these questions can be answered only by natives. But how do you talk to the natives?

The Educational Branch, Special Service Division, A.S.F., has thought about that. Already they have worked out, in understandable form, a method for soldiers to conquer 25 languages and dialects. In a short time there will be 15 more. These languages range from German and Japanese to Fante (Gold Coast) and Hausa. For the most part, this material is prepared to be inserted in the back of the Soldier's Information Manuals ("Short Guide to North Africa", "Short Guide to Great Britain", "Short Guide to Australia", and so forth).

But aside from this, Special Services have put a good deal of the material on phonograph records, which may be obtained by any group desiring to study a language. They are accompanied by mimeographed sheets of essential assistance in listening to the records. The sheets are divided into three parts: 1. "Hints on Pronunciation," 2. "List of Most Useful Words and Phrases," which is composed of the words given on the records. 3. "Glossary," containing words and phrases not included on the records.

The first section, "Hints on Pronunciation," presents a few simple rules for the pronunciation of vowels, consonants, and accents, and the nearest equivalent English sounds they represent. It furnishes a method of writing any language so that one representation and only one occurs for every significant sound in the language.

The second section, paralleling the material on the records, contains a list of the most useful words and phrases needed by soldiers, to be thoroughly memorized.

The third section of the language material is a glossary of additional words and phrases. These words are not given on the records, but with the aid of the "Hints on Pronunciation" and of the records themselves, it should be easy to master them.

These records and written materials do not attempt to teach the grammatical principles of a language; they do teach the soldier to make simple statements and ask simple questions. With a few hours of conscientious listening to the records, and study of the written material, a man will be able

to understand simple greetings and general phrases, to ask directions and to have a slight but practical vocabulary that will stand him in good stead when need arises.

Not only will a man feel less strange if he can understand what is said to him and pass the time of day with people of the country, or if he can ask for a glass of beer, or find out where the latrine is; but understanding even a little of the language of the country may mean actually the difference between life and death.

IN ANY event, even a limited ability to meet the ordinary social situations will greatly increase the cooperation given our troops by the people with whom they are billeted. There is probably no quicker way of proving your good intention to a man than by trying to speak to him in his own language.

The presentation of the records follow a very simple plan:

First, a word or phrase is given in English and is followed by the word spoken by a native using his own language. After a pause in which the soldier has opportunity to repeat the word aloud, the foreign word is repeated, as is the pause provided for the

soldier to repeat again. This gives an opportunity for the soldier to hear the words and phrases twice and to repeat them twice.

Vowels and consonants are given on the records with their approximate English equivalents so that the listener can imitate the sound he hears.

The introductory vocabularies are practically the same in all languages and dialects.

As a concrete example of the way in which these languages are taught, some of the "most useful words and phrases" taken from the material on Melanesian Pidgin English accompany this article.

Melanesian Pidgin is spoken in much the same way in New Guinea and through the islands south and east of New Guinea, all the way to New Caledonia. It is not to be confused with the other Pidgin—Chinese—which is quite a different language. NOTE: In general, your pronunciation of words which are the same in English and Pidgin will be understood by the natives. However, you will notice that their pronunciation might sound very strange to you. But it will not be too difficult to get on to. Pidgin has a peculiar whining sort of intonation. This is quite easy to imitate and very important. ☆

## When you mean . . .

I am an American soldier, I am your friend  
Food  
Bring some food  
Bring some drinking water  
I am hungry  
I am sick  
Where can I sleep?  
Where is the village?  
Yes  
No  
Understand  
I don't understand  
Where is  
You come and show me the road  
I want some firewood  
Bring it  
Mosquito net  
Village interpreter  
Come quickly  
Come here  
Go quickly  
Where are you going?  
Milk  
Eggs  
Native tobacco  
Yesterday  
Today  
Tomorrow  
Day after tomorrow  
Day before yesterday

## Say . . .

Me man belong 'Merica me perehn belong you  
Kai-kai  
Bring-im kai-kai ee come  
Kiss-im water belong drink ee come  
Me hungry  
Me got sick (and point to the affected part)  
Me can sleep long wuh-name place?  
Where stop place belong ka-na-ka  
Ee got; or na-wuh-name or yes  
No-got; or no  
You savvy  
Me long long  
Where stop; or ee stop where  
You come line-im me along road  
Kiss-im some pella pire-wood, ee come  
Kiss-im, ee come  
Taw-nam (particularly in Rabaul area)  
Tul-Tul ("u" as in "put")  
You come hurry-up  
You come  
Run you go  
You go where?  
Soo-soo  
Kee-au  
Brus ("u" as in "put")  
Assaday  
Now  
Tomorrow  
Hap tomorrow  
Assaday before







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

#### CONGRESSIONAL MEDAL OF HONOR

**LIEUTENANT COLONEL:** Pierpont M. Hamilton.

#### DISTINGUISHED SERVICE CROSS

**MAJORS:** William G. Benn, Algene E. Key, Allan J. Sewart, Jr.\* **CORPORAL:** Ivan W. Henderson.

#### DISTINGUISHED SERVICE MEDAL

**MAJOR GENERALS:** Lewis Brereton, James E. Chaney. **BRIGADIER GENERAL:** Laverne G. Saunders (Also Silver Star). **COLONELS:** Everett S. Davis, Uzal G. Ent, Paul B. Wurtsmith.

#### SILVER STAR

**MAJOR:** David L. Hill. **CAPTAINS:** Rob Roy Carruthers (Also Distinguished Flying Cross with Oak Leaf Cluster), Graham Gammon, Paul H. Payne (Also Oak Leaf Cluster to Silver Star), Jay P. Thomas, Manford K. Wagnon (Also Oak Leaf Cluster to Silver Star), Carl E. Wuertele. **LIEUTENANTS:** George W. Chandler, John J. Heard, Jr., John G. Hemans, John F. Hopkins (Also Oak Leaf Cluster to Silver Star), Charles E. Norton, Albert J. Progar, William H. Roe (Also Distinguished Flying Cross and Air Medal), Wayne W. Thompson, Homer W. Vail, Frank T. Waskowitz, Clarence M. Wilmarth. **WARRANT OFFICER:** Anthony A. Albino. **TECHNICAL SERGEANT:** Charles M. Noble. **STAFF SERGEANTS:** James E. Briggs, Daniel L. Cross, James F. Gates (Also Air Medal), Eino S. Hamalainen (Also Air Medal). **SERGEANTS:** William L. Hammack, Richard C. Inman. **CORPORALS:** Roger W. Ferguson, Robert A. Fries, Joseph D. Lillis, Walter E. Stephanik (Also Purple Heart and Air Medal), Joseph H. Wood. **PRIVATES FIRST CLASS:** Henry Majeski, Leroy Payne.

#### OAK LEAF CLUSTER TO SILVER STAR

**MASTER SERGEANT:** Meyer Levin. **SERGEANT:** Kenneth A. Gradle (Second Oak Leaf Cluster

to Silver Star). **CORPORAL:** James C. Underwood.

#### PURPLE HEART

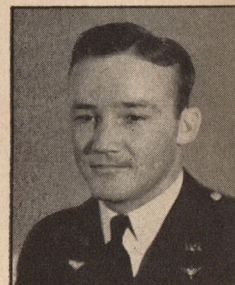
**MAJOR:** William C. Addleman. **LIEUTENANTS:** William B. Adams, Jr., Robert L. Ager, Willis W. Burney\*, Wesley E. Dickinson, Forrest D. Hartin, Elton C. Hefley, Gilbert S. Portmore (Also Air Medal). **WARRANT OFFICER:** Philip K. Head. **STAFF SERGEANTS:** Franklin E. Abbott (Also Air Medal), Lucas L. Achay, John J. Hudjera. **SERGEANT:** T. E. Roberts. **CORPORALS:** William E. Irons, Russell D. Johnson (Also Oak Leaf Cluster to Purple Heart), T. C. Luczyk. **PRIVATES:** Theodore A. Alleckson, Floyd A. Northam, T. W. Ryan, H. J. Tiffany, R. P. Vidoloff, Charles W. Wells, Hugo I. Wiener.

#### DISTINGUISHED FLYING CROSS

**BRIGADIER GENERAL:** Frank A. Armstrong (Also Oak Leaf Cluster to Distinguished Flying Cross). **COLONELS:** Hugo P. Rush, James H. Wallace (Also two Oak Leaf Clusters to Distinguished Flying Cross). **LIEUTENANT COLONEL:** John S. Chennault. **MAJORS:** Paul L. Fishburne, George E. Glober, George W. Prentice (Also Air Medal), John A. Rouse. **CAPTAINS:** John H. Buie, Walter E. Chambers, E. A. Doss, Donald J. Green, Thomas R. Jemison, Thomas J. Lynch, Bertram C. Martin\*, Albert W. Schinz (Also Air Medal), Fred E. Thompson (Also Air Medal), George B. Uhrich (Also Air Medal), Furlo S. Wagner (Also Air Medal). **LIEUTENANTS:** John D. Bailey, Joseph B. Boyle, Albert H. Burr, John A. Castle, Jack Cohen (Also Air Medal), Francis E. Dubisher, Melville V. Ehlers, Henry A. Fischer, Jr., Kent M. Fitzsimmons, Russell S. Gustke (Also Air Medal with three Oak Leaf Clusters), Frederick C. Harries (Also Air Medal), Harold Henderson, Robert M. Hernan, William G. Ivey, James T. Jarman, Paul K. Jones, David E. Latane,



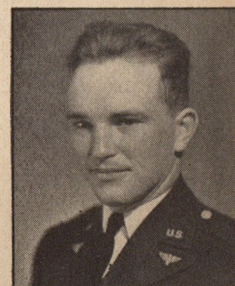
Sgt. L. C. Rambo



Capt. W. T. Cherry



Sgt. R. G. Ryan

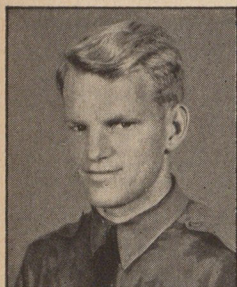


Major J. A. Rouse

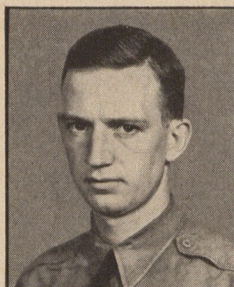
\* Posthumous.



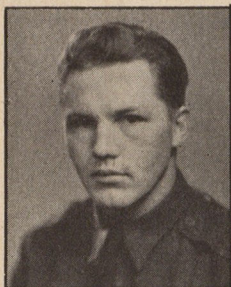
# ROLL OF HONOR



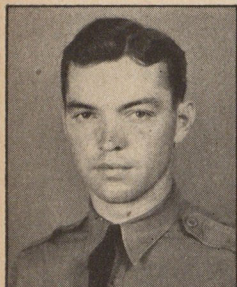
Lt. Clarence Wilmarth



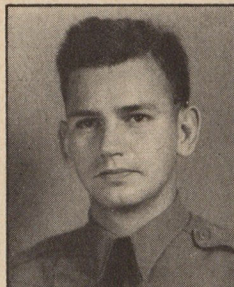
Lt. J. T. Jarman



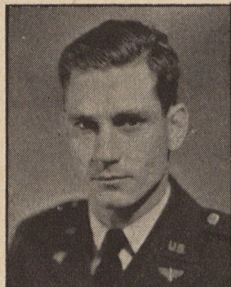
Capt. J. P. Thomas



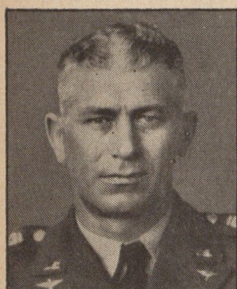
Capt. B. B. Southworth



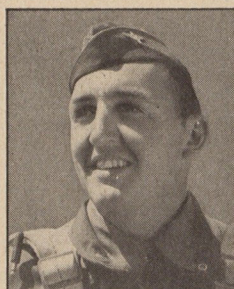
Lt. J. J. Heard



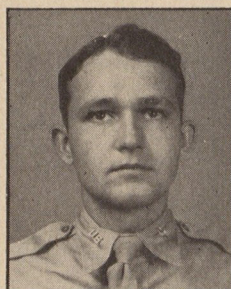
Major H. J. Holt



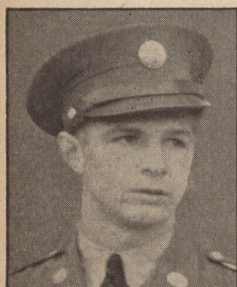
Brig. Gen. F. Armstrong



Lt. R. S. Gustke



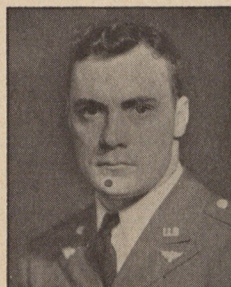
Lt. Howard M. Crow



Sgt. A. M. Blosko



Lt. Col. J. S. Chennault



Capt. J. H. Moore

Jack C. McIntyre, George Oxider, Charles W. Peterson, William R. Ross, Francis E. Widman, Marion J. Wood, Marshall A. Younkman, John Zarlengo (Also Air Medal). **TECHNICAL SERGEANT:** Chester F. Thew (Also Air Medal). **STAFF SERGEANT:** Raymond P. Legault (Also Air Medal). **SERGEANTS:** Alexander Blosko, Lewis Coburn, Donald L. Kerns, Glenn D. Norton (Also Air Medal), Charles H. Spencer, Gordon Thorpe.

## SOLDIER'S MEDAL

**MAJORS:** Frederick E. Crockett, Curtis W. Handley. **CAPTAIN:** Clarence H. Bomberger. **MASTER SERGEANT:** Warren J. Morris. **FIRST SERGEANT:** Guy G. Cope. **STAFF SERGEANTS:** Robert L. Beale, Louis C. Conner, Irvin M. Patterson. **SERGEANTS:** Harlos G. Ackerman, Hendrik Dolleman, Niels C. Jensen, Stockton W. Teague, Oran E. Toole. **CORPORALS:** Roy J. T. Harris, Donald Kent, Cecil V. Luke, Walter K. Riddle. **PRIVATES FIRST CLASS:** Ormund H. Munger, Jr., Joseph C. V. Pelletier, Salvatore Pillera, Joseph Profeta. **PRIVATES:** Benjamin W. Bay, Floyd A. Nelson, Frank M. Szunyogh, Godfrey E. Walker.

## OAK LEAF CLUSTER TO SOLDIER'S MEDAL

LIEUTENANT COLONEL Bernt Balchen.

## AIR MEDAL

**GENERAL:** Henry H. Arnold. **COLONEL:** Donald N. Yates. **LIEUTENANT COLONELS:** Milton W. Arnold, Henry V. Bastin, Jr., Robert L. Morrissey. **MAJORS:** Paul D. Brown, Harry J. Holt, David M. Jones, William P. Martin, Edward P. Myers\*, William M. Redington, Charles B. Westover. **CAPTAINS:** Richard H. Beck, Donald Blakeslee, William T. Cherry, Jr., Thomas R. Cramer, Gerald J. Crosson, Charles W. Dean, Selden R. Edner, Donald L. Gilbert, Joseph R. Holzapple, Willis E. Jacobs (Also Oak Leaf Cluster to Silver Star), William E. Kinney, John W. Livingston, Edwin A. Loberg, Robert V. McHale, Ray Melikian, John C. Nissen, Richard C. Ragle, John M. Regan, Edward W. Robinson, John L. Ryan, Billy B. Southworth, Jr., Richard D. Stepp, Henry W. Terry, Thomas J. Watson, Jr., Fred E. Wright. **LIEUTENANTS:** Robert G. Abb, Raymond L. Adair, John C. Adams, Frederick T. Albanese, Carl L. Aubrey, Edward J. Bechtold, Clinton W. Benjamin, John G. Benner, Grover C. Bentinck\*, Vernon A. Boehle, Rozert A. Booch, Guy C. Brantley, Sheldon S. Brinson, Richard C. Brown, Samuel M. Brunson, LeGrand W. Burt, John J. Charters, James A. Clark, Jr., Charles W. Cranmer, Howard M. Crow, Dean E. Delafield, Joseph Dockweiler, Joe E. Dodson, Scott S. Douglas, Robert U. Duggan, Robert D. Eames, William W. Elliott, Leo M. Eminger, Isaac L. Epperley, Jr., William F. Erwin, Roy W. Evans, George E. Ewald, Maurice Stephen Feltz, Gene B. Fetron (Also Oak Leaf Cluster to Air Medal).

(Continued on Page 38)



## "IN CASE OF ACCIDENT"

(Continued from Page 19)

standing up against a 60-foot spruce tree. It didn't look much like a plane even if they could see it. They didn't either, till the eighteenth day, and by that time we had almost given up hope. We had taken off—I mean crawled off like hurt dogs—when they found the ship. But I'll come to that later.

Mostly we stayed in the wreck under heavy covers, the first six days. I hadn't been able to find the flare pistols but did locate some warning signals like railroad fuses. When a plane was coming over, I'd light one of these and hold it out the window. But the light wouldn't even shine above the trees. We found the same trouble later when we built fires outside—the smoke wouldn't go above the forest.

During the second week we'd build a fire whenever it was clear. Dry wood was hard to find near the crash and we'd burn crates from the plane. After a time we began to wonder whether they would find us. What did I think about? Mom and Dad back in Wisconsin—they were born in Poland, you know; my girl, Eleanor, whom I met in Hollywood during basic training; my kid brother, who's in basic training now. Then I'd wake up thinking about hamburgers, and malted milks after basketball games. Or Mom's doughnuts after my cousin, Kuba, and I would return from hiking. We'd go every Sunday when I was off work at the paper mill.

A funny thing happened once. At the mill I guess I handled tons of what we called blue batting. When Alexander's fingers froze I got out the first aid kit and unwrapped the gauze. I noticed the paper wrapping was made by the mill where I had worked.

Well, on the eleventh day we thought we'd better try to crawl to the airfield. Alexander, though, was afraid he couldn't

keep up. He's older, you know, and he wanted me to go ahead alone. I didn't want to go off and leave him, but on the thirteenth day I started out, sort of on my hands and knees. I strapped my bad leg to the little toboggan-sled, which the planes carry, and put a ski on my right foot. I'd lift the sled forward with my left foot, then slide ahead on my right foot. Three times I fell down and it would take fifteen or twenty minutes to get up again. My broken leg would get tangled. About a quarter of a mile out I heard a plane testing its magnetos. The sound came from straight ahead so I thought I was on the right track. But when the plane took off it showed up to the rear, and I knew I'd been thrown off by echo. I'd been out three hours in the wrong direction. It was uphill all the way but I made it to the plane just after dark.

It was warm that day—maybe as high as 50 above. My clothes were wringing wet and Alexander made me undress. Next day, he said he'd try it with me. It was one p. m. before we got off. I took the sled, which we loaded with rations. We took four packages of dried noodle soup, seven squares of bouillon cubes and a three-inch length of summer sausage. We also took matches, a hunting knife, the .38 Colt, and extra parka for me and a leather flight jacket for Alexander.

I went ahead. I took the lead rope of the sled and tied it to my wrist. Then I fixed a strap to the rear of the sled and tied it to the same wrist. This way I could push the sled ahead with my arm as I crawled forward and yet keep the sled from getting away. I'd dig my elbows into the snow and pull forward. It worked.

Alexander used snow shoes on his hands. First day he put his arms through the foot fastenings up to his elbows, then rested

his knees on the "heel" of the shoe. This was a mistake because he skinned his knees very badly. Next day he just grabbed hold of the bindings and used the shoes on his hands to pull himself forward.

We crawled this way for four days. The Canadian Mountie and U. S. Army lieutenant who found us the morning of the fifth day said we had made four miles. We knew we were close, for the night before we'd seen a plane overhead with his landing lights turned on.

That fifth morning of the crawl we had gone 100 feet. There was a shout: "Hello there." The Mountie came through the brush and I said: "Gee, am I ever glad to see you!"

That's about all. Mac, the Mountie (Constable N. S. MacWhirter and Lieutenant Felix Davis had run across the trail I made on my false start. They traced it to the plane, then picked up our new trail which was four days old. The Mountie went off for more help and Lieutenant Davis stayed with us. Soon a plane flew over and dropped a mailbag full of rations. We fought to stuff food into our mouths. Then the rescue party came—fourteen of them—with a toboggan and sled. They pulled us to the edge of a nearby lake, where a ski-plane waited. It flew us to the field and we were put in the base hospital. Next evening we left for a hospital in Edmonton. And, boy, did they treat us good!

The newspapers always tell about the notes you leave when things look black. Well, I left one, too. It said:

"In case of accident please send baggage to Mr. Stanley Wilczynski, Nekossa, Wis. Also have baggage at Curtis Hotel, Minneapolis."

You know, I forgot to tell them where to send me! ☆



## NOTES FROM ANTILLES

(Continued from Page 23)

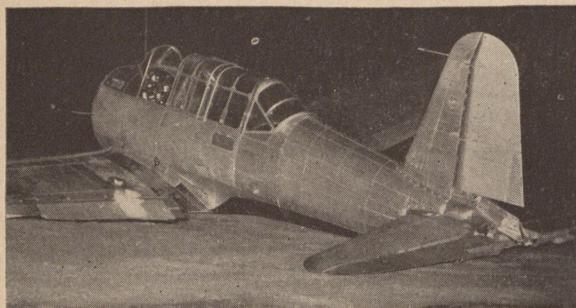
If a red pennant with white fringe flies from this pole, it indicates that the family has a virgin daughter of marriageable age; the white signifying her chastity. A large red pennant without fringe but with a smaller white-trimmed red flag under it means that a girl in the house has borne a daughter out of wedlock. A large white pennant announces a boy in the family. A small white one under a large red one tells that a girl has borne a boy-child out of wedlock. An orange flag means that papa will trade a daughter or two for a son. A purplish pennant has been called "practically an SOS signal"—a notice that the old man will sell some of his daughters for cash.

**THINGS YOU REMEMBER.** The slow but reliable, hard-working, weatherbeaten B-18s used through the islands, particularly one called "Ye Ancient Ox Cartte" . . . The

numerous hangars and engineering buildings made of palm fronds, native fibers, sheet tin, and anything else that comes to hand . . . A sign in an Air Transport Command base bar, announcing that it's the "Tuna Puna Tavern, Ltd. Main Office, Brooklyn, N. Y." Sandwiches in this tavern are offered as follows: "Hamboigers—15c; Ham—20c; Chizz—15c" . . . Young flyers, in bland disregard or ignorance of regulations, heading back to the States with monkeys, parrots, and koala bears from Down Under . . . The picturesque but unserviceable paper money—gook money—used in many of the British West Indies . . . G.I. truck drivers airily driving on the left in those same B.W.I.s as though they'd been born to it . . . A tennis court on one island made of bauxite, which is 50% aluminum. So plentiful is bauxite ore that natives use it as gravel to build roads . . . The

varieties of rum drinks—rum-and-coke, rum-and-soda, daiquiris, frozen daiquiris, rum-swizzles, planters punches, and just plain rum—that are the vogue in the Caribbean . . . The familiar story that one island, plagued with snakes, imported mongeese to kill the snakes. Now there are no snakes but the people don't know how to get rid of the multiplying mongeese . . . A sight from an airplane in a sunny tropical rain—the shadow of the plane on a cloud below, encircled by a rainbow. Sometimes called the Pilot's Cross and supposed to be lucky . . . Businesslike transport planes on their way to Africa, loaded to capacity and then some . . . The many men who have been in the Antilles for two years or so, and who have missed a good many boats, eager to know how things are back home . . . And, above all, the morale of these same men. Doing a hard, vital yet unsung job, and doing it cheerfully. You hear as much spontaneous singing in the Antilles as anywhere in the Army Air Forces. ☆





Usable sections of a wreck . . .

## Pre-Fabrication Speeds Repair

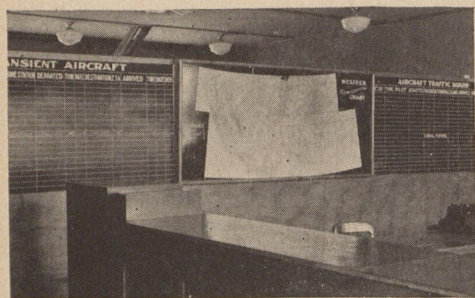
At Perrin Field, Texas, Major Douglas Soper and his civilian mechanics of the 98th Sub-Depot have developed what they believe to be a new method of quickening repair work on damaged aircraft. Briefly, this is an adaptation of the familiar production line technique—prefabrication.

Sub-assemblies are put together from airplane parts salvaged from previous crashes and repaired. These assemblies, completely rebuilt, are set up on cradles and held in readiness for further needs.

This method is said to be so successful that a Vultee basic trainer—the type of plane serviced by the Sub-Depot—was returned to the flying line only 28 hours after suffering major damage in a forced landing.

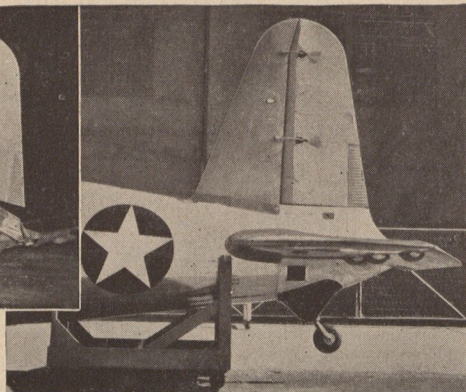
As shown in the photo above, taken just after the crash, only the fuselage was usable. Major Soper's crew hauled out their prefabricated assemblies, put the rebuilt plane together, gave it an hour's slow time on the engine, test-hopped it and returned it to service.

To the obvious objection that prefabrication ties up parts, Major Soper replies that when individual parts are needed they can be removed from the assemblies. Then, when damaged parts are repaired, they replace those taken from the assemblies.—**Perrin Field, Texas.**



## Large Scale Weather Chart

A chart (above) showing contact, instrument or closed weather conditions at principal airports in a large area—thought to be the first of its kind in the Air Forces—



. . . become prefabricated parts.

has recently been installed in the Dispatcher's Section of the Post Operations Office at Merced Army Flying School, California, by Lt. Col. P. O. Brewer, Operations Officer.

The value of this "Weather Flying Condition Chart" to the pilot contemplating a cross country flight is apparent. He can determine conditions in advance for his entire trip and choose the proper route, according to the safety of conditions in certain localities.

The chart is made of black sheet iron. Four regional maps are pasted on it, and plastic letters are used to designate conditions—"X" for closed, painted red; "C" for contact, painted blue; "N" for instrument, painted black. On the under side of each letter is a small magnet which makes it stick to the chart. Changes in the hourly weather sequences, if any, are indicated on the chart as they are received from the Weather Officer. On this page is a photo of the chart as it appears in the Operations Office.—**Merced Army Flying School, California.**

## Hollow-Steel Props

Erosion of propeller blades from dust, sand, mud, gravel and water thrown into the propeller disc by the nosewheel of airplanes has been practically eliminated through development of the hollow-steel propeller blade.

In addition to superior erosion resistance, the hollow-steel blade is lighter than large-diameter wood propellers and permits use of small compact hubs; its torsional rigidity is greater than any other type. Damaged blades can be repaired readily with a comparatively small amount of equipment. Service life of these blades is believed to be unlimited.

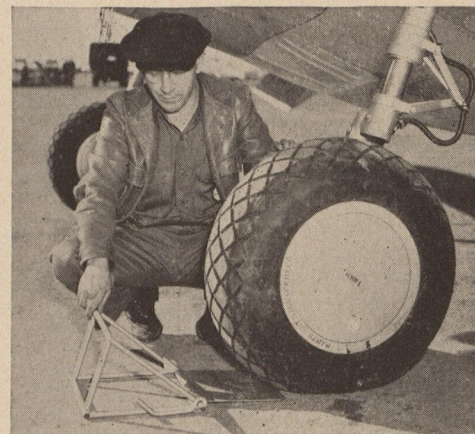
The United States, it is believed, is the only nation having hollow-steel propeller blades in production.

Four large factories have been in quantity production for some time on three different types of hollow-steel blades—all developed by Army Air Forces funds. A fifth

factory is ready for production of a new type of flash-welded construction, invented and developed under the supervision of Materiel Center, Propeller Laboratory engineers.—**Wright Field, Ohio.**

## 98th Invention

Earl C. Gregg, 44-year-old senior machinist in the sub-depot of the Enid Army Flying School, Oklahoma, has to his credit 98 time- and labor-saving devices—last of which is a new type airplane wheel chock which operates mechanically. Made of bar steel, it has a steel apron which becomes an anchor to prevent the aircraft's wheel from sliding either to the front or to the back while the engine is being warmed. This chock will soon replace the old wooden block at Enid.



Automatic wheel chock.

Gregg (above), whose walking has been impaired since he was six years old, was formerly operator of a machine shop in Enid. Three of the inventions he has submitted to the government are reported to be now in the experimental stage. One is a new type bomb, another is a motorless torpedo, and the third is a magnetic ship lock.—**Enid Army Flying School, Oklahoma.**

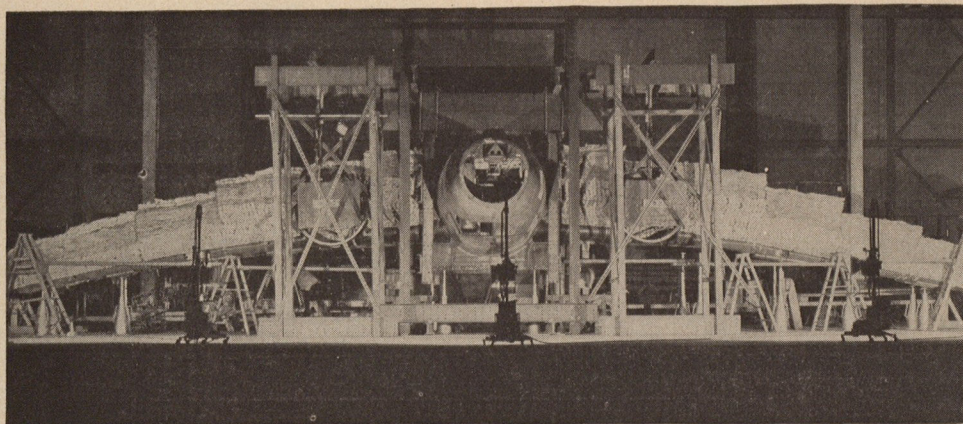
## New Rescue Aid

A new rescue aid of the Army Air Forces now being packed in all life raft emergency kits, is a yellow-green fluorescein dye that can be seen for many miles when spread on the water.

Packed in metal cans and paper envelopes, the dye can rapidly be scattered on the surface to attract the attention of friendly aircraft.

This dye also is used in Mae West (B-4) Life Vests. It is enclosed in a small packet that is cemented between the inflatable envelopes of the vest. Upon contact with the water the packet and dye dissolve, coloring the water for a large area around the survivor.—**Wright Field, Ohio.**





## Static Test on B-26c

More than sixty tons were stacked on the wings of this B-26c bomber (above) while undergoing tests in the Static Test Building of the Aircraft Laboratory, Engineering Division, Wright Field.

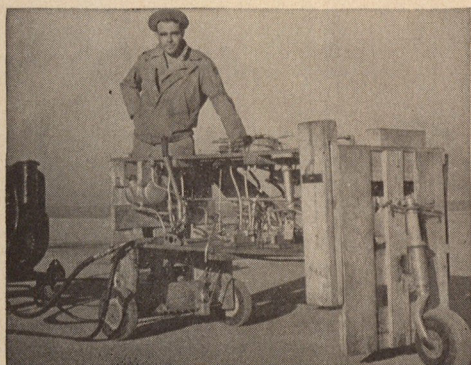
When the picture was taken, the wing load was 25 per cent more than the maximum load for which the wing was designed. Maximum load under Materiel Center specifications includes a suitable margin of safety to protect plane and pilot in maneuvering and in unusual emergency conditions.

The test was conducted from a positive low angle of attack condition to determine maximum overload possible on this type of plane. The test was one followed to destruction and is typical of tests conducted by the Aircraft Laboratory on plane components.—Wright Field, Ohio.

## Mobile Test Bench

Men of the 28th Air Depot Group at Stinson Field, Texas, have developed a mechanical monstrosity known as the "Hydraulic Jeep" (below), which is proving useful as a trouble shooter.

Whipped together from spare parts lying about the hangars, this contraption is a mobile test bench which can be moved right



out onto the flying field and hooked up to the hydraulic system of any airplane. It will locate the trouble instantly, thus obviating the necessity of taxiing the plane to a hangar.

The front wheel of this gadget is really an old tail wheel from a discarded airplane. It is not only connected with the steering gear but is retractable, permitting the bench to lower itself to the ground for stability. The "rear wheel construction" is made of a fabric material coarse enough to provide excellent traction on any field's surface.

The enlisted men who designed and built this device are Privates August Canney, Paul Kahn, William D. Cooney, Sam Durfee, Herbert Doershuk, Bernard Lawrence, and Bob Hirschback. All are under the command of Captain Fred A. Deyo, Engineering Officer, who has previously contributed to Army Air Forces inventions by perfecting a bomb-loading device now in general use.—Stinson Field, Texas.

## Heated Surface De-icing

Although not new in principle, heated surface de-icing systems have been satisfactorily installed on most types of Army Air Forces planes. Advantages of the new de-icing system are simplicity of control, as compared with the rubber boot de-icer commonly used, and the conservation of large amounts of critical rubber.

The heated surface system conducts exhaust gas through an air exchanger. Cold air, which is picked up by a ram usually located behind and within the radius of the airplane propeller, is passed across or through the heated air exchanger. It is then carried in ducts along the leading edges of the wings and empennages. The air, after losing its heat, drifts toward the trailing edge of the air foil where it is exhausted.

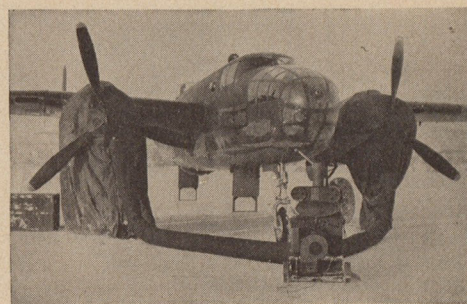
The system can be operated continuously during flights in which the formation of ice is considered possible, thereby relieving pi-

lots of the necessity of looking carefully for ice formation on airfoil surfaces, as they must do with rubber boot-type de-icers.—Wright Field, Ohio.

## Preheating Saves Time and Engines in Arctic

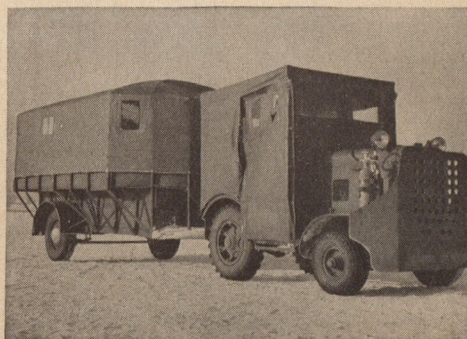
Army Air Forces fighting ships based at Alaskan airfields are now being preheated by gasoline-fed heaters. Motor-driven fans blow hot air through pipes to the vitals of the engines, and the heat is confined to the points at which it is needed. Engines are brought to the proper flying temperature in from 15 minutes to an hour, depending on the degree of the outside cold. In temperatures frequently far below freezing, this method saves time as well as wear and tear on parts. In extreme cold, engines can not be turned over until properly "cooked."

Below is a B-25 North American Mitchell bomber being prepared for service, its engines swathed in padded canvas hoods.

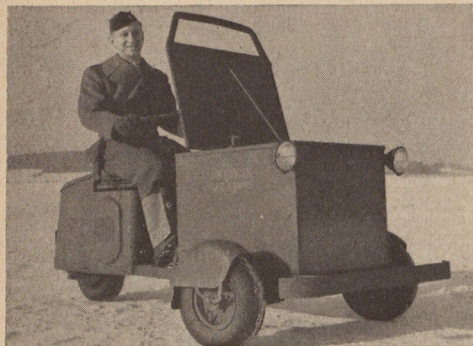


## New Model "Cars" at Dow Field

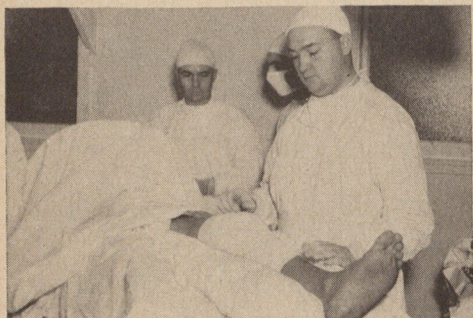
1 . . . Eighteen mechanics, complete with working equipment, can be transported to jobs around Dow Field, Maine, on the time-saving vehicle (below) designed by men of the 332nd Sub-depot. A canvas covered trailer is towed by a conventional Clark tug. Over-all length of the trailer is approximately 24 feet. The canvas is supported by horseshoe-shaped ribs, both of which can be removed in summer so that a larger load can be accommodated.







2 . . . Lt. George Van Laethem (above), of the 332nd Sub-depot, Dow Field, rides a scooter rigged with a "windbreaker" to take the edge off Maine's winter winds. The windbreaker, used on auto-gliders or scooters, is of simple construction, incorporating a framework of half-inch round stock in two rigid sections, the lower half being covered with canvas, the upper half having a light grade of plexiglas sewn into a canvas border for proper driving vision.



Capt. F. M. Lyle operates before the camera.

### Surgery Movies for Instruction

Captain Francis M. Lyle, of the Base Hospital at Wendover Field, Utah, has instituted a policy of filming important surgical operations performed at the hospital. Education and training of enlisted men students will be greatly facilitated through use of these films, for they show pictorially details which otherwise might require hours of oral description.

First operation to be filmed at Wendover (above) was an operation on Corporal William Woznak of the Repair Squadron. While carrying an anvil, Corporal Woznak suffered a torn cruciate ligament and a mesial semi-lunar cartilage. A 45-minute operation was photographed from beginning to sewing of the last stitch by Corporal Norman M. Germond.

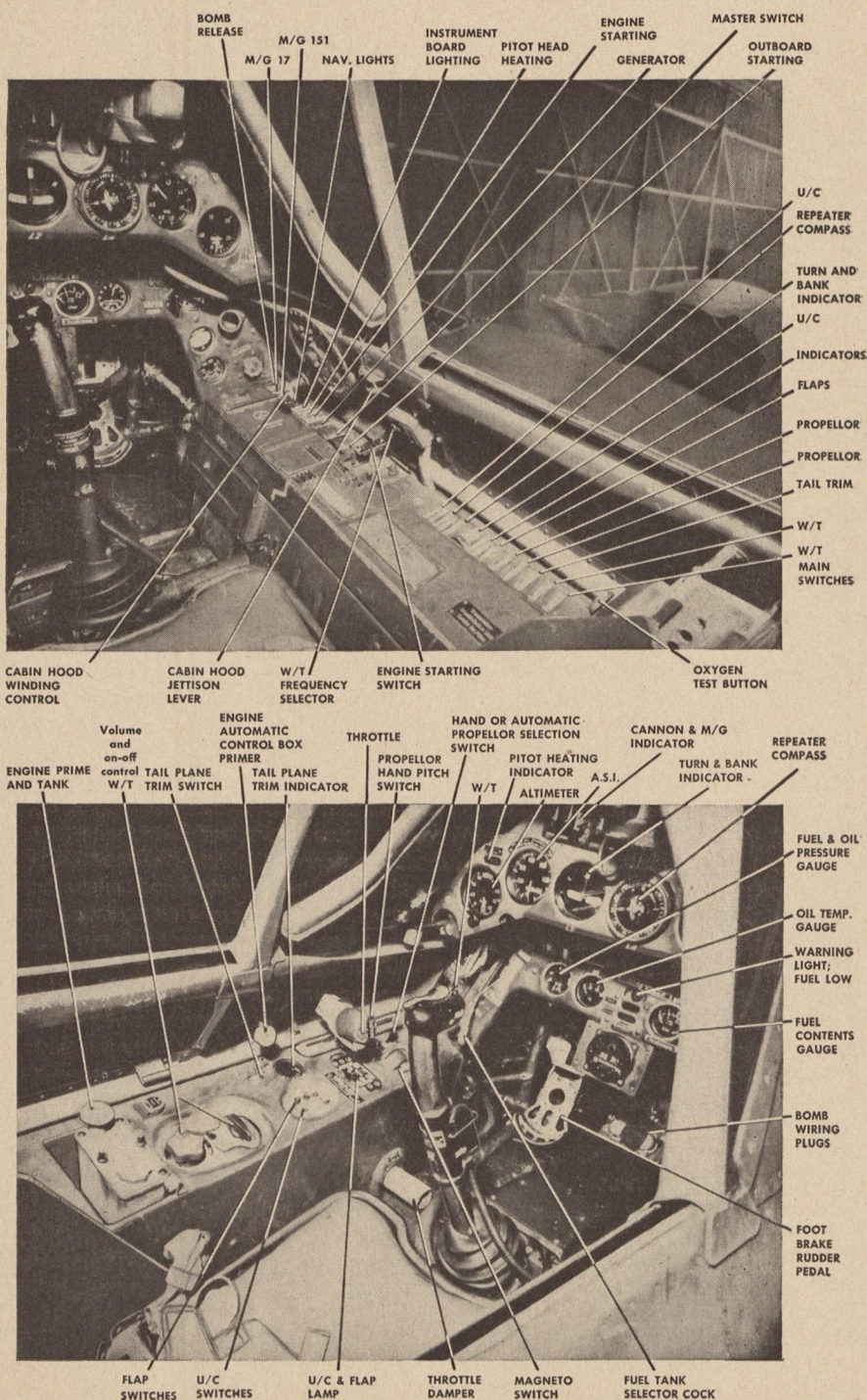
While first films have been black-and-white, Captain Lyle intends to try color film shortly. This, he says, "should add immeasurably to the clarity of the record."

Wendover Field, Utah.

AIR FORCE, May, 1943

### Closeup of the Focke-Wulf 190 Cockpit

The capture of enemy aircraft in salvageable—sometimes flyable—condition has proved an invaluable aid to our engineers in determining designs and adjustments in our own aircraft which will make them superior to those of our adversaries. The photos below show the cockpit of the FW-190, with the various instruments labeled in English. Pilots of this German fighter have fewer instruments to work with than pilots of the average American fighter plane.

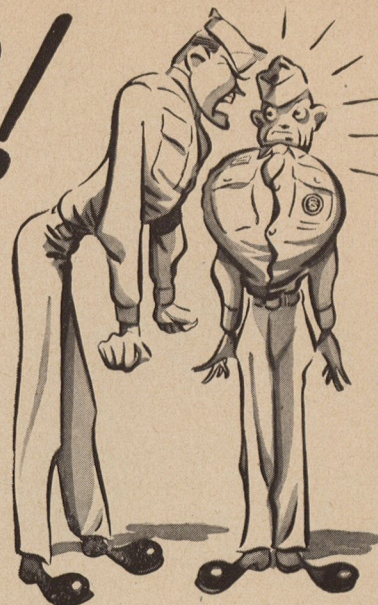




# Look Proud Mister— *You're at O.C.S.!*

*By Lieut. William L. Richman*

HARLINGEN GUNNERY SCHOOL, TEXAS



WHERE is the Coral Sea? . . . What's the difference between a Springfield and an M-1? . . . What makes you think you'll make a good officer? . . . How high is up?

It didn't make a bit of difference to the Board of Officers seated around a large table who you were, where you came from or what you did in private life, or how much money you had.

I was lucky. I knew the right answers—at least some of them. I decided before I walked into that room that I wasn't going to try to outsmart them. I made up my mind, scared as I was, that if I didn't know the answers I'd say so. Hell, I hadn't cracked a newspaper or listened to the radio once during the ninety days of basic it took me to learn how to tear apart the bolt of a Springfield rifle; how to adjust and remove a gas mask in 20 seconds; the I.D.R. and its various complications; a complete course in K.P.; "How to G.I. a latrine", and a million other things a soldier needs to know.

There wasn't an easy moment learning how to be a soldier. And strange as it may seem I enjoyed every minute of it. My delicate stomach disappeared. I no longer had any need for or used the saline preparations my wife tossed into my bag when I walked off to join the Army of the United States.

I left our little farm house, sixty miles north of New York City, early the morning of June 2nd, 1942, after kissing my wife and 11-months old baby goodbye. This war wasn't going to be a glamorous adventure for me—wings and all. I knew it meant hard work. And after sitting in a law office for more than fifteen years, I was frightened at the prospects of hard work. But I had to go and my wife knew how I felt.

Who is the Commander of the British Army in Africa? . . . Where are the Solomon Islands? . . . How come you left a wife and baby to join the Air Corps? . . . How long have you practiced law? . . . So you were in the Connecticut National Guard? . . . How many hours can a soldier fight aggressively with a gas mask on?

When I boarded that train to the accompaniment of the Post Band, I was with a bunch of kids 15 years my junior. We had

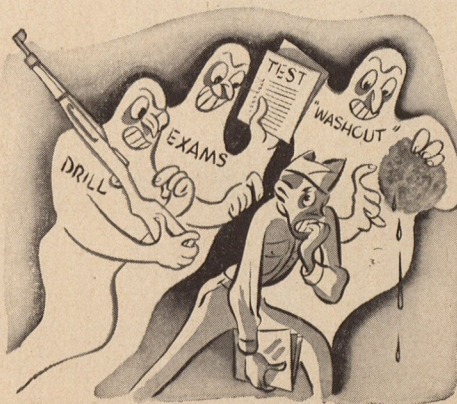
taken the oath of allegiance and been put through the induction wringer in New York. Now we were on our way, and we didn't know where we were going. My heart pounded and my knees shook. I thought I was thrilled. Maybe I was scared.

WHEN would I see my family again—if ever? Who's responsible for these god-damned wars? Isn't it possible that after this thing is over we'll be able to move into the driver's seat—and hold the reins?

Thirty-three hours later we stretched tired legs on the platform at Miami, Florida. The town looked good again. I was glad to get back. It would be nice, I thought, to renew old friendships made on previous pleasure trips. Maybe I'd play a little pinochle. If you can't play pinochle, don't get assigned to Miami.

It was beastly hot. I sweated like a pig. They gave me salt tablets. They marched me to the golf course that I knew so well. I didn't play golf. I marched in squares—and wound up in circles. Five long hot hours each day. We stood in lines two blocks long for a gulp of warm water during the ten-minute breaks each hour. I developed the most beautiful set of blisters ever seen in the United States Army. And when it rained! Well, we just plowed through water up to our knees, soaking wet, steaming hot.

ILLUSTRATED BY  
LIEUT. WILLIAM B. LENT,  
O.C.S., Miami Beach, Class 43-B



I pulled K.P. on my birthday. The boys gave me a little party just before the dinner rush, presenting me with an officer's belt and a carton of cigarettes. After that they sent me to the kitchen and I washed and rinsed food trays until eight that night. We marched back singing—my voice the loudest in the formation. I washed windows—millions of them. I "G.I'd" the beautiful hotel floors until the skin wore off my hands. I lost that excess fat quickly. They waste no time at Miami Beach. For the first time in seventeen years I felt as I had when a buck private in the Connecticut 102nd Regiment, Inf.

The Army succeeded where private masseurs had failed. I was slowly getting conditioned without knowing it. I was eating twice as much food as I had at home, and enjoying it. It was good to regain the feel of a gun again and I knew deep down in my heart that I was once again a soldier. I shed twenty pounds; my waistline slid from 37 to 30 inches. My corns disappeared and my G.I. shoes embraced my feet with loving care. I learned how to be a soldier at Miami Beach. My next job was to learn how to be an officer.

The Board accepted my frank statement when I said that I would become a good officer. I convinced them I was honest when I declared that I was satisfied that I had become a good soldier.

On September 18th, 1942, they made me a corporal. On the same day we marched from our headquarters up to O.C.S. Ten short blocks. God, we were happy and proud! We were accepted by the board—and that was really something. We had heard weird and fantastic tales about O.C.S. Miami Beach. But we were good soldiers—tested and found qualified.

"Processing" they call it. But we sweated it out. And what an experience!

"Sound off, Mister!"

"Let's see your shoulder blades touch!"

"Throw your chest out!"

"Suck your gut in!"



## A graduate of Air Forces school at Miami Beach looks back over his "pop-to" days.

"Reach for the ground!"

"How old are you?"

"37? Good, let's see 37 wrinkles in your chin!"

You draw your chin back until you see black spots before your eyes and you gasp for air. To another chap: "So you were a first sergeant, eh? Well, listen, Mister, stripes don't mean a thing around here. Get them off!"

"From now on you're Officer Candidate Jones!"

"Look proud!"

"Don't you like it here, Mister?"

Indignation raged in my breast. I wondered if all this was worth it. I was about to say the hell with it when a brand new second looie, finding out I'd enlisted, leaving a wife and kid back home, whispered in my ear: "You're a good man, soldier, you have more of a right being here than I had".

That remark cheered me up. I really "popped to". It didn't matter that my chest was on fire and my back was breaking. I began to realize that there was a purpose behind all this "nonsense". They wanted to see whether or not "you could take it". They didn't propose wasting their time or the government's money training officers who might, at some later date, quit when the going got tough.

I got a big kick when Officer Candidate Clark Gable, Class 42-E, "braced" me. Make no mistake about that man. He may have been the great lover on the screen. At O.C.S. Miami Beach, he was every inch a soldier.

Mess Management (with the gnawing fear that you might wind up a mess officer); Supply; Administration; Military Law; Identification of Aircraft; Structure, Terminology and Theory of Flight and three dozen other subjects were thrown at you until you were dizzy. "Fizz-ed" with its obstacle course which left your muscles aching and your lungs pounding against your ribs; burpees; side-straddle hope; arm, shoulder and leg exercises. They really gave you a work-out, make no mistake about that.

Time passes unbelievably fast. Before you know it your fourth-week marks are posted and you find out for the first time where you stand. You either ease up a bit or

tighten up. You can't and don't relax. The day just isn't long enough. Ten minutes to fall out for reveille at five in the morning—and they don't mean eleven minutes. More than likely Colonel McNair or Colonel Nelson or Major Lewis or our "house-mother", Lieutenant Jack Sullivan, might be observing the formation from the shadows.

And how they could make soldiers! I remember vividly how big Sully, a graduate Air Mechanic, with five days drill under his belt, arrived at O.C.S. Miami Beach and wound up a Group Commander in the Corps. It was a pleasure to watch his march. Nothing finer ever came out of West Point.

I plowed along. My "furrows" remained even. I did everything asked of me. I stood rigidly at attention for 45 minutes or so at



every retreat formation, never taking my eyes off the neck of the officer candidate standing equally as rigid in front of me. I often became oblivious of my surroundings. My mind would wander off. I'd try to think of my wife and baby. I wondered whether or not my mother was feeling any better. I wondered if I'd ever get to Australia or Africa or Europe.

I'd glance out of the corner of my eye and see kids "passing out." At O.C.S. the only way a candidate can leave a retreat formation is to be carried out. When Major Lewis heard that some of the squadrons were using spirits of ammonia to keep the boys from "peeling off," he hit the roof.

Before I knew it I became an upper-classman. I put shoulder straps on my khaki's

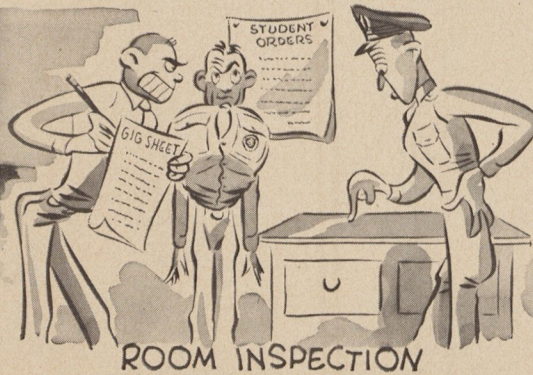
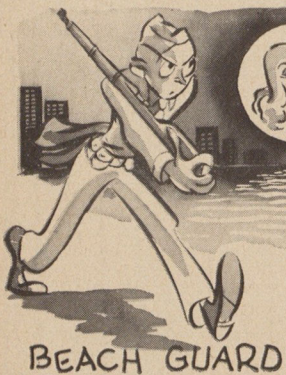
and had the "hours till graduation" counted off for me by the under-classmen. I glanced at the eighth-week marks apprehensively. I was curious to know whether or not I slid a few hundred places or was holding my own. I started to figure out my chances of escaping the "washboard."

At that point you know whether or not you can ease up just a bit or really start worrying. And the powers-that-be cooperate beautifully. They let you go out and order your uniforms, and the stimulant is exhilarating, but you've just got to make the grade. That swell-looking uniform you tried on is waiting for you. You don't dare get careless. You are cautioned, cajoled and beseeched by your Tack Officer not to let down. You go into the home stretch with dreams of covering yourself with glory in some theater of operations. By this time the metamorphosis has set in. You're suffering from "delusions of grandeur."

THE classification department tries to find out where you're best suited and fit you into the job you'll like. You knock your brains out trying to convince them that you're just right for combat intelligence. You're turned down. Too old or too many dependents or something. You hear that they're accepting applicants for aerial observers. Once again you forsake your dinner, dash up there, file an application and once again you're turned down. So what? So you start wondering.

For a while you feel sorry for the boys who "washed out." The orders of the day like to refer to these unfortunates who couldn't quite make the grade as "eliminees." The word sounds less harsh; the pain and disappointment remains. You move about feverishly to clean up odds and ends. By this time your marching pleases the West Pointers who run the school.

"Unfortunately," I missed the "dry run" the day before graduation. There was a little matter of walking a two-hour punishment tour that had to be disposed of—and my luck held out to the end. I squared accounts between 1500 and 1700 o'clock Tuesday, December 8th, 1942. The "dry run" was scheduled for 1700 o'clock the same day. The squadron marched off at 1645 o'clock. I got back to my billet at 1705 and at 1715 the heavens broke loose and for the next two hours, while my room-mates were rehearsing a "dry run" in a torrential down-pour, I was reposing peacefully—stretched out on the carpeted floor—sound asleep.





Yes, my luck held out to the end. That night we were honorably discharged from the Army of the United States. Despite the fact that we were civilians once more the authorities thought it might be a good idea if we remained their guests for the night. They confined us. Their reasoning was very sound. Lots of the "civilians," including myself, were just about ripe for a real "package." We didn't get a chance that night.

The next morning the underclass took over and marched up to the parade grounds. The stands were filled with proud wives and relatives. The entire corps passed in review—36 squadrons of upper-classmen about to be commissioned en masse, and their underclassmen, equally happy to move up into our places and dreaming of their brief moment in the sun six weeks hence. We were told afterwards that we marched like West Pointers. A greater compliment could not have been given us.

After the review, the under-classmen marched away to their own duties and problems. We were put at ease. Speeches were made, medals presented, and for the first time in 12 weeks we relaxed. We were strong and tanned and healthy. The strain and pressure left us, and with it disappeared the fatigue of 12 long arduous weeks.

A few minutes later we became Second Lieutenants (Temp) in the Army of the United States.

My wife persisted in clinging to my arm as we slowly strolled back toward by quarters. She shared in my happiness and I was happy for her. She was not only a Lieutenant's wife, she was a soldier's wife! All around us brand new Lieutenants were feeling proud and strong. Some had already blossomed out with their bars and insignia. Their exuberance knew no bounds.

Just as I was about to enter my hotel, we bumped into a sweet kid from New Hampshire who had worked with me when we were both privates. He had qualified as an Aviation Cadet and was awaiting appointment. He tossed me a snappy "highball." I told him I knew of no finer person to earn that dollar for the time-honored and traditional first salute. He asked me to autograph that dollar bill and said that he would cherish it as a good luck omen when his turn came to "soar into the Blue."

My orders directed me to report to the Commanding General of the Gulf Coast Army Air Force Training Center. From there I was fortunate in being sent down to the Harlingen Army Gunnery School at Harlingen, Texas.

Every Saturday afternoon I watch these youngsters, their new silver gunner's wings glistening in the Texas sun, march off to the railroad siding to keep their rendezvous. I go back to my desk, heave a sigh and continue to initial W.D. Q.M.C. Forms #33.

Despite the fact that I'm a victim of "delusions of youth," I live for that day when I'm ordered to foreign duty. I hope that day comes real soon. I'm getting restless as hell. ☆

## ROLL OF HONOR

(Continued from Page 31)

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### OAK LEAF CLUSTER

#### To Air Medal

**MAJOR** John W. Weltman. **CAPTAINS:** Leo G. Clarke, Jr., Joel A. Owens, Jr., Theodore H. Runyon.

### THE LEGION OF MERIT

(In the Degree of Officer)

**CAPTAINS:** William E. Dyess, Joseph H. Moore. **MASTER SERGEANT** Edwin A. Logston.

### CITATION

#### 11TH BOMBARDIER GROUP

(As announced by War Department)

"The 11th Bombardment Group (H), United States Army Air Forces in the South Pacific, is cited for outstanding performance of duty in action during the period July 31 to November 30, 1942. Opposing the full force of the numerically superior Japanese with all available aircraft, the 11th Bombardment Group participated continually in attacking the enemy in his efforts to obtain a stronger foothold on strategic territories. Heavy damage was inflicted on Japanese airfields, storage and supply areas, seaplane bases, docks, troop positions and other installations. In addition, the action by this group resulted in the sinking of four enemy ships, the damaging of fifteen and the probable damaging of nine others. Throughout its operations, the group was faced with extremely difficult problems of logistics, airdrome improvement, and the necessity for long, hazardous overwater flights to reach enemy objectives which frequently were located at extreme flying range of its bombardment airplanes. The superior courage and devotion to duty shown by combat crews and ground units of this bombardment group is in the highest traditions of the United States Army and will always be worthy of emulation."

This award entitles the group to have a streamer for its colors and flag as well as a silver band for its guidon. After an organization is cited twice, its members wear a decoration of a blue ribbon in a gold-colored metal frame of laurel leaves.

This is worn by officers and enlisted men if they were members in either or both actions for which the organization is cited. Members with the organization who were not attached during either occasion of citation may wear the decoration only so long as they are a member of the organization.

### PICTURE CREDITS

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### CORRECTIONS

In AIR FORCE for March, 1943, the Foster Field (Tex.), skeet tower pictured on Page 35 was incorrectly located at Jackson Field, (Miss.), and in the AIR FORCE Quiz answers on Page 40, same issue, the Messerschmitt 110 was identified as a two-seat fighter. Actually, the plane accommodates three, but in combat the crew is usually limited to two.



# How to Keep Well in the BURMA THEATER

Brigadier General David N. W. Grant

## THE AIR SURGEON

The following is the fifth of a series on health conditions in the various theaters of operation—  
(THE EDITOR)

BURMA is an interesting country and a most beautiful one, but under the surface of handsome pagodas, lofty mountains, dense jungles and deep rivers lies one of the most concentrated collections of hazards to the health of man that exists on this earth's surface.

One can enumerate on the fingers of the two hands the communicable diseases that have *not* been reported from this area. The recognition of disease and other dangers will be of great importance to American troops operating in Burma. However, modern military medicine, especially military hygiene and sanitation, as now taught in the Army, has been developed for the sole purpose of keeping men well and fighting in just this kind of a country.

Prior to the Japanese invasion of Burma, the British had established European communities in the larger cities. But practically all of the facilities of these European communities are said to have been destroyed either at the time of the Japanese occupation or, subsequently, by allied bombings. The native quarters of the towns and the rural districts have been little affected by the white man, and the people exist in much the same state of culture as they did 200 years ago.

In other words, the American will find none of the modern sanitary devices that he is accustomed to at home, especially such things as municipal water works that produce pure water, or sewage disposal plants. He will have to rely upon the fundamentals of military hygiene and sanitation to protect him from disease. It will be necessary for each individual to appreciate the necessity for maintaining the same strict sanitary precautions that are enforced in the environs of all military installations, and to apply them wherever he may be.

Malaria is the greatest single cause of death among the Burmese. It occurs

throughout Burma even at heights of 4,000 feet or more in the mountainous districts. It is the most important disease in the whole area, and in many districts 100 percent of the people are infected. Because troops suffering from malaria cannot operate efficiently, every precaution should be taken to avoid the disease.

Each man should have a thorough knowledge of the various methods of protecting himself from mosquitoes, not only from the malaria carrying type, but also from others. Dengue and filariasis (mosquito borne diseases) occur in Burma, but are carried by different types of mosquitoes. He should know the value of the mosquito net, how to use it, and care for it. He should consider it an essential piece of his equipment and should keep it available at all times.

The malaria mosquito usually bites at night. However, it may be encountered during the day time in dense jungle or shaded mountain valleys; therefore, when it is necessary to go out of doors at night, or to operate in a mosquito-infested region, long sleeved shirts buttoned to the neck, long trousers tucked into boots, and head nets and gloves should be worn. It is best to stay under a mosquito net as much as possible after dark if there are no properly screened buildings at hand.

AVAILABLE insect repellents are of little value for more than a few minutes, especially if the individual is sweating, so too much reliance can not be placed upon them. Because so many natives are infected with malaria, and can act as reservoirs of the disease, and because mosquitoes capable of carrying malaria are usually found in the vicinity of human habitation, it is best to avoid towns and villages, especially at night.

In many parts of Burma the Medical Officer will recommend that the suppressive or prophylactic treatment of malaria with either quinine or atabrine be used. This method of treatment does not prevent malaria in the true sense and thus can not take

the place of the previously mentioned precautions. However, it does suppress the symptoms of malaria and thus allows a man to carry on until the military tactical situation permits hospitalization. When suppressive quinine or atrabine treatment is once instituted, directions must be followed explicitly; otherwise it may do more harm than good.

As mentioned previously, the people have little knowledge of, and even more important, little regard for modern sanitation. They carelessly deposit garbage and human waste in the streets, in the fields and along the banks of streams, and, as a consequence, Burmese towns have a distinctive odor and characteristic sight. Buildings not only serve as dwelling places for the family, but also for pets and domestic animals. Many houses have granaries for the family rice supply, which usually attracts rats and other rodents.

Because the rate of exchange is favorable, and because wages are so low in this part of the world, Americans frequently hire native boys to cook, run their errands, do the laundry, and perform other menial tasks. These boys may appear clean and may be intelligent. However, do not trust their knowledge of sanitation and hygiene, for their customs will be the same as their forefathers. Personally supervise everything they do until you have thoroughly trained them. Be sure that the medical officers say that they are not infected with a communicable disease. Be sure that they know enough to wash their hands with soap and water whenever they are soiled. Be sure they prepare your food exactly as Army doctors prescribe. And above all, be sure that the supplies that they purchase for you are safe.

There is an adequate amount of water in most parts of Burma. However, it can never be considered safe for drinking until treated. Dysentery, typhoid fever and cholera are common diseases in Burma, where they are usually water-borne. Because of the presence of these deadly diseases, only water



that has been treated by appropriate Army personnel should be used.

Since such water may not be available at times, every soldier operating in this area should know one or more methods of purifying water (FM 21-10). If he has no chlorine or iodine he should always remember that boiling water is one of the easiest and surest methods of purifying it. Under battle conditions it may be impossible to spend very much time purifying water. And since the wet, humid climate of Burma will cause copious sweating on the part of an active man, each soldier should have a thorough knowledge of the conservation of water. Men have lived on a quart of water a day for many weeks even when that quart had to be used for all purposes, but, in order to get the full benefit of such a small amount of water it will be necessary to form certain habits.

It is well to become accustomed to drinking small amounts of water slowly, or moistening the mouth and throat frequently with sips of water, and to drinking only at set intervals. Smoking and chewing tobacco increase thirst, while chewing gum or sucking on small pebbles stimulates salivation and thereby decreases thirst. It is essential for the body to have a certain amount of salt, but when one perspires profusely much is lost in the sweat. Unless this salt is replaced by taking salt tablets or by adding additional salt to the food, heat cramps and possibly heat exhaustion will result.

Even though flies and other insects exist in great numbers, there are few screened buildings in Burma. Foods in markets and kitchens are not protected, so it is easy for flies to move about at will from the manure pile to the food of man. Every precaution should be taken to combat flies. Flies that have been in contact with the wastes of persons suffering from the intestinal diseases (typhoid fever, dysentery and cholera) can carry these diseases to man.

Native fruits and vegetables are dangerous, for they are commonly raised in soil that has been fertilized with human waste, or washed in polluted streams. The safest rule is to eat only thoroughly cooked foods. Soaking fruits or vegetables in potassium permanganate solution is not satisfactory unless they have been soaked for a minimum of four or five hours. Thick skinned fruits should be peeled only by oneself and even then it is best to dip them in boiling water for a few minutes before peeling. There are very few dairy products in this area, and those that do exist are not safe to eat.

One should form the habit of never walking about barefoot. Fungus diseases, such as athlete's foot and dhobie itch are very prevalent in this area. They are not usually fatal but can cause sufficient trouble to cripple a man and thereby make him a liability to a fighting team. These diseases are easy to prevent if care is taken to bathe frequently. Dry all parts of the body thoroughly with your own towel, not with a towel that has been used by someone else.

Be especially careful to dry between the toes, in the groin and under the arms. Dusting the body with powder, such as Army issue foot powder, and changing to dry clothing as often as possible are additional methods of preventing these diseases.

Fungus diseases easily can be transmitted from one individual to another, when the clothing of a man suffering from a fungus infection is washed with the clothing of others. It is therefore best to do one's own laundry or to always boil the clothing. Hook worm is another disease prevalent in Burma that can be picked up by walking about barefoot. A pair of bath slippers made of wood and some string is a great help in preventing both of these diseases.

The jungle country of Burma is inhabited by many obnoxious insects and pests, some of which are disease carriers, but the majority are purely troublesome. There are two types of leeches found in the low lying districts, the large dark horse leech and the small red jungle leech. The former inhabits fresh water, while the latter is found on shrubs and jungle grass. Although leech bites are not dangerous, they frequently become infected and lead to painful chronic ulcers. A leech should not be pulled off of the skin; when this is done its "stinger" is left in the wound. They can be removed with ease by touching them with a lighted cigarette or prodding them with a knife. The natives of this part of the world remove leeches by touching them with a small sack of moist salt that they carry tied to the end of a stick.

VARIOUS types of mites and ticks are found in cut over jungle land. One of these mites carries a serious disease known as mite typhus, and some of the ticks carry a tick typhus, somewhat similar to but milder than Rocky Mountain Spotted Fever. When traveling through mite and tick infested country, trousers should be tucked into the boots, and one should lie down in the grass only when it is absolutely necessary. It is well

to remove the clothing two or three times a day and make a thorough search of the body for ticks. Do not remove a tick with the bare fingers, but place a piece of paper or cloth about the tick before touching it. They also can be removed in the same way as leeches, by prodding them with a knife or touching them with a lighted cigarette.

Because of the difficulty in keeping clean and dry, minor wounds such as leech bites, insect bites, scratches, cuts and burns, which would be of little consequence in the United States, become infected easily in this area. No matter how small or trivial, all wounds should be thoroughly cleansed and an antiseptic applied to them immediately.

THERE are many poisonous snakes, such as the Russell's Viper, the King Cobra, kraits, and a very poisonous sea snake. Many of these snakes live close to human habitations which they visit at night in search of food. On cool nights snakes like to get into warm places such as shoes and clothing. Therefore, carefully examine all clothing and shoes in the morning before getting dressed. Before getting out of bed at night turn on a flashlight to make sure that there are no snakes on the floor. Always look into cupboards, drawers, and other dark places before reaching in with your hand.

If bitten by a snake the patient should be kept quiet and medical attention obtained as quickly as possible. Do not give the patient a drink of whisky or of any other alcoholic beverage, and do not allow him to exert himself. Follow the procedure set forth in paragraph 128, FM 21-10. Start the treatment immediately. If bitten on an arm or leg apply a tourniquet just above the bite. This tourniquet can be made from a neck tie, handkerchief, bandage, piece of string, or vine. A cross incision one-half by one-half inch should be made over each fang puncture. These cuts should be from one-quarter to one-half inch deep, and are best made with a razor blade or small, sharp knife. Suction should then be applied for at least one-half hour. This may be done by either sucking with the mouth, using a glass breast pump, or by heating a bottle and applying its mouth tightly over the wound. Cooling of the bottle will produce considerable suction. If there are any cracks or sores on the lips or inside of the mouth place a small square of rubber, such as the rubber taken from a condom, over the wound to keep the snake's venom from coming in contact with the mouth.

Venereal diseases are common throughout Burma, particularly among the hill tribes of the north and the inhabitants of the seaport towns. Eighty percent of all of the natives in one district were found to have either syphilis or gonorrhea. Many of the native women are promiscuous and both professional prostitutes and clandestine pick-ups are common. The majority of these contacts suffer from gonorrhea and syphilis, and many are also infected with chancroid and granuloma venereum, two other serious venereal diseases. ☆

#### ANSWERS TO QUIZ ON PAGE 28

1. The C-54 is a FOUR engine TRANSPORT (or CARGO) plane with a TRI-CYCLE retractable landing gear.
2. (c) In the Aleutian chain. 3. (b) Africa.
4. The C-46 is a troop carrying plane. Upon the appearance of enemy fighters, evasive tactics should be adopted.
5. (d) When the salute has been returned.
6. (b) 120 steps per minute.
7. (b) C-87.
8. (a) Air Marshal Sir Arthur Harris.
9. (c) 45 degrees.
10. (c) The tendency of a plane to roll in the direction opposite to that of the prop rotation. 11. (b) Junkers 87.
12. (d) The boundary between the troposphere and the stratosphere.
13. (b) Out to the skeet range. 14. (b) Red.
15. (c) Guadalcanal.
16. (d) Following a railroad track.
17. (c) Cardiograph is out of place. It is used for recording movements of the heart; the other instruments are for recording weather elements.
18. B-25. 19. B-26. 20. A-20.



# The AIRY TOUCH

## "P" Shooter

Something about a fighter job  
Just gives a man a thrill,  
She kinda sets your heart a-throb,  
You know she's built to kill.

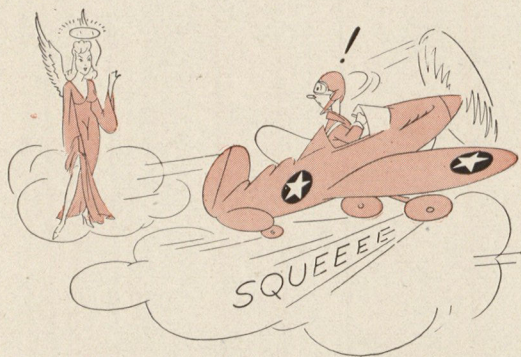
She doesn't have plush cushions,  
The torque is pretty bad,  
But she keeps right on a-push'n  
Despite the hell she's had.

There's not much there but motor,  
Some stubby wings and guns,  
But there's plenty power to float her,  
And she weighs about four tons.

It's true she's hot to handle,  
And landing takes two tries,  
But nothing holds a candle  
To the ship that rules the skies.

When the gates of hell are open,  
And the battle starts for true,  
There's one thing for which I'm hop'n,  
A "P" Shooter to fly me through.

—Lieutenant Jacob W. Dixon, Fighter  
Squadron, Alaska



## The Weatherman's Lament

Bards through the ages have filled many  
pages

Extolling the Infantry's glory;  
They love to enlarge on a Calvary Charge  
And make it the theme of their story.  
The boys in the tanks are beginning to rank,  
And the caissons keep rolling along;  
While pilot and plane will most always at-  
tain

Their full credit in story in song.

The reporters adore the parachute corps;  
The medics come in for their praises;  
But there's one bastard crew, a forgotten  
few,

On which glory's light never blazes.

They spend their dull hours in forecasting  
showers

And in judging the height of the clouds,  
But anticipation of precipitation  
Will elicit no cheers from the crowds.

Problems climatic are not so romantic,  
As is shooting down Japs from the blue,  
But bet your last dollar fliers would holler  
If the weatherman failed to come through.

When the Bomber Command has a mission  
planned,

And is set to raise hell with the Jap,  
There's question whether all's well with the  
weather

Enroute to that spot on the map.

That's the weatherman's call to get on the  
ball,

And to get all the dope for the flight;  
He can't play the breaks, or allow for mis-  
takes,

And no guessing—he's got to be right!  
When there's nothing to clear he'll sit on  
his rear,

He's lazy, that point is conceded;  
He'll loaf on the job, and he'll jawbone an  
ob,\*

And ain't worth a damn—'till he's  
needed.

\*Weather forecast.

—Pfc. Don H. Fields, 10th Weather Squadron



"Another near miss—it didn't go  
down the funnel!" —F. Wilkinson

## The Cry of the Kee Bird

You have heard the wail of the siren,  
As an ambulance sped down the street,  
And mayhap you've heard the lion's deep  
roar

Down in Africa's grim desert heat.  
Or the piercing cry of the tiger  
At night, as he stalks his prey,  
Or the locomotive's high shrill whistle  
As it sped, through the night, on its way.  
But these sounds sink to a whisper,  
You've heard naught, I assure, 'til I've  
told

Of the blood-curdling cry of the Kee Bird  
In the Arctic's cruel frigid cold.  
This bird looks just like a buzzard,  
It's large, it's hideous, it's bold,  
In the night, as it circles the North Pole  
Crying, "Kee, Kee, Keerist but it's cold!"

The Eskimos tucked in their Igloos,  
Toss fretfully in their sleep,  
While their huskies asleep in a snow bank,  
Start burrowing away down deep.

For this cry is so awe inspiring  
It freezes the blood I am told,  
As the Kee Bird flies in the Arctic  
Crying, "Kee, Kee, Keerist but it's cold!"

The Mounties, abroad in their dog sleds  
Visiting these Wards of the Crown,  
Often hear this strange cry and stare sky-  
ward,

With a fierce and sullen frown.

For odd things happen in the Arctic,  
And many weird tales they have told,  
But their voices drop to a whisper  
At the cry, "Kee, Kee, Keerist but it's  
cold!"

And many a brave man on this Base site,  
Strong and bold, from a Northwest State,  
Are taking the first ship back to homeland,  
To forget this fierce bird's song of hate.  
They can "take it", it seems, in the day  
time,

But when the midnight hour is tolled,  
They cover their heads in shameless fright,  
At the cry, "Kee, Kee, Keerist but it's  
cold!"

So back to the States they are going  
To sleep in a real bed, as of old,  
To slip their strong arms 'round their loved  
one

Her fair slender form to enfold.

Then off to sleep in warm comfort,  
And wifey's soft hand they will hold,  
To wake, terrorized by a "Kee Bird" night-  
mare,

And the cry, "Kee, Kee, Keerist but it's  
cold!"

—Ed. J. Pritzinger





# WHO-

# ME?

Yes, you...think before you write. A careless pen is more deadly than a bomb. For your own safety—and for the protection of your comrades, don't write about forthcoming troop movements or destinations, mode of travel, number of men or types of planes and equipment in your unit.

**Write home often but...**  
**KEEP IT PERSONAL**