

# AIR FORCES NEWS LETTER



AUGUST-SEPTEMBER 1942



An A-20 on patrol over Grand Coulee Dam

# AIR FORCES NEWS LETTER

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## Technical and Art Staff:

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Sergt. William T. Lent - Paul Reed*

Photos from official Army Air Forces sources



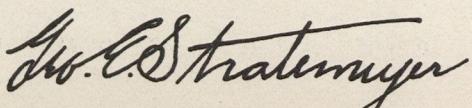
# Our Most Powerful Weapon

**A** REAL AND POTENT WEAPON IS BEING CARRIED ABOARD OUR BOMBERS. THIS WEAPON IS TEAMWORK--THE PRECISION TEAMWORK FOR OUR FLYING COMBAT CREWS.

PRECISION TEAMWORK COMES OF MEN KNOWING AND LIKING ONE ANOTHER; OF TRAINING AND PRACTICING LONG ENOUGH TO KNOW EACH OTHERS ABILITIES AND LIMITATIONS; OF FACING DEATH TOGETHER FOR A COMMON CAUSE. ON THE GROUND, IT PRODUCES EASY FELLOWSHIP AND A NEW KIND OF DISCIPLINE. IN THE AIR, IT IS THE MOST POWERFUL FORCE OUR ENEMIES MUST FACE.

ALL MEN IN A BOMBER CREW MUST WORK TOGETHER AS PRECISELY AS THE PARTS OF THE INTERNAL MECHANISM OF A FINE WATCH. ANY ERROR BETWEEN PILOT AND NAVIGATOR ON A 2,000 MILE RUN OR THE SLIGHTEST FLAW IN CO-ORDINATION BETWEEN BOMBARDIER AND PILOT IN THE SHORT RUN ON THE TARGET CAN MEAN THE FAILURE OF A MISSION. IF THE FLIGHT ENGINEER CANNOT KEEP THE COMPLICATED MECHANISM OF A BOMBER IN ORDER DURING FLIGHT OR THE RADIO MAN DOESN'T KNOW HIS JOB, WHY RISK THE SHIP ON A MISSION AT ALL? AND IF YOU WHO MAN THE MACHINE GUNS IN COMBAT CANNOT COVER EVERY FOOT OF THE SURROUNDING SKY WITH LEAD, DEATH STARES AT THE ENTIRE CREW.

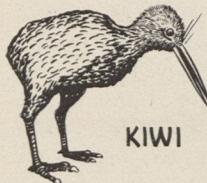
PILOTS, BOMBARDIER, NAVIGATOR, FLIGHT ENGINEER, RADIO MAN AND GUNNERS MUST STOP FUNCTIONING AS INDIVIDUALS THE MINUTE THEY STEP ABOARD THEIR BOMBER. THEY MUST BEGIN TO OPERATE AS ONE. THAT IS WHY PRECISION TEAMWORK IS A VITAL PART OF EVERY BOMBING OPERATION AND THE MOST POWERFUL WEAPON ABOARD OUR BOMBERS. SUCH PRECISION TEAMWORK PRODUCES PRECISION BOMBING.



GEORGE E. STRATEMEYER,  
Major General, U.S. Army,  
Chief of the Air Staff.

cross

Country



KIWI

TO A GOOD many the term Kiwi (kee-wee) won't mean a thing, and we aren't much concerned about it. The name Kiwi rightly belongs to a non-flying, witch-like New Zealand bird about hen size, and although it popped up some 25 years ago as the slang description of non-flying Air Force personnel, we are not sure it means all that it did back then in view of the recognized importance today of earthbound officers and men in the Air Forces.

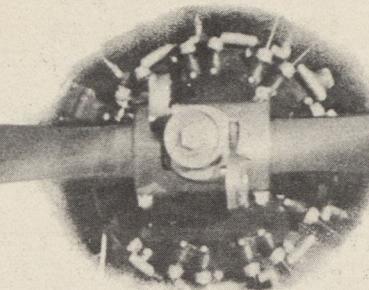
We are concerned at the moment with the mechanical Kiwi, or what we like to call the Mekiwi, and which we will have no truck with and don't mind saying so. In fact, we are about to suggest an open season on the flocks of Mekiwis now roosting throughout the Air Forces.

## MEKIWI



The Mekiwi, if you please, is an airplane mechanically unfit to fly because someone flunked his job or became careless or failed to realize the importance of maintenance in aerial warfare.

If our useless Mekiwis nested primarily in the combat areas, we might be tempted to



dig up some excuses. But when this country has three to four times as many available planes out of commission as have such spots as Alaska, Hawaii and Panama, we haven't much of an argument.

To hunt down the Mekiwis and keep more planes in the air, Headquarters needs ammunition in the form of ideas and suggestions from the field, especially from officers and men directly engaged in maintenance and technical inspection work.

Mekiwi hunting demands, first of all, a general buckling down to work, but we do need to hear more about the specific boners that have come to your attention. Send in suggestions for a series of "do's" and "don'ts". Shoot us ideas for articles, cartoons and posters that might help improve the standard of maintenance.

Reports tell us the Mekiwis are thriving on such earthworms as these:

*Bodily removing a generator when a slight adjustment of the voltage regulator would have corrected the trouble.*

*Warming up a plane where loose rocks or gravel can cause serious injury to nearby planes and crews.*

*Failing to ground the magneto wire and thus preventing the engine from being stopped.*

*Using improper cleansing agents that ruin equipment or endanger life and property.*

*Failing to make proper notation on Form One when removing a plane part, thus*

*prompting a crash after a pilot has taken up the plane in good faith.*

*Holding up a 100-hour inspection for lack of such simple "10-cent store" items as washers and gaskets.*

That merely scratches the surface of easily correctible boners that daily ground our planes and breed Mekiwis. How about passing on information concerning the maintenance bottlenecks that are gumming up the works? Jot down your ideas and suggestions and send them to Headquarters in care of the News Letter. It will help eliminate the Mekiwis.

ONE OF THE WILDEST confirmed war stories to come our way features a British fighter pilot who downed two Nazi planes without firing a shot. His report: "Owing to the position of my Hurricane and that of another machine of my squadron, I crashed into a Do. 215 (German) with my right wing. The wings of both planes broke up. I then crashed into another Do. 215 on my left with my left wing. I then went into a rocket (wingless) dive." While the Nazi planes were crashing to earth, the Hurricane plunged down out of control. The English pilot landed safely by parachute, his only injury a sprained ankle.



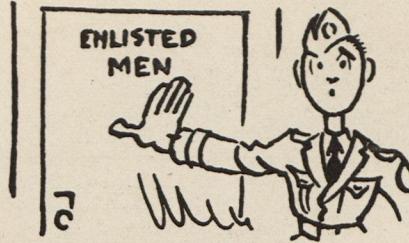
DICTIONARY of British slang: "Mickey Mouse," bomb dropping mechanism; "brolly," parachute; "bus driver," bomber pilot; "dust bin," rear gunner's position; "George," automatic pilot; "balbo," large formation of aircraft; "completely cheezed," no hope at all; "collect a gong," get a medal; "crabbing along," flying near the ground or water; and "Kipper Kite," coastal command aircraft used to convoy fishing fleets in the North and Irish seas.



**COMBAT NOTES:** It's rather important that pilots know the voice of their flight director. The Japs are old hands at radio deception. At Midway the Japs were talking a lot of English on frequencies used by American planes.....Anti-aircraft fire directed at one plane has been known to pass right through and hit the following aircraft. In strafing of any kind, it is important not to follow exactly in the path of the ship ahead.....Jap Zeros are believed to be landing on carrier decks without the use of hooks.....Last minute checks before combat on such items as guns charged, carburetion and proper engine RPM are very essential. A check-off sheet mounted on the instrument board has been recommended.....Full or partial deflection shots are accounting for the great percentage of planes downed in fighter combat.



AN informant from the Southwest Pacific Area warns against running for shelter when the bombs begin to fall on an air-drome. Lie flat on your face behind small protection such as sand bags or in shelter trenches says he, and your chances of getting nicked are less likely. Take this advice, we are told, and you will be surprised how close a bomb can hit without doing you wrong.



TWO late arrivals in the enlisted ranks have given us cause for smiles. The one, at a southern camp, nervously asked the Sarge what that AUS meant after his name, and was told it stood for Army of the United States. "Whew," mumbled the recruit, "I thought it meant AUSTRALIA." The other, reportedly at Keesler Field, and nervous for another reason, walked into a post building, hesitantly peered about, and asked a nearby Corporal if there happened to be a men's room around. The Corporal pointed toward the door marked "Enlisted Men." The recruit sorrowfully shook his head and said: "I can't go there; I was drafted"



WE PICKED this one up at least fifth hand, but an Aviation Cadet at some field or other, after being transferred to another field for advanced training, is said to have written his former tactical officer in this fashion:

"At last, after weeks of silent suffering, I am now far from the range of your jurisdiction and as far as I am concerned you and all of your staff can take a jump in the lake."

Not long after, so the story goes, the Cadet got this reply: "All information as to troop movements must be submitted on Form 245B."

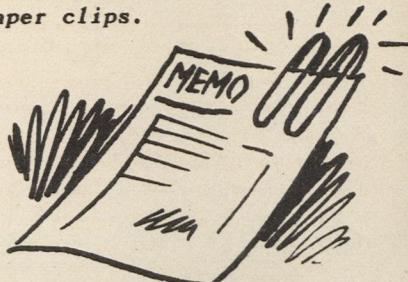


A teletype report passing over our desk was cause for a second glance. It read: **TWO LINK TRAINERS DEPARTED THIS STATION DATE ETA 281600Z END.** Just when we thought the faithful Link had finally soloed, we learned that the message referred to Link trainer operators.

YOU PROBABLY DON'T know too much about the Swiss Air Force. Neither did we, until we ran across such incidental information as this: The Swiss Air Force was originally a branch of the Army but was made independent in 1936. Since September, 1939, it has been in a state of partial mobilization. Under the Swiss militia system, each young male citizen, unless he pays a special military tax, enters the armed forces. After serving as a private soldier for six months, he may volunteer for flying duty. If so, he enters a flying school, progressing to advanced training. Active duty can come only in the event of mobilization. The Swiss Air Force is organized solely for defense, has no bomber command. Flying personnel are reported extremely proficient. Equipment is either German Me 109s or French Morane 405/6s, both manufactured under license in Switzerland. Swiss pilots are said to prefer the French ships.



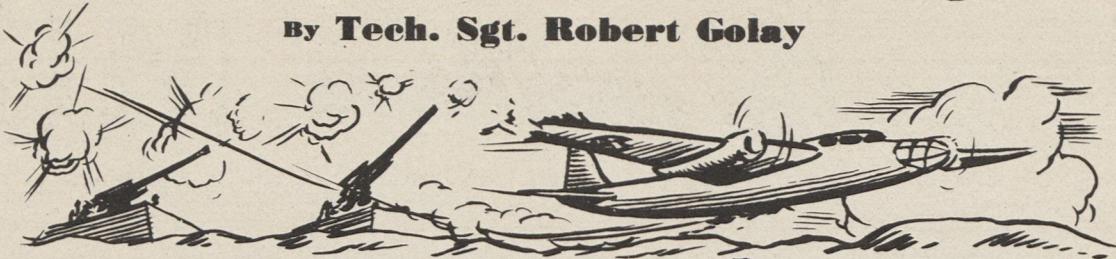
A memorandum calling our attention to Army Regulations on the conservation of valuable material, including a reminder against the use of duplicate paper clips, didn't carry the punch it might have, inasmuch as the memo was weighted down with two shiny paper clips.



WE CAN'T PROVE it, but the report comes from the Midland (Tex.) bombardier school that more practice bombs are dropped every day on Texas prairies than the daily average of real bombs dropped by the Germans in the September, 1940, Battle of London.

# American Fireworks Over Europe

By Tech. Sgt. Robert Golay



AND there we were, upside down at ten feet dropping our bomb", and so goes the old line without which any aerial gunner would feel as naked as though he were without his clothes, but back of those lines lies a story that entitles most winged warriors to tell their own stories in their own way.

Through the events of the past four months it has been my good fortune to become an aerial gunner, and through consequent events, to be a member of the first American combat crew to drop bombs on occupied Europe. Because of these events, I have been requested to set down on paper as nearly as possible the trend of events that reached their climax with the Fourth of July raid on Holland.

I entered the Army Air Corps in June of 1940, at Chanute Field, Rantoul, Illinois. I had been a newspaperman on the Fredonia (Kansas) Herald and someday after the war I hope to be a newspaperman again. It wasn't long before I began to move about, leaving Chanute a month later to attend the Aircraft Armorers school at Lowry Field, Colorado.

## Training Was Valuable

Later, that training which I received at Lowry was to be one of the most valuable pieces of time which I have ever spent. However, at the time it was a lot of hard work figuring out how so many little gadgets put together in one "shell" could cause twelve hundred rounds a minute to come out the muzzle.

After graduating from Lowry Tech., my journeys really began, and from that time, October 25, 1940, until April 29, 1942, I was stationed at eight different stations for varying periods of time--Brooks Field, Kelly Field, Goodfellow Field, Sherman-Dennison Air Base, all in Texas; Will Rogers Field, Oklahoma City, Oklahoma; Hunter Field, Savannah, Georgia; Lawson Field, Fort Benning Georgia, and Fort Dix, New Jersey.

In all this time, I was on and off combat status rather spasmodically, but even at that time, I had definitely made up my mind, that one way or another, should I ever get into the combat zone, I'd either become a gunner or some other part of a combat team.

After landing in England, which was preceded by a boat ride that was by no means uneventful, things began to move rapidly and things happened fast. Early in June of this year orders came through from the commanding of-

ficer that eighteen men would proceed immediately from our base to one occupied by British personnel for the purpose of a short but intensive period of instructions as aerial gunners.

The training which we received from the R.A.F. instructors at this base, has and will continue to be, one of the guiding factors in my present and future operational flights. Too much cannot be said about the tireless way in which these boys, none of them over 25, unfolded for our observation and discussion stories which theretofore they had never discussed even among themselves. Stories of actual experiences by men from Malta; of sweeps against the Norwegian coast; of low-altitude attacks against shipping in the channel and the North Sea. It was from these men that we learned what to expect from "Jerry". Through mistakes that had cost the R.A.F. lives, we profited.

We were greatly pleased to find that the particular British squadron, with whom we were to coordinate our efforts, was flying "Bostons", the British version of the Douglas A-20. But suddenly we discovered that we were a long way from being ready to go on "Ops", the British term for operational missions. There was the job of each crew getting to know each other, to learn the little peculiarities, which tend to make one individual different from another; the radio men had to learn the English procedure, and in general we all had a lot to learn.

## Met Sgt. Cunningham

It was at this point of progress in events that I first got to really know Sgt. Bennie B. Cunningham. Bennie is a quiet-spoken lad from Tupelo, Mississippi, who says very little, but always does his job plus just a little more. Bennie and I were crewed up with Captain Charles C. Kegelman, who was commanding this particular operational group.

It had been my good fortune to know the captain for some time before we came overseas, and having seen several demonstrations of his flying, I knew he was tops when it came to being skipper of a plane, either in the air or on the ground. Believe me, it means a lot to have a C.O. like that.

The observer was Lt. Randall Dorton, Jr., who, in the captain's absence was more or less mother to his little brood, and continually kept after Bennie and myself to keep training, rain

(Continued on Page 35)

STAFF Sgt. John J. Gogoj of Bellrose, N.Y., was the top gunner in one of the Air Forces' B-26 torpedo planes that put their tin fish into a Japanese aircraft carrier during the Battle of Midway. His pilot, Lt. James Muri, of Riverside, Calif., was guiding his plane to the scene of battle several hundred miles from Midway. When the B-26 was about 25 miles from the Jap task force, which included at least four carriers, Sgt. Gogoj's story began.

"We were sailing along, headed right for the Japs' ships out ahead of us. Me and my guns were pointing forward, out over the pilot's cabin, ready for any trouble from in front of us. That's where the Japs were, and that's where I expected trouble from," Gogoj said.

"Then I heard Ashley,--that's Earl Ashley, a pfc, he's from Williamstown, South Carolina,--start shooting his gun in the tail. I swung around, and there about 500 feet away was a Jap pursuit plane right on our tail. It was one of those Zeros.

"He was shooting right into us. I could see the flame coming out of his wing guns and that cannon was lit up plenty, too. All I know is that I swung my guns on him and squeezed the trigger,--then hell started popping.

"He hit my left gun with one of those cannon shells. My turret cover was all busted. Pieces of it hit me. Pieces of it cut my scalp," he said pointing to a half dozen cuts on his scalp. "I put my hand up to my head. Then I felt something kind of sticking to my right temple. It was sticky and wet. I tried to brush it off, but I couldn't get it loose. It was under the skin. I picked at it like this," he indicated, making a tweezer-action with his thumb and finger. "It was a bullet that had gone in under the skin. I got ahold of it and pulled it out.

# "We fought at MID"

Compiled by Capt. Charles E.



"Then I went down below into the plane and took some sulfanilimide and started to bandage my head. I had the bandage all ready and just ready to put over the cuts when a bullet hit my hand here,"--and Gogoj pointed to a scarred nick on his left middle finger,--"and bounced off, I guess, and hit me here over the left eye. Boy I tell you that made me mad. I was sure bloody then. You might say that after that I was immune to pain, but I sure looked bad with blood all over my face and coveralls.

"Then I went back up to my guns. The right one was still working. And it was a good thing because another Zero was on us. He wasn't actually shooting at us, but was up above us about a thousand yards. I could see that he was trying to get just a little more altitude so that he could zoom down on us. I figured he was ready to drop on us, so I opened up with the right gun. I pulled the trigger.

"Tracers went up into him right around the pilot's compartment. I think I got him all right because he just plain disappeared,--just left completely. I'd like to go back to Midway to look at our plane. You know we had more than 500

bullet holes in her. She isn't much good now, but it was worth it, putting that torpedo into that carrier. It sure was worth it."

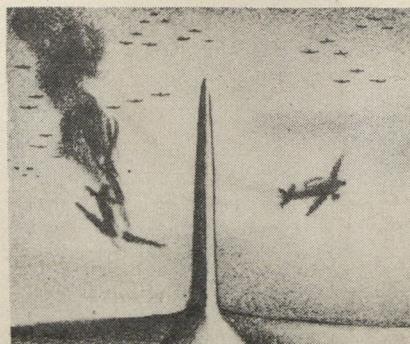
All members of the B-26 crew were awarded the Distinguished Service Cross for their performance.

"We got in 54 hours of flying time in four days," said Capt. Charles E. Gregory, of Houston, Texas, after his return from piloting a B-17 in the Midway battle. "At one time we were as close to Yokohama as we were to Honolulu. But not as close to Yokohama as we'd like to be."

Capt. Gregory and his crew scored definite hits on a Jap battleship and a carrier. During the height of battle Sgt. Bernard Carroll, of Tom's River, New Jersey, upper turret gunner, calmly spoke to Capt. Gregory over the inter-phone. Said Sgt. Carroll: "Some Zero's right behind us, Sir. If you'll slow down a little bit, Lomax and I'll get 'em." Cpl. Melvin Lomax, of Wichita, Kansas, was the rear gunner.

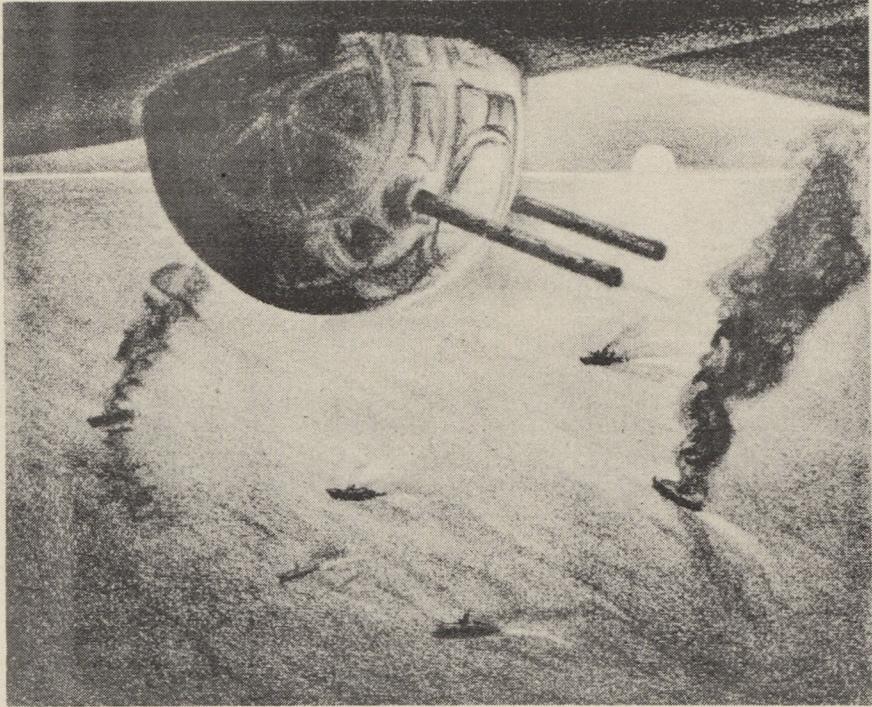
Sergeant George Scherba, a Pittsburgh boy who has three brothers in the service, tells what a belly-gunner in a B-17 went through off Midway.

"After weeks of 'special



# "WAY"

Shelton, Hickam Field



alerts' we were given orders," Scherba said. "Take-off was scheduled. No one seemed to know where we were going--lots of rumors about Australia. Once in the air, we found out where we were going and why. As we were flying along I spent most of my time jumping in and out of my lower ball turret. I practiced tracking diligently because something told me I was going to use it. I thought the world of that turret before we left and before we got back I was 'nuts' about it.

"Just as the sun was on the horizon, I heard someone say over the inter-phone, 'There they are, boys!' I swung my turret to the front and saw clouds of smoke coming up from burning ships down ahead of us. It was a good sight because I knew someone had done a fine job. We were at least 10 to 15 miles away when I saw the

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first bursts of anti-aircraft dot the sky.

"I saw the shrapnel spatter all over the ocean," Sgt. Scherba continued. "They kept firing like this while we got the sun behind our backs for our bombing run. As we got closer every boat seemed to be

and it was a funny feeling to be looking down into their gun barrels from my position.

"Then I heard 'Enemy Aircraft' over the inter-phone. Looking out I saw a Zero fighter coming up about a thousand yards away. The tail-gunner let him come up to about 400 yards. I opened up too. From the tall stories about fanatical Japanese pilots, I thought he would close in fighting. Not this Jap. Tracers were flying all around him as he broke away. Just at that point three groups of tracers hit him. He started a zigzagging glide towards the sea with black smoke pouring out of him. I did not see him crash because I started looking for other targets. All in all I saw just three Zeros. When we landed a tail-gunner from another plane told us that he saw our Zero fighter crash in the sea."

A hard luck story was told by 2nd Lt. Bernard E. Anderson of Fayette, Utah, a bombardier on a B-17. Anderson's plane, piloted by 1st Lt. Fred Wesche of New Jersey and 2nd Lt. Arthur L. McMullen of Akron, O., joined a flight of 16 other planes sent out from Midway in chase of the fleeing Japanese navy.

opening up on our planes. We were so low that the Japs couldn't get it through their skulls to shorten their range. It seemed all their shots were bursting above us. A carrier that was burning at the stern was firing heavily from the prow.

"A plane headed for it, but before I could see what happened I noticed a heavy cruiser immediately below us. I opened up on it. The guns started at the stern and went over the whole length of it. I was firing bursts of 6 to 10 rounds at it steadily. The cruiser seemed to suck the tracers right into its deck. All the while the Japs were shooting at us



"After searching for five hours we finally sighted two Japanese vessels which I think were cruisers," Anderson recounted. "Three planes up in front of our formation went after the first ship below and I don't think a single one of their bombs missed, because the vessel just buckled up in

Sketches by  
Capt. Raymond  
Creekmore  
AAF Artist

(Continued on Page 37)

# ONE-MAN LIFE RAFT

THE Army Air Forces' newest safety device is a seat cushion for sitting down purposes that becomes a one-man raft for life saving purposes.

The gadget was demonstrated for Wright Field officers recently by Lt. David Allen, of Ft. Benning, who leaped into Indian Lake, Ohio, from 5000 feet and paddled ashore.

At the right is Lt. Allen poised for his jump. On his back is his main parachute; in front is strapped his emergency chute and under the Allen rump is the rubber life raft.

On arriving in the water (picture 2) Lt. Allen disengages himself from his chutes, and turns the valve of a small gas tank attached to the raft, inflating it instantly.

He then pulls himself into the raft (picture 3) and proceeds to bail out the water shipped during the boarding operation.

In the final photo, we see the Lieutenant ready to go places by means of paddles strapped to his hands.



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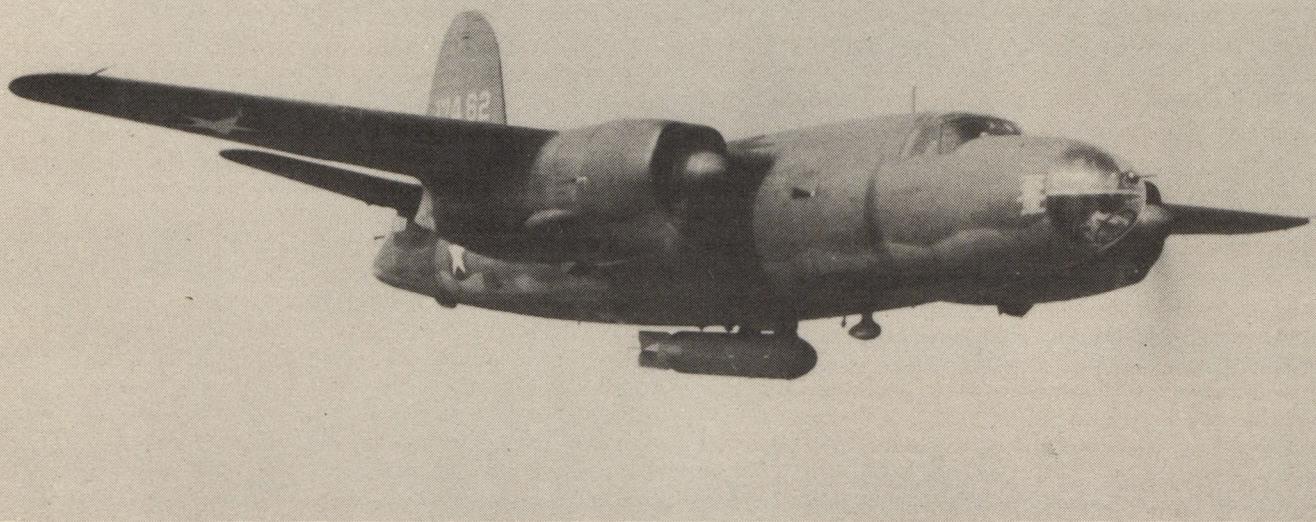
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# Tailor-Made for Combat

By Captain Selby Calkins

Wright Field



*A torpedo-carrying B-26 medium bomber*

THE scene might be enacted in any one of a dozen or so cities in the United States, from the Mexican to the Canadian border. A group of young workers, lunching within hearing of a steady roar of aircraft engines, have the day's newspaper on the table in front of them and are discussing yesterday's successful attack by American Air Forces over France or Germany or Libya or some far outpost in the Pacific.

The discussion is less one of words than an exchange of knowing smiles. Then:

"C'mon, you guys, lets get back to the shop and do it some more," says one of them.

Maybe the combat "show" they have been reading about was a torpedo attack by an Army plane known heretofore as simply a medium bomber. Or maybe they had been reading of the exceptional success of an already obsolescent--from our standpoint here at home--fighter plane which has proved to be a pretty good ground strafer and light bomber in the North African desert.

These lads are young but skilled. It is likely that their supervisory heads are veterans in aircraft construction and maintenance. Certainly they are every one of them artisans, for they are employes of one of the U.S. Army Air Forces Modification Centers, set up and operated for the Materiel Command's Production Division.

## General Wolfe Is Chief

The Materiel Command is the Army Air Forces' agency for supplying our far-flung fighter commands with the airplanes and the equipment needed in this global war. And the Production Division

is its "shirt-sleeves" organization. From Brigadier General K.B. Wolfe, Chief of the Production Division, down to the newest apprentice to skin his knuckles on a cylinder stud in a factory, the one objective is more airplanes, more guns, more bombs--more sudden death for the Axis. It takes rolled up shirt-sleeves, and sweat and daring thinking, to do the job as rapidly as it has to be done. That is the "why" of the Modification Centers.

Does an idea for a telling blow against the Japs form in the alert brain of General Doolittle? He and General Wolfe go into a huddle. Somewhere in the United States a number of airplanes start touching down on an airport and taxiing up to huge shops, one by one. Engineers and project officers armed with rolls of blueprints and technical instructions filter in from Wright Field, and another Modification Center project is under way.

No telling what happens after that....maybe Tokyo will get bombed again. Maybe Jap aircraft carriers will be sinking all over the Pacific because the Nips didn't know that land based bombers carried torpedoes. Or maybe ships that the Luftwaffe "knew" had a range of only a few hundred miles, suddenly strike at key industries a thousand miles from the nearest Allied air base. Let 'em guess!

Colonel Bryant L. Boatner, Chief of Special Projects at Wright Field, passes over the special projects of our Modification Centers with: "We don't say much about past jobs--we might want to do 'em again"! Then he boils down the

broad Modification Center program with a homely comparison:

"Suppose you make kitchen stoves," he says. "Your factory is all tooled up for one model on a mass production basis and you're turning out thousands of them. Then your salesmen tell you that you've got to add another gadget or your competitors are going to put you out of business. Which is easiest--retooling your plant or adding another little shop where the gadget can be installed on the mass production stoves before they meet their competition?"

"That's the basic function of all our Modification Centers--we add, subtract and change to meet and beat our competition--the Axis. We can take production airplanes and fit them for Arctic or desert operation, increase their range or build up their bomb loads.....sometimes fix up little surprises for the yellow Aryans in Asia and the paperhanger's stooges in Europe," he explains.

Broadly, the purpose of the Modification Centers (exclusive of special projects in the "surprise" category) is to permit up-to-the-minute developments to be incorporated in combat aircraft without interrupting the flow of production from factories. Of course when a number of these changes merits inclusion in all production airplanes, steps are taken to provide tools and manufacturing methods for the change. All preparations are made without interrupting the flow of production. Then, when everything is ready, the change in tooling and methods is made literally overnight--and from that point forward the uninterrupted production stream from the factory is a stream of the more advanced type airplanes.

#### Personnel Are Experts

Such procedures in one airplane does not wipe out the affected Modification Center. On the contrary, it continues to operate--perhaps with the same airplanes coming in for even newer installations--perhaps with another type, from another manufacturer, getting the attention of the experts assembled there.

The word "experts" is used advisedly. Personnel of the Modification Centers are not beginners. In the search for facilities which could be used at the earliest possible moment and used to the greatest advantage, the terminal overhaul shops of the nation's airlines loomed like beacons in the night. The Army Air Forces knew that these airlines had for years been training crews of skilled mechanics in the need for speedy, yet perfect, overhaul and repair and even major modification of their transports. An organization which can take a work-weary passenger transport and turn it out a few hours later in factory-new condition, is an organization which has been trained to perfection.

Thus it was that the airlines were approached

with a proposal that they operate these Modification Centers under contract with the Army Air Forces. They voiced assent with the same eagerness that gave our war effort their airplanes and their pilots and their experience in so many other phases of the war's demands upon their industry.

Today the airlines operate exactly half our Modification Centers. Others are operated by manufacturers themselves, and a few by the Army Air Forces at Air Depots. By and large, the airlines have carried the major load in volume of modification work performed to date.

#### Geography A Factor

By design, Modification Centers operated by airlines have geographical advantages. For instance bombers manufactured on the Pacific Coast and destined for ferrying to a combat zone via a South Atlantic route, may be flown from the factory to a Center in Texas. They arrive there as plain "production jobs"--but they'll leave ready for combat against the type of competition they'll meet and equipped for the kind of weather or terrain they'll find at their destination. Too, there are Modification Centers geographically close to North Atlantic jump-off points, and in the Pacific Southwest and Northwest.

Do Intelligence reports advise us of conditions in North Africa which our ships are encountering? There's a Modification Center in Arizona, perhaps, where those conditions can be exactly duplicated for test purposes. Would it be wise to plan on operating certain types of ships under Arctic conditions? We can take care of that too, knowing that when we send our ships away to fight they'll do what they are intended to do.

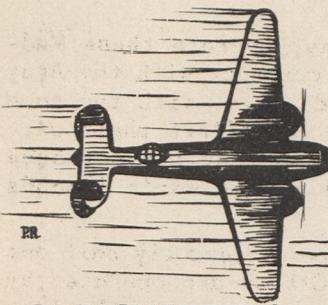
Finally, our Modification Centers serve us in another way. We know that Army engineers here at Wright Field, or engineers in the aircraft industry, can't foresee every condition of combat in a global war, or every trick of a wily enemy. But they can cancel those tricks out and develop new ones.

Everyone knows that the Japs found no tail guns in the earliest "Flying Fortress" bombers they met over the Philippines. True, the Jap guns downed but few of the big Boeings in flight. But our pilots out there clamored for tail guns--and got them. They were production jobs, for there were no Modification Centers then. But now such pleas would be answered from Modification Centers in the interim before the production change could be made.

The Modification Center organization is expanding in size and scope. There's no intimating what surprises in the way of speedy alterations "to meet the competition" are in store for the Axis.

# We Scour the Seas

By Air Vice-Marshal G. B. A. Baker  
RAF Coastal Command



COMPARATIVELY little of the work of Coastal Command receives the limelight of publicity because of necessity what happens at sea is not everybody's business, at least not until long after it has ceased to be spot news. As a result less is known of the duties of the aircraft of the Command than is the case with other Commands of the Royal Air Force. It is not uncommonly thought that their role is defensive and that their main objective is the protection of the Coasts of the British Isles.

In point of fact nothing is further from the truth. The Coastal pilot passes over the British coasts on his outward mission to return, hours later, to his aerodrome or anchorage. In the meanwhile he may have been operating anywhere on the coastline of Germany or German Occupied territory from the North of Norway to Gibraltar: or out deep in the Atlantic, 600 miles or more.

## First Duty

The first duty of the Command is reconnaissance, searching for the enemy on the sea, under the sea and in harbor; but the matter does not end there, for, once he has been located, the enemy is attacked with all the means available. The command is equipped not only with long range flying boats and reconnaissance aircraft but also with aircraft capable of bombing or dropping torpedoes, in addition to long range fighters. Many of the types used are of American origin--the Hudson, which has done yeoman service throughout the war on medium range general reconnaissance and U-boat hunting, the Catalina and the four-engined Liberator.

What then are the problems with which Coastal Command have to deal? There is a German Navy, which is powerful enough to cause considerable trouble if it gets out of control and breaks out onto the crowded Atlantic trades routes. The escape of the Gneisenau and Scharnhorst in March 1941, resulting in the sinking of at least 19 merchant vessels, provides an example of the damage which major naval units are capable of inflicting. The Bismarck set out on a similar voyage which ended less happily for her. After sinking H.M.S. Hood, she tried desperately to make a port in the Bay of Biscay in a damaged condition. In the bad weather she had shaken off the following British fleet and her chances of escape were favorable. And then a

Catalina of the Royal Air Force broke cloud a few hundred feet above her. Those on board the Bismarck had no illusions as to what her presence meant. Every A.A. gun and some of the main armament as well opened up: the aircraft was hit, a shell fragment passing up between the two pilots: but the sighting report was made none the less, and the lost contact was re-established. The Scharnhorst in 1940 and the Lutzow in 1941 both attempted to break out. But their freedom was short lived, and they returned to port for prolonged repair as the results of encounters with Coastal Aircraft.

The fortunes of war ebb and flow, and at times the dice are too heavily loaded. Later the Scharnhorst and Gneisenau broke out of Brest in a dash to the German ports. They made the run at high speed under cover of bad weather and relays of shore-based fighters concentrated over them throughout the passage in overwhelming numbers. They effected their escape, not without damage, in circumstances which clearly favored success.

Such actions are incidents which stand out against a background of weeks and months of intensive reconnaissance of the harbors and dockyards in which the German Navy shelters, and which provides the necessary information on which to anticipate projected movements. In addition patrols must be maintained to search for and locate convoys of merchant ships which pass up and down the North Sea Coastline. Shipping plays a substantial part in the German economy: it eases the overloaded and somewhat groaning German controlled railways: it carries supplies of food and ammunition to German troops abroad and it brings back from the occupied countries spoils in the form of iron ore, farm produce, fish and other necessities for the German people and their war effort. Bitter experience has caused them to arm their ships heavily and to form them into convoys closely escorted by flak ships mounting A.A. guns and covered by shore-based fighters. Nevertheless they are continually harassed and attacked by day and night, at times not without losses, with the result that many a ship carrying a German cargo lies at the bottom of the North Sea.

The convoys make their journey in stages, putting into harbors on their route. But even here, protected by shore defenses they ride uneasily at anchor, alert for the drone of air

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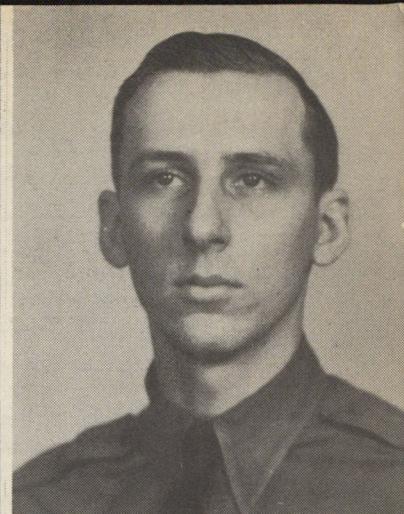
1st. Lieut. P.L. Moore



Maj. C.C. Kegelman



Capt. R.L. Morrissey



2nd Lt. R.R. Birnn

# ROLL OF HONOR

## DISTINGUISHED SERVICE CROSS

MAJORS Conrad Necrason, Hervey H. Whitfield. FIRST LIEUTENANTS Robert Taylor Hanson, Randall Dorton. SERGEANTS Bennie B. Cunningham, Robert Golay.

## DISTINGUISHED FLYING CROSS

MAJOR Charles C. Kegelman. CAPTAINS James J. Collins, George E. Kiser, Robert L. Morrissey. FIRST LIEUTENANTS James B. Morehead, Herbert C. Mayes (Post.), Pren L. Moore, James P. Muri. SECOND LIEUTENANTS Richard R. Birnn (Post.), Gerald J. Barnicale (Post.), William D. Harbis, Jr. (Post.), A.T. House, Jr., Russell H. Johnsen, William W. Moore, Garrett H. McAllister (Post.), John P. Schuman (Post.), Colin O. Villenes, William S. Watson (Post.), Thomas N. Weems, Jr., Leonard H. Wittington (Post.). SERGEANTS Raymond S. White, Salvatore Battaglia (Post.), Richard C. Decker (Post.), John J. Gogoj, Jack D. Dunn, Ernest M. Mohon, Albert E. Owen (Post.), James Via (Post.). CORPORALS John D. Joyce, Frank L. Melo, Bernard C. Seitz (Post.). PRIVATES Earl D. Ashley, Benjamin F. Huffstickler (Post.), Roy W. Walters (Post.).

## SILVER STAR

BRIG. GENERAL A.L. Snead. COLONELS Caleb V. Haynes, William D. Old, Robert L. Scott, Jr., Birrell Walsh. MAJORS Julian M. Joplin, Robert D. Van Auken. CAPTAINS Dalene E. Bailey, N.H. Blanton, Bert M. Carleton, Walter Coss, Fred Eaton, Felix M. Hardison, W.J. Hennon, J.J. Kruzel, Guilford R. Montgomery, Edward I. Pratt, Jr., Wayne K. Richardson. FIRST LIEUTENANTS Frank E. Adkins, Ben S. Brown, James A. Gibbs, Donald J. Green, John H. Posten, Eugene A. Wahl, Varian K. White. SECOND LIEUTENANTS J.J. Boll, Paul F. Conroy, Robert L. Hartzell, Thomas J.

Lynch, Harold J. Martin, Lawrence R. Mesereau, Andrew J. Reynolds, Jacob P. Sartz, Richard Werner, Merle C. Woods, Claude Lee Dean. SERGEANTS William P. Bonner, William P. Campbell, Durward W. Resmire, Henry J. McElderry, Glen Beard, William E. Bostwick, Ernest E. Creach, Kullervo T. Aaltonen, Ralph B. Baldridge, William D. Bettis, Orville W. Kiger, James O. Mink, Robert A. Mocklin, Michael J. Novello. CORPORAL James L. Shannon. PRIVATES George W. Motley, James W. McCabe, Ralph C. Riddle, Albert A. Wagner, Francis J. Marvey.

## PURPLE HEART

COLONEL Hilmer C. Nelson, CAPTAINS Carl M. Sidenblad, John J. Webster. FIRST LIEUTENANTS Charles C. Johnson, Harry J. Schreiber. SECOND LIEUTENANTS Keith B. Brown, Eddie W. Hayman, Wallace F. Pickard, Melville Pound, Kenneth T. Taylor. WARRANT OFFICER Gottlieb J. Kaercher. SERGEANTS William L. Bayham, Robert G. Eidem, Charles A. Fay, Kraig L. Van Noy, Vernon C. Rider, Glover Burke, John M. Diehl, Arthur W. Norgaard, John F. Dorondo, Milton J. Dunn, Ethelbert E. Lovell, John J. Ostrum, Gerald L. Suprise, George J. Van Gieri, Theodore E. Wesala, Lewis Coburn, Ira Pickingpaugh, David Runager. CORPORALS Robert A. French, George C. Ames, Robert Stewart, George Tillett, Bryson C. West, Ford Everett Dodd, Frederic W. Sprague, Merritt Wimsett. PRIVATES Daniel A. Mahoney, Russell C. Thompson.

## SOLDIER'S MEDAL

FIRST LIEUTENANT Edward O. Hubbard. SERGEANT Samuel C. Dragone. PRIVATE Woodrow W. Ravenscraft.

# Hunting for One in a Million

By Lieut. John M. Jenks

Headquarters, AAF



Col. Leon B. Lent

THE man in Colonel Leon B. Lent's office set a distracted pigeon on the desk and pointed to it triumphantly.

"Suicide pigeon squadrons!" he yelled. "Just think of it! Thousands of birds--each with a little bomb tied to its leg!

Then all we have to do is train 'em to fly into the propellers of enemy airplanes! It'll win the war for us!"

Colonel Lent, who is used to this sort of thing, ran fingers through his snowy hair and explained gently that the idea just wouldn't work. What he didn't explain was that the pigeon man belonged to the lunatic fringe of visitors who almost daily wander into his office at the National Inventors Council in Washington--like the man who proposed that battalions of skunks be posted around airfields to guide night fliers in by sense of smell.

"We get them all the time," says Colonel Lent, "but each one is given a sympathetic hearing and courteous treatment, because we never know when the one idea in a million will come along."

Definitely not in the "big idea" class are such screwball proposals as a bridge around the world for the swift movement of troops and supplies, or "death ray" devices that capture so many addled imaginations.

## A Plane That Never Stops

One "inventor" proposed a perpetual motion airplane that would run forever by means of an electrical motor hooked up to the prop which would run generators, which in turn would supply juice for the electrical motor, which in turn would spin the prop, and so forth, ad nauseum.

Not all of Colonel Lent's visitors are crackpots, however. In fact, nearly five thousand inventions submitted to the Council within the past two years have been considered sufficiently meritorious to be referred for development to various branches of the Army, Navy and other government agencies.

This is roughly 5% of the total of 90,000 inventions, suggestions, ideas and what-have-you that the Council has reviewed since its organization in October of 1940. Of the acceptable 5%, about one quarter are in the field of military aeronautics with the remainder divided among Ordnance, Signal Corps, Engineers, Medical Corps and other government departments connected with the war effort.

After Colonel Lent and his staff of seven

highly trained engineering and technical experts refer an invention or idea to the Army or Navy, it is swallowed up in the mists of official secrecy, and the clamp-down is impenetrable. Even the Colonel rarely knows what happens to them. It is possible that many instruments, devices and gadgets now used in our military aircraft had their origin on Colonel Lent's desk.

Among the practicable proposals now going through the appraisal mill are jet propulsion devices of the "rocket" type to add power for aircraft take-offs on short runways, and refueling equipment designed to increase the effective range of fighter planes.

Other ideas and devices which have interested the Army Air Forces include engines, construction methods, de-icing equipment, flying instruments of many types, lubricants for armament and other things that must function properly at both high and low temperatures, and photographic equipment.

"Most of the stuff that is being developed at the present time is good," states Colonel Lent. "So good, in fact, that we don't dare speculate on the extent to which they may someday affect our military proficiency.

"Unlike some other branches of the armed service, most good inventions useful to the Air Forces come from Air Forces personnel--so tell the boys to keep up the good work."

Right after Pearl Harbor, the number of ideas that funneled into the Council's offices in the Dept. of Commerce building in Washington spiraled astronomically.

From a daily average of 200 before December 7, 1941, the volume of suggestions grew to more than 2500 a day, and the flow has only recently begun to ebb. The quality of ideas submitted also improved after the Jap stab in the back, indicating the more serious members of our society, outraged at the sneaking attack, were thinking along inventive lines.

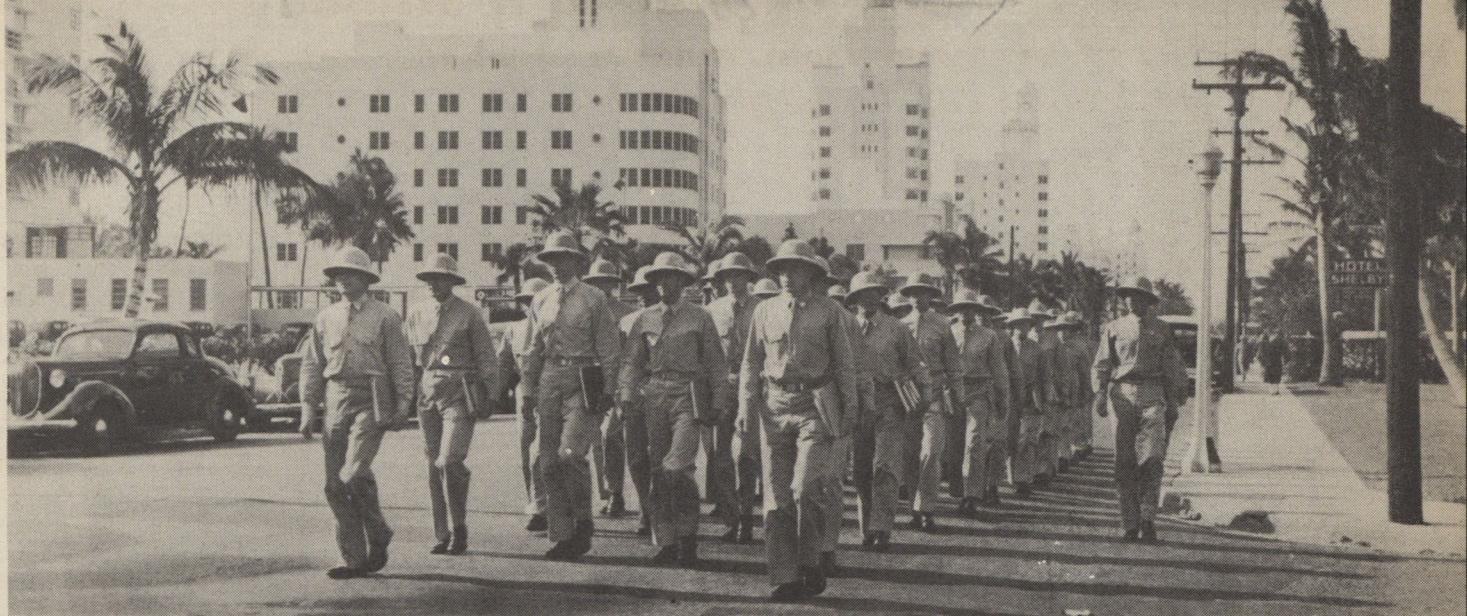
## Civilian Thinkers

Unusual though it seems, some of our most important military weapons and devices have been invented by civilians without military experience. The airplane, for example, was invented by the Civilian Wright brothers, the submarine by Civilian Simon Lake, and so on.

Were it not for the National Inventors Council, the flood of inventions and ideas from civilians would have to be reviewed and passed upon by officers of the Army and Navy.....a task which would distract needed talent from its wartime duties. Into this breach steps the Council.

(Continued on Page 29)

# Miami Beach Goes to War



**M**iami Beach has gone to war. The Technical Training Command has converted this luxurious playground into a gigantic war factory producing thousands of trained ground officers and men for the Army Air Forces. The conversion of Miami Beach's civilian facilities into a vital part of the Army Air Forces war effort is as spectacular and effective as any that private industry has made.

The streets are still lined with ultra-modern glass and steel hotels and the ghosts of night clubs. The sea still pounds along the long stretch of white sandy beach and the full moon and tropical nights are still better than any of the Tin Pan Alley songs written about them. But the streets now resound to the tramp of G.I. shoes and the cocky stanzas of the Air Corps song, roared by hundreds of sunburned marching men. The empty night clubs are classrooms. The hotels stripped of former furnishings are barracks. The beaches and golf courses are full of sweating soldiers getting whipped into shape with drill and calisthenics. Few see the moon except on weekends. Call to quarters sounds at 8 p.m. and taps at 10.

Every available scrap of space has been pressed into use by the Technical Training Command. Much valuable time has been saved by avoiding new construction. A large modernistic department store is now a classification center. Air conditioned theaters are used as lecture halls in the mornings before the matinees begin. Many night clubs are classrooms during the day and blossom at their old trade after dark. The former burlesque theater has been converted into a USO clubhouse. Former brokers offices, stores, ballrooms and hotel courtyards have all been converted into classrooms.

Biggest of the three Technical Training Command installations at Miami Beach is the Replacement Center commanded by Col. Mert Proctor.

Tens of thousands of Air Forces recruits flow through the center for three weeks processing and classification before assignment to permanent posts. The Officers Candidate School organized by Col. James Stowell trains men to be commissioned as administrative officers in the Army Air Forces. It offers a three months course based on a streamlined West Point curriculum adapted to Air Forces needs.

Most interesting of the three installations is the Officers Training School organized by Lieut. Col. W.A. Roberts. Here officers commissioned from civilian life because of special talents which can be utilized by the Air Forces are put through six weeks training to whip them into the physical and mental condition necessary for the assumption of their responsibilities as Air Forces officers.

To learn how to command soldiers, these men commissioned directly from civilian life, are soldiers themselves for six weeks. They are organized into squadrons, stand guard, police their quarters, act as orderlies and are trained so that any man can take over command of his squadron at any time.

Anybody who thinks assignment to Miami Beach means lolling in the lap of luxury is due for a shock.

Sweat and study is the theme of the new Miami Beach. The war is close to the men at Miami Beach. Patrol planes are constantly buzzing overhead. Sentries patrol the beaches and the black-out descends every night at dusk. Men of the early OTS and OCS can remember the days when they saw torpedoed tankers blazing hardly 10 miles from their hotel barracks. From early morning until dark the officers and men of Miami Beach are working hard at their task--to turn out trained officers and men to match the flow of weapons from our great industrial system.



# CONTROL TOWER

BEFORE you sink any base pay in the purchase of a new winter service coat, be sure your tailor designs it according to the new approved style. War Dept. specifications now authorize only one type of coat--basically the same as that worn heretofore by other than Air Corps officers. The approved coat is provided with side pleats in the back, has a fully detachable cloth belt supported at the side seams by removable cloth belt loops, and the fourth button will be bone or plastic instead of ornamental. In the enlisted men's department, service coats will be worn without the pleated bi-swing back, to save wool.



IF you sawed a fiddle back home, or drove the neighbors wacky with trumpet toots, they've made it a bit easier for you to turn your talent into tunes for Uncle Sam. Liberalized regulations regarding eligibility of military personnel for attendance at the Army Music School have recently been announced, and they provide that candidates must be at least 25 years of age and not more than 44 years and eight months at time of examination for appointment. In addition, three months service in the armed forces is required. Previously, only non-commissioned applicants with three years service as Army bandsmen, plus other qualifications, were accepted.

LEGAL DEPT:--If Representative Durham of N.C. has his way, a Pharmacy Corps will be established in the Army for the purpose of eliminating an overlap of authority among other medical branches that reportedly confuses the purchase and handling of drugs and medicines. It's not likely that you pharmacists now on latrine duty will learn much about this opportunity before late Fall, as the proposed bill is now under consideration by the Military Affairs Committee of the House. More proposed legislation, requested of Secretary Stimson, would remove the necessity of obtaining a new oath of office and acceptance of a commission from an officer each time he is promoted. The thought behind the suggestion is not to make it easier for you career boys to leap up the ladder, but to save the War Dept. considerable paper work.

THE time limit on railroad tickets used on furlough has been extended from 60 to 90 days, and now the boys are wondering when furloughs themselves will be extended to 90 days.....Officers who have faced the danger of sleeping on park benches in overcrowded Washington will be happy to learn that a Billeting office has been set up in the War Dept. to which they can apply in advance for hotel or residential accommodations at the Nation's Capital.....All members of the armed forces will be granted special concessions in computing their income taxes, under the terms of the new war revenue bill now before Congress. The bill provides an additional \$250 personal exemption for single men and \$300 for married men.

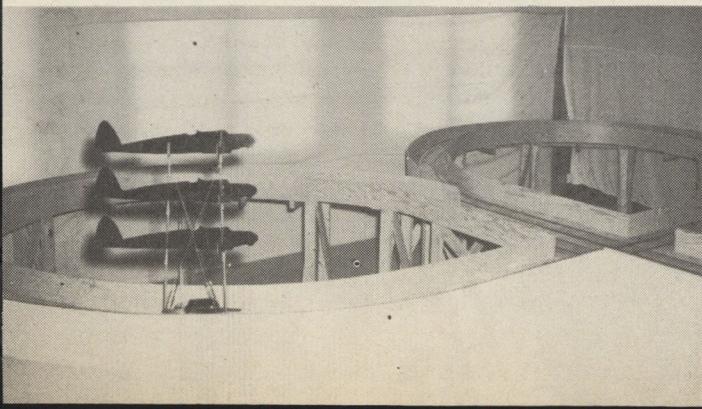
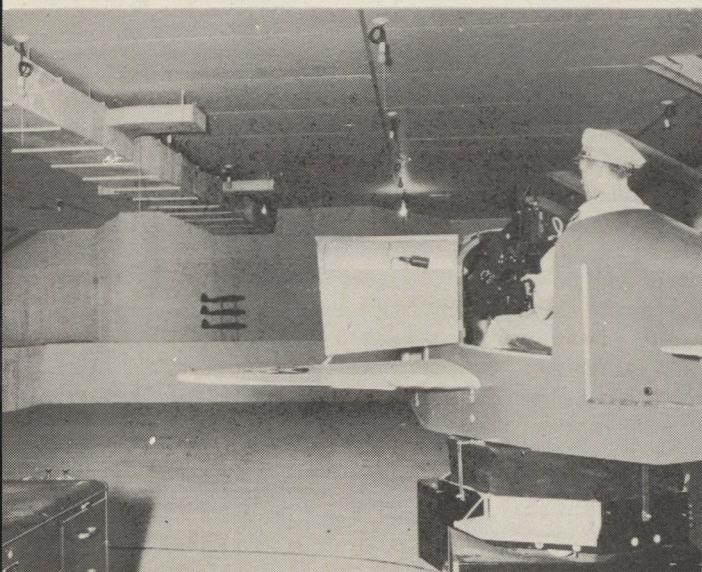
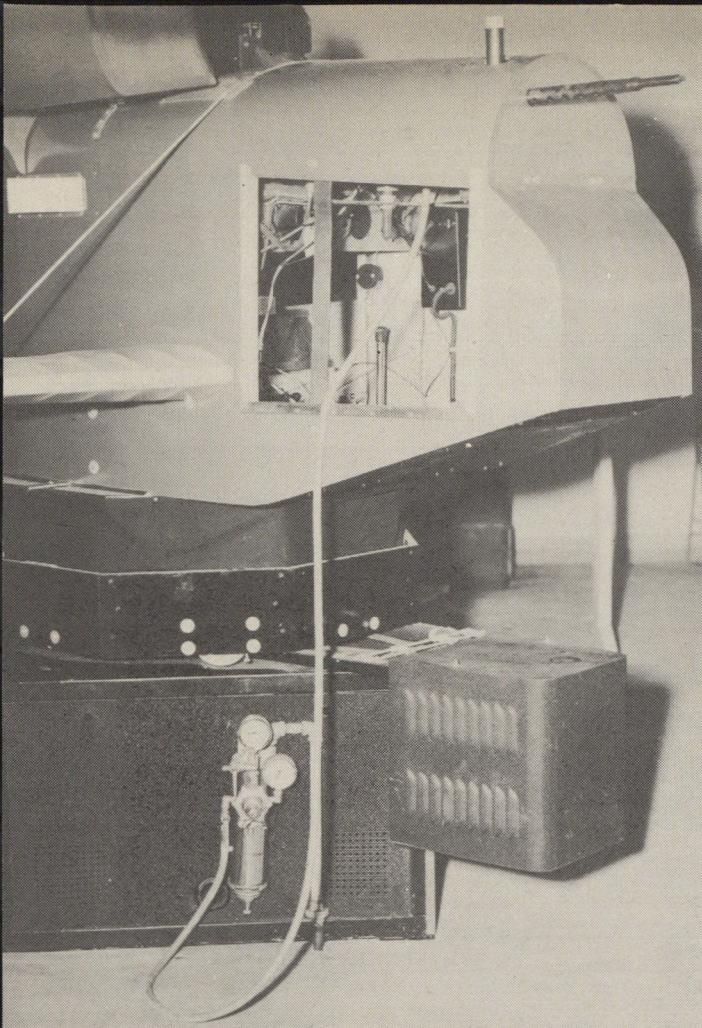


MISUSE of military insignia is currently plaguing official circles, and all personnel returning to this country from foreign stations or from combat units preparing to go overseas are warned to avoid displaying squadron, group or other identifying markers for the benefit of press photographers--as well as for any enemy agents who read newspapers. And in connection with insignia, note that "any person wearing military insignia or any colorable imitation thereof without proper authority shall...be punished by a fine not exceeding \$250, or by imprisonment not exceeding six months." Yes--this applies to the girl friend.

IF you were in World War I, be advised that the draft registration cards you and 23,999,999 others signed 25 years ago have been transferred from the War Dept. archives to the Census Bureau, where they are available as a source of evidence on age and place of birth for persons lacking birth certificates. Also, veterans of the last conflict who served overseas are now entitled to wear a service ribbon attesting to that fact. The ribbon has a black center with a wavy red and blue stripe at either end, and may be purchased at most PX's.



STYLE NOTE:--G.I. footwear will undergo structural changes soon, but the appearance of your clodhoppers is not likely to be improved, nor their weight lessened. Instead of the quarter pound of crude rubber that now is used in composition soles and heels, about 10% of uncured tire scrap will be used. Less bouncy, but lots of badly needed rubber will be saved.



## The Link Gets Tough

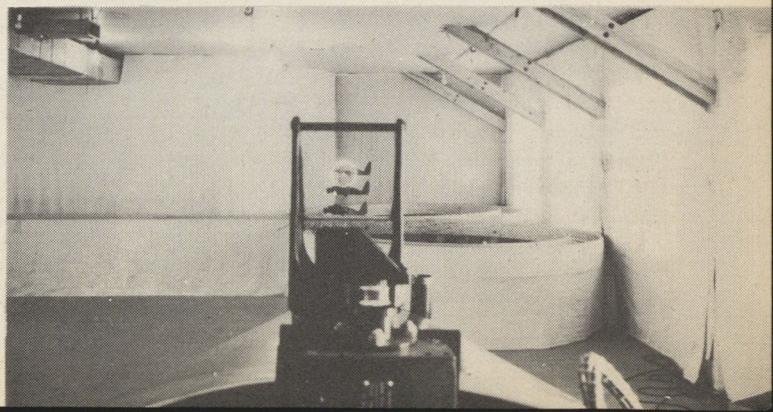
DOWN at the AAF Advanced Flying School at Moore Field, Texas, they have fitted out three Link Trainers with high-velocity B.B. machine guns, and the boys are shooting lead pellets at moving targets that look like Heinkel III's.

It's a brand new idea, developed by Lt. Col. German P. Culver, as part of his plan to improve students' gunnery before they are assigned to outdoor ranges with .30-calibre ammo. The gadget works so well that the Gulf Coast Training Center has given its assistance, and all advanced flying schools in the southwest may be equipped with the indoor gunnery ranges before long.

Thirty-seven feet away from the gun-equipped Trainers is a target range, where a small electric locomotive pulls the targets along a small railway track. Traveling at nine feet per second, the target moves at a speed which, to scale, represents 120 miles per hour. This will soon be stepped up to 140 miles per hour. Eighty pounds of compressed air enable the students to blast away with a muzzle velocity of about 300 feet per second.

### First Photos of New Range

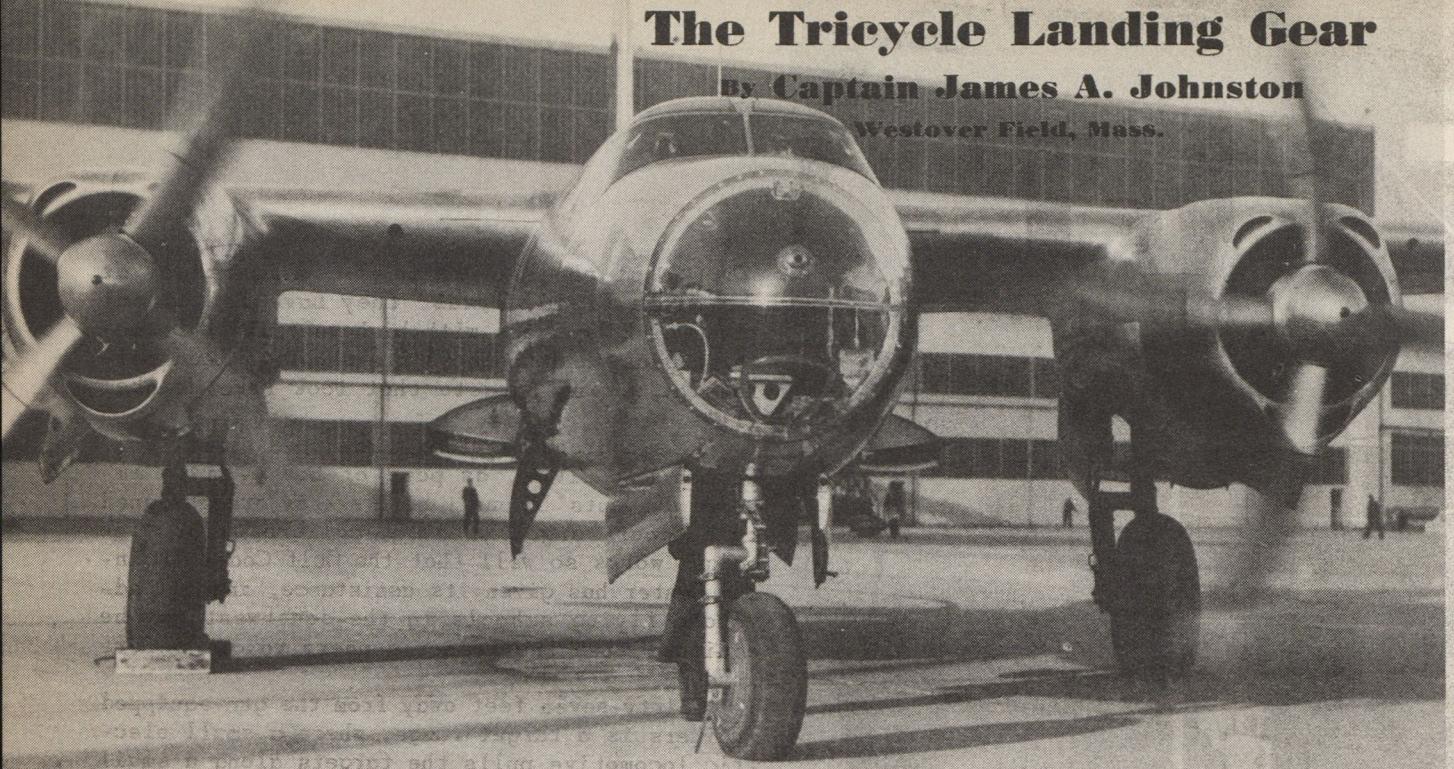
THE novel compressor shown at top furnishes 80 pounds of pressure for the air gun mounted on the Link Trainer, enabling the student to fire B.B.'s with machine-gun rapidity. The tube on top of the hood is where B.B.'s are inserted. At left, Lt. Col. German P. Culver, inventor of the device, is shown demonstrating it. Note that the hood of his trainer has been removed for "contact flying". At left below is a close-up of the target, traveling a circuitous course which the trainee must follow constantly with his sights, as shown in the photo below. The muslin drapes in the background collect pellets that miss, and they are used over again.



# The Tricycle Landing Gear

By Captain James A. Johnston

Westover Field, Mass.



**T**HE tricycle landing gear is almost as old as heavier-than-air flying. On the first man-carrying powered airplane, the undercarriage consisted of a set of sled-runners, wide enough and long enough to prevent the flying machine from tipping over in landing. This contraption made it necessary to launch the plane from a greased track; upon landing it came to a stop as abruptly as a sled fresh out of snow.

Airmen soon found that construction of launching tracks at every open field desired for landings and take-offs was impractical. They added light bicycle wheels. And in the first old pusher type airplanes, it was natural that the two main wheels should be located beneath and behind the airplane motor on the lower wing, with a third wheel up in front to support the nose. Thus the tricycle gear came into existence.

Further experiments in flying, however, led to tractor propellers and front-mounted engines. In such types, the two main wheels usually were located by designers to follow the weight. Pusher airplanes were seen less and less often, until finally the type almost disappeared--and with the pusher went the tricycle gear.

#### Some Changes Made

This condition existed during World War I, through the boom era of trans-Atlantic hops and on until about 1937. Then, with prospects of an air war on the horizon, there were increasingly loud whispers of 2,000 horsepower engines and of 400-or-more-mile per hour fighters. Drastic changes in airplane design began to receive real attention.

Out at the Douglas aircraft plant in Santa Monica, Calif., an old Dolphin began slapping

the runways with three wheels for an undercarriage. The laughs continued when a steel tricycle-gear frame cooked up by North American Company's engineers, the frame loaded to the limit with sand bags, turned over during a test one bright morning while being towed behind an automobile. But the tricycle landing gear was staging a come-back. It has since gone on the Consolidated B-24 heavy bomber, the North American B-25 and Martin B-26 medium-bombers, and the Douglas A-20 light bomber, the Bell P-39 and Lockheed P-38 pursuits, and the Douglas DC-4 and DC-5 transports.

Among pilots, vague opinions about tricycle landing gears still are prevalent. Praise, fear and criticism vary with each group using such equipment. It is the writer's opinion that few know exactly why the gear is an improvement, or the best way to handle it.

It is particularly important to understand that with the tricycle gear, and its comparatively short nose wheel arm and broad base of support, the center of gravity is ahead of the main wheels. In the conventional gear, having a long tail arm and small tail wheel, the center of gravity is behind the main wheels.

Let's assume that we are in an airplane with conventional gear and forced to land in a cross wind. If we have not straightened out before touching the runway, or a gust happens to have hit the rudder while we are still taxiing fast, or the pilot has over-corrected with motors or brakes, we are almost certain to find the tail swinging to one side. And since the airplane will tend to exaggerate this tendency, if we don't correct promptly, we are going to have a "ground loop."

Scientifically speaking, the danger is in the

center of gravity going outside the radius of the turn and outside the line-of-inertia movement. When this occurs the airplane must be "flown" every second to prevent a "ground loop" or possible accident.

#### "Crab-Wise" Approach

It's different with a tricycle gear. You can come in "crab-wise" for a landing right down to the approach and even on to the runway until the wheels touch. Your airplane actually will straighten out and assume a runway heading equal to the ground track being made good on the approach.

Provided the runway or landing surface is not so slick that the wheels are unable to get traction, it is impossible to "ground loop" a tricycle landing gear in the accepted sense of the word. Tests have been made, locking one brake, or gunning one motor. Under such abnormal conditions the airplane either continued straight ahead or changed course slightly and held that new course. Continued application of a motor will, of course, slowly swing the airplane around in a long-radius turn, but normally the tricycle gear will safely withstand abuse from amateurish operation which would wreck a conventional-gearred airplane.

Blown tires are always a danger in aircraft landings, but a tricycle gear will not ground loop with a blown tire. When a tire blows at the highest possible speed on the ground, the airplane will change course not over 15 degrees and will hold the new course.

Wet asphalt, grass and icy runways constitute a very real danger to modern airplanes, and those equipped with conventional gear often have accidents in landing under such conditions. With the tricycle gear, when one brake is applied as the wheels touch a very slippery runway, the airplane may change heading and sometimes will spin around, but it will not change course off the runway--it will continue on the path it was making good when the skid began.

Many pilots appear apprehensive of the nose wheel of a tricycle gear, usually because they have heard it is subject to failure without warning. This is the worst misconception that exists. Nose wheels will "take it" when treated with normal caution, having respect for design limitations. Most nose wheels have failed when operated on muddy ground, soft sand or deep snow or when a pilot attempts to taxi against a turned wheel or a wheel having improper position of the towing pin lock.

Most nose wheels "caster"--that is, they trail from the pull of the strut in spite of the fact that the nose wheel strut has a forward slant. Muddy fields, sand, snow and high grass all tend to eliminate the caster effect of the nose wheel. When anything of this nature "builds up"

in front of the wheel to a point in line with the strut, the castering effect is destroyed. As a result, the accumulation becomes a pure resistance, tending to twist the nose wheel sideways until it is crosswise to the taxi direction.

Here is a major cause of nose gear failures--pilots attempting to pick up speed in rough going, or, in trying to pull out of the spot, gunning the motors against a turned nose wheel and snapping the strut. It is easy to see how, unless excessively heavy braces are installed, the retraction strut can "snap" under the pull of 1,700 horsepower engines when the nose wheel is turned sideways.

#### Operation Hints

A few hints on operation with tricycle gear seem to be in order, so here goes:

When entering your airplane look at the nose wheel--be sure it is straight.

Roll straight ahead for several feet before beginning a turn and lay off the brakes and motors as much as possible. Sudden brake applications jerk the nose wheel around.

In approaching intersections for turns, anticipate the turn sooner than with conventional gear. Put on the outside motor well before the turn; hit the inside brake easily.

Always stop with the nose wheel straight. This is best accomplished by rolling straight into the stopping point and applying both brakes equally.

Check the motors before coming to the end of the runway prior to the take-off. After the check, roll on to the end of the runway and begin the turn at slow speed, using the outside motor, with as little brake as possible. Keep rolling and before completing the turn bring the inside motor up to a speed equal to that of the outside motor.

On take-offs, once on the proper heading, ease the motors up to 1500-1700 revolutions and hold them there for three or four seconds, allowing the airplane to pick up speed--this gives the nose wheel a chance to begin "tracking" properly.

Most tricycle-gearred planes will not take themselves off, so when elevator control is gained at 60 or 70 miles an hour, ease the controls back, letting the nose wheel lift off the ground, and run on the main wheels until take-off speed is gained. Don't trim the elevator tab to the tail-heavy position for take-off; the gain in speed and the retraction of the landing gear after take-off would make a stall imminent.

In landing, set in with more than stalling speed and land on the main wheels, nose wheel off. After landing, hold the nose where it is until a little speed is lost and then let the

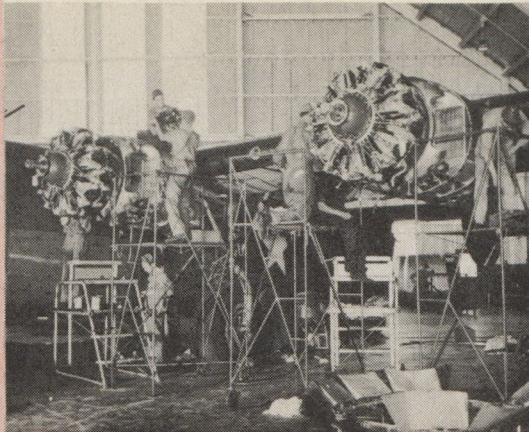
(Continued on Page 38)

## MECHS OF THE AIR CORPS

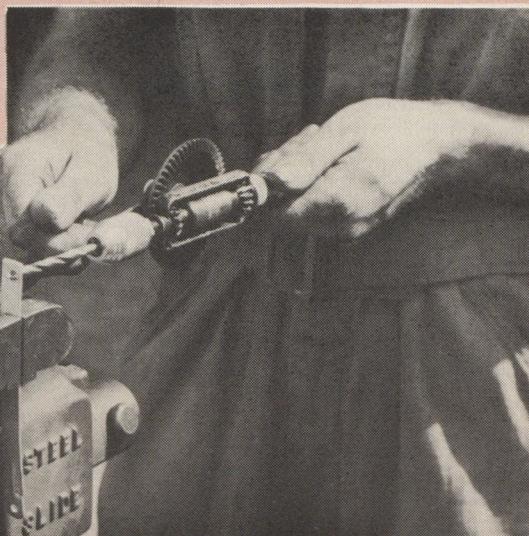
FOR every AAF man in the sky, at least ten must remain on the ground, performing the thousand and one tasks required to "Keep 'Em Flying".

The AAF has confidence in its mechanics. It is betting millions of dollars worth of equipment and thousands of lives that they know what they're doing. In order to make this a safe bet the AAF makes sure its mechanics are the best. Only the cream of the enlisted personnel of the Army can be Air Forces mechanics--and then only after months of intensive training. In return for his services the Air Forces pays the mechanic well--up to \$150 per month plus clothing, food and shelter.

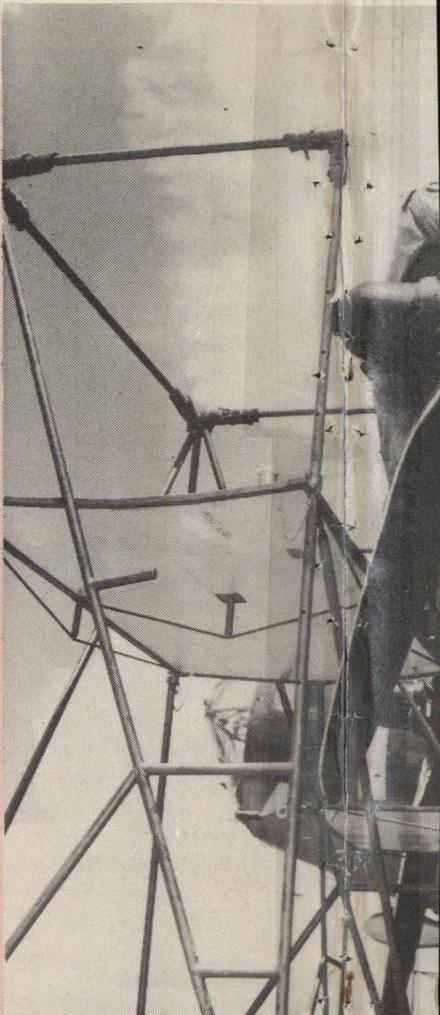
The AAF mechs not only "Keep 'Em Flying" in the United States--they follow their planes right into the toughest combat zones. Their's is no soft life, but they have the satisfaction of knowing that they're good, and that they're doing one of the biggest jobs in the Air Forces.



Constant care keeps 'em' humming.



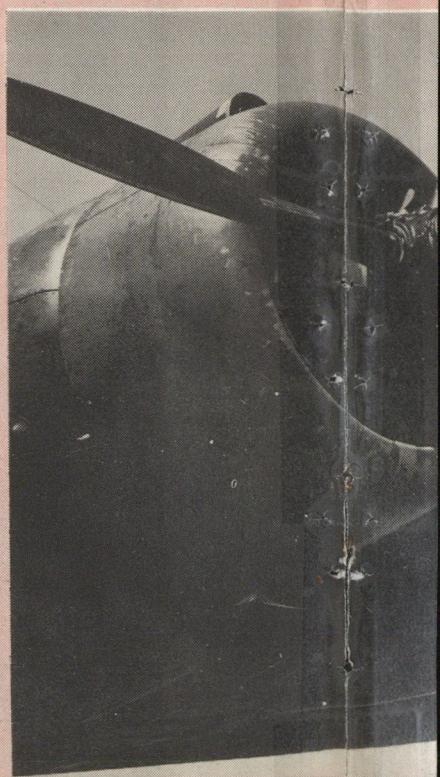
One of the 10,000 little hand jobs needed to make a Flying Fortress tick.



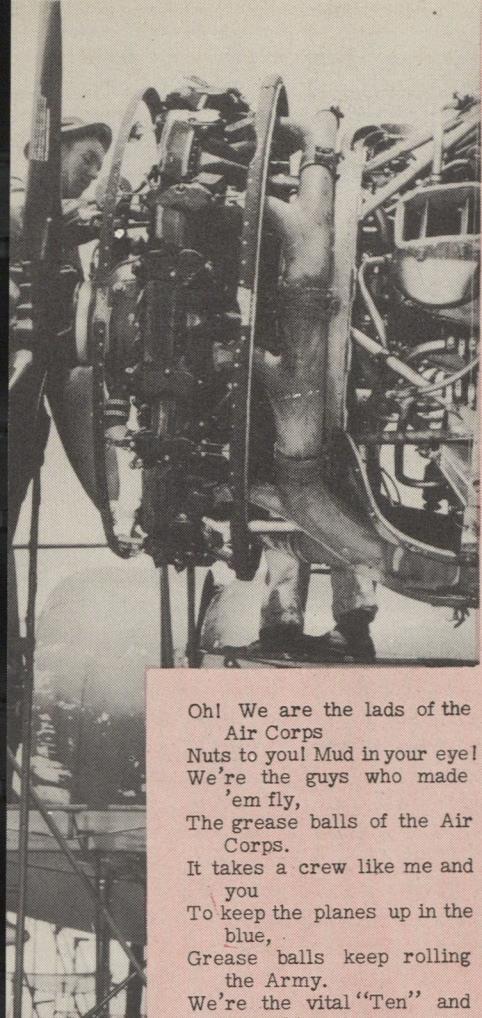
Busy hands out-of-doors.



Washing an elephant is play compared with the task of bathing a bomber.

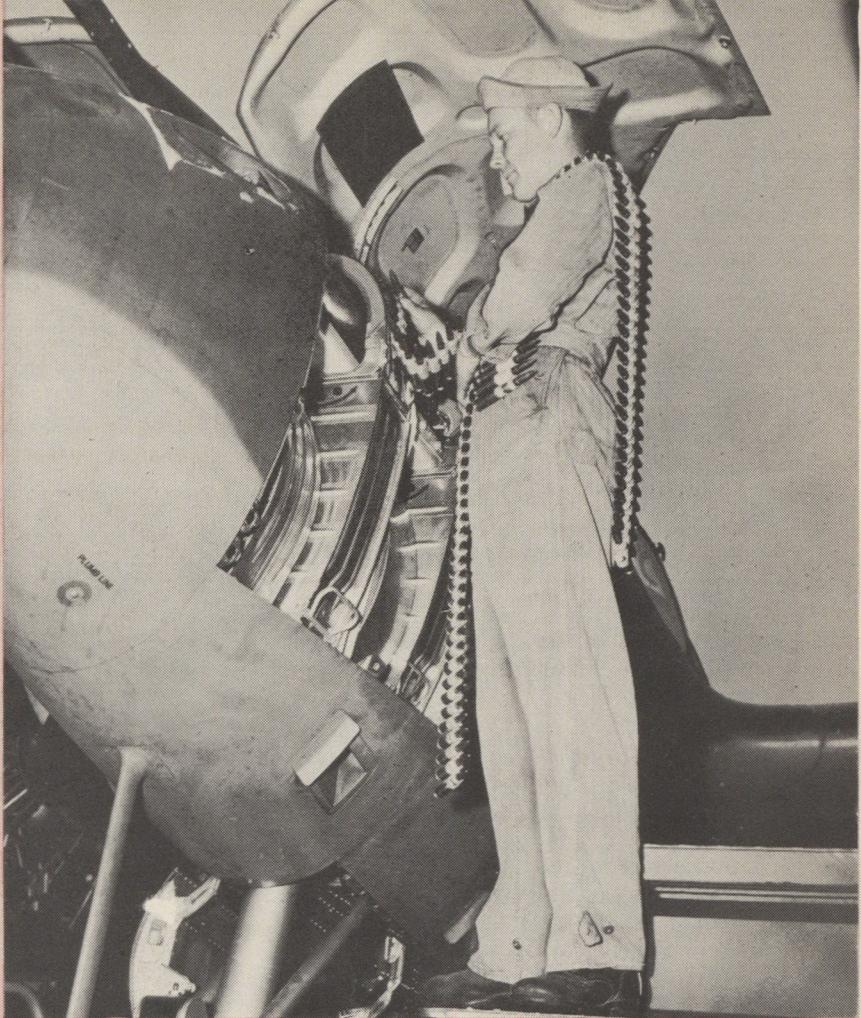


The mighty motors

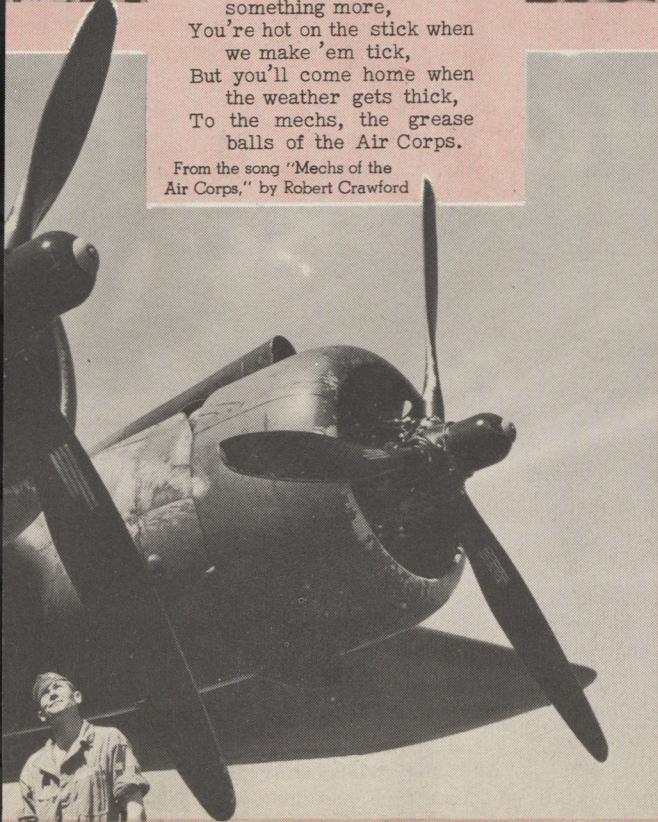


Oh! We are the lads of the  
Air Corps  
Nuts to you! Mud in your eye!  
We're the guys who made  
'em fly,  
The grease balls of the Air  
Corps.  
It takes a crew like me and  
you  
To keep the planes up in the  
blue,  
Grease balls keep rolling  
the Army.  
We're the vital "Ten" and  
something more,  
You're hot on the stick when  
we make 'em tick,  
But you'll come home when  
the weather gets thick,  
To the mechs, the grease  
balls of the Air Corps.

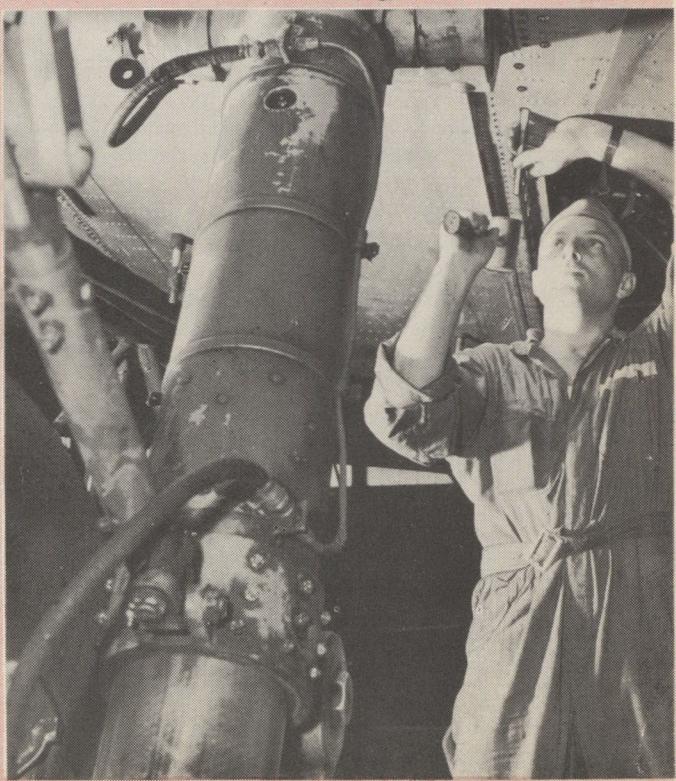
From the song "Mechs of the  
Air Corps," by Robert Crawford



A mechanic-armorer puts the sting into a pursuit.

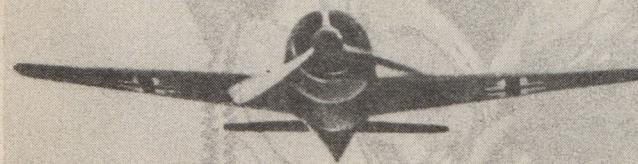


of a B-17 are given last minute pre-flight inspection



Thousands of screws must be inspected.

# Through British Eyes The Luftwaffe Today



Front View of "FW 190"

A N examination of Germany's present air strength suggests that the Luftwaffe of 1942 is inferior, both in numbers and in quality, to the Luftwaffe of 1941.

Such a statement may appear to be born of optimism, yet the more the facts are probed the more certain the condition appears. The flying equipment of the Luftwaffe has been improved during the past year, but the introduction of new fighters and bombers cannot make good shortcomings in other fields.

Briefly the reasons for the present shortcomings are: (1) Loss of valuable leaders and experienced pilots, (2) Less thorough training, (3) A wider distribution enforced on the Luftwaffe, (4) Heavy losses in Russia and over Malta, (5) Curtailed production as the result of R.A.F. bombing, and (6) A falling aircraft production relative to Allied production.

The backbone of the Luftwaffe's flying personnel has been the several thousands of ex-members of the Condor Legion who fought in Spain. They were the first European airmen to gain experience of air tactics in modern war. Almost all the well-known Commodores and Wing Commanders of Jagdgeschwader Pursuit Groups and practically all the fighter pilots with more than 70 victories to their credit, belonged to that crack formation. The late Colonel Molders, the late Majors Wick and Balthasar, the present Inspector of Fighters, Colonel Galland, and the Commodores of Pursuit Groups, Lieutenant Colonel Lutzow, Majors Trautloft and Oseau, all belonged to the Condor Legion. Most of the holders of the Knight's Insignia of the Iron Cross flew in the Spanish War.

Like the German Army, the Luftwaffe suffered heavy losses during the Russian Winter offensive. It has paid a heavy price for its raids on Malta, and in meeting the daylight challenge of the R.A.F. over France and the Low Countries. The number of obituary notices in German papers announcing the death of Luftwaffe personnel who fought in Spain rose sharply during the Winter months. There were many fatal accidents, and the Luftwaffe's fighting strength was drained still more by transfers of experienced airmen to training schools or to the staffs of Air Divisions, Air Corps or Air Fleets, and other admin-

istrative posts where their experience was considered of great importance. Moreover, several Luftwaffe officers--their number will remain unknown until the end of this War--were drafted to other services, and there is at least one instance of a former pilot of the Condor Legion becoming a submarine commander.

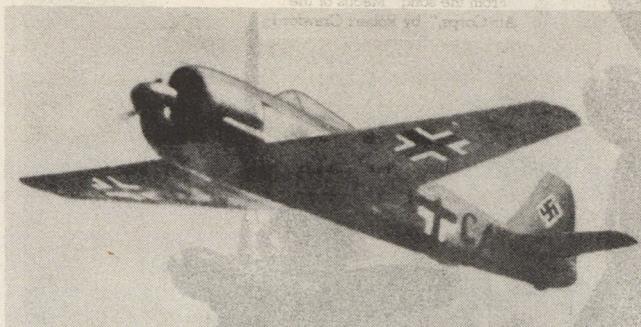
Airmen trained since the outbreak of war have been sent into action by the thousands. Although many of them have shown courage and skill as high as that of their older comrades, they lack the long experience which the "Spaniards" gained. Moreover, they are not as well trained as the regular airmen or those who joined a front-line unit during the first 18 months of the War.

Since the Battle of Britain, when the Luftwaffe suffered its first severe losses, training has had to be accelerated to match the output of the British Commonwealth Joint Air Training Plan.

Before the War, German pupils averaged about 200 flying hours before they received their wings, and underwent special operation instruction before going to a Staffel, an operational squadron. Now, the average pupil obtains his pilot's certificate after 100 hours, and most of the operational training is gained on active service. As the selection of candidates is now less strict than before the War, the average German pilot of today cannot be as efficient as the average airman of a year ago, and still less than at the beginning of the war.

## Equipment

Squadrons of the Luftwaffe fighting on the principal fronts--in particular over the Channel area--are equipped with better aeroplanes than they had a year ago. The ME 109F1 and F2, and the Focke-Wulf FW 190H single-seat fighters have



Three-quarter View of "FW 190"

better performances than the earlier ME 109E. The ME 110C is being replaced by the ME 210, and reports from Germany indicate that the Focke-Wulf company is still experimenting with the FW 187 Zerstorer (Destroyer). The Henschel HS 126 is no longer in quantity production and is being replaced by the more efficient FW 189 twin-boom type built for tactical reconnaissance and ground

attack. Of the new bombers, only the Dornier DO 217 multi-purpose bomber is yet in service. Comparatively few of the queer-looking three-seat Blohm and Voss BV 141, the four-motor HE 177 and the new Junkers JU 91 four-motor bombers have been in service so far. These types are only just coming into quantity production and few are likely to be seen for some time--unless there is truth in the report that German aircraft factories in former Polish territory have been building new types in large numbers for some time.

Perhaps the most important point of all is the numerical strength of the Luftwaffe. The Luftwaffe of 1942 is certainly inferior in numbers to the Luftwaffe at the outbreak of the Russian campaign. At that time the operational strength of the Luftwaffe was about 6,500 first-line aeroplanes. This fell to about 4,000 machines by the end of 1941 and the first-line operational strength can now hardly exceed 5,000.

This deficiency in numbers is not offset by the higher quality of the equipment. More efficient fighters and bombers can make good a deficiency in numbers only when the opposing air force cannot command aeroplanes of equal quality, or when the force with superior quality can concentrate at a few vital points while the more numerous force is widely scattered. Neither condition applies to the Luftwaffe. Allied Air Forces are using aeroplanes at least equal in quality, and the Luftwaffe is now widely scattered and unable to concentrate as it could in the early days of the War.

#### Distribution

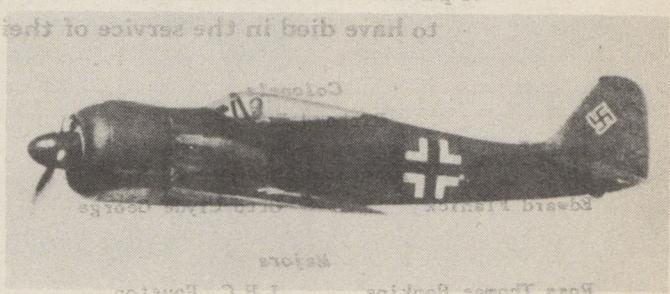
At the start of the Russian campaign in June, 1941, the bulk of the squadrons of the Luftwaffe were stationed along the Eastern Front, waiting for reinforcements, particularly in fighters, from Marshal Sperrle's Luftflotte (Air Fleet), which had had to guard the Western Front. The units did not arrive before the middle of July in the Southern and Central sectors of the front.

Elsewhere there were only comparatively small Luftwaffe contingents. General Geissler's Air Corps had been recalled from Sicily and had gone East. North Africa held a bare 200 fighters, reconnaissance machines, Stukas and bombers; more were not required as the opposing British forces did not receive reinforcements until some months later. Practically all the Luftwaffe units which had fought in the Balkans and over Crete had been transferred to the Ukraine.

Probably fewer than 50 German first-line aeroplanes were stationed in Greece and Crete, and even the Italian air units which could be spared for newly occupied countries were small because of the heavy losses which Mussolini's "White Eagles", had suffered from the attacks of

the Royal Air Force in Africa.

Inside Germany, fighter--and in particular night fighter--protection was poor. General



Side View of "FW 190"

Kammhuber was busy forming his Night Fighter Division which was to be equipped with more suitable types. Until then, the chief German night fighters were the elderly Arado AR 68 and Heinkel HE 51 single-seat fighter biplanes, although a few HE 113s and ME 110s were used. The new Night Fighter Division was to be equipped with ME 109s for interceptor work, with ME 110s for pursuit, and with JU 88B night fighters for pursuit and intruder work.

The pauses in air operations during the Winters of the first two years of the War were not accidental. The Germans used them to overhaul their war machine, to improve its organization according to the lessons learned, to train and re-equip the troops, and to prepare for coming offensives. Something like a million and a half men were sent to the factories in each of the two first Winters of the War in order to speed up production, but in the third Winter the Russian offensive upset the Nazis' plans and demanded the recall of thousands of German soldiers who had been sent home on industrial leave. In consequence, armament production schedules were not fulfilled, and still sterner measures had to be enforced to raise factory outputs. One of the new rules made absenteeism a crime almost as great as treason.

Shortage of labor is Germany's most serious problem--as it was in the last War. In an attempt to overcome it, the Germans are employing still more women in industry and still more foreigners.

Despite all the measures taken, aircraft production from June, 1941, to the end of the first quarter of 1942 fell far short of German needs. Output increased by a bare 10 per cent. and was attained only by extending existing plants. Though higher than a year ago, production is inadequate to meet the increased commitments of the Luftwaffe and, judged side-by-side with Allied production, shows a comparative decline that may soon become catastrophic.

But it is too early to assume that the symptoms now visible are comparable with those that marked the decline of German air power in the last war.--Reprinted from *Aeroplane*.

# PRO PATRIA MORI

A partial list of officers and men of the Army Air Forces officially reported to have died in the service of their country since December 7, 1941.

## Colonels

Richard E. Cobb

## Lieutenant Colonels

Edward Flanick

Otto Clyde George

## Majors

Ross Thomas Hopkins

J. H. C. Houston

David P. Laubach

Norman Jett Lewellyn

Mark K. Lewis

Floyd J. Pell

Charles L. Robbins, Jr.

Clarence McPherson

Jack S. Marks

Jerome John Simandi

## Captains

Virgil Calvin Alleman

Louis Anthony Almeida

James Albert Cox

John Denis Franciscus

Harold E. Hammers

Robert D. Hunter

Harry Willson Markey

William Edward Mulvey

Gerald McCallum

Patrick William McIntyre

Franklin S. Nelson

Albert Burice Norrod, Jr.

Elmer Leroy Parsel

Morris Pelham

James A. Plant

Robert W. Rulkoetter

Lytle William Small

Sherman F. Stacher

Glenwood G. Stephenson

Baron Brodine

John P. Stewart

Allison Wayne Strauss

Donald R. Strother

Jack F. Todd

William P. Underwood

Donald E. Wilburn

Berle Elvin Sampson

Emmett F. Blakemore, Jr.

Harold Clair Smith

Donald Ranson Harris

Burrill Charles Davis

Leland Douglas Bradshaw

## Second Lieutenants

Wm. James Gowan

Donald Lavon Chase

Turner Earnest Savage

Benjamin Harry Sherman

Werner C. Von Berckefeldt

H. Dewitt Kelley

Roy Murrel Crothers

James Sherrill Carithers

John Ferguson Stevenson

Charles Allen Kinzie

Jack Windham Pounds

Richard Edward Baldsiefen

Newton Henry Simpson

Raymon Dail Clement

David Allen Southard

Treman Jackson Barber

Wm. Walter Bennett, Jr.

Frank Haskell Pulley

James Irven White

Dana Wm. Bradford

Angus Martin Johnston

Ronald Charles Hocking

James Wm. Lauck

John Samuel Fennell

Robert Gay Kaspar

George Hemingway Bennett

Mario Lawrence Biava

Frank Samuel Stiertz, Jr.

Duane Tripo Crosthwaite

Glen Roy Metsker, Jr.

Lawler Clyde Neighbors

Albert Luman Spehr

Jay E. Pietzsch

John S. Greene

## Master Sergeants

Fred Peoples

## First Sergeants

Herbert B. Martin

## Technical Sergeants

Daniel A. Dyer, Jr.

Monroe M. Clark

## Staff Sergeants

George K. Gannam

Felix Bonnie

## Sergeants

William Charles Jones

Edmund B. Lepper

James L. Reed

Edward R. White

## Corporals

Robert R. Garrett

James M. Topalian

William C. Krueger

Hubert McDonald

## Privates First Class

Joseph F. Nelles

Marion H. Zaczkiewicz

George Price

James I. Lewis

Eugene L. Chambers

Dexter C. Woodman

Alan Thibido

Charles E. McNary

## Privates

William M. Northway

Donald D. Plant

William H. Manley

Lawrence P. Lyons, Jr.

Joseph Jedrysiak

Theodore K. Joyner

Otto C. Klein

Rex Nelson

Leslie V. Long

Robert R. McLennan

Robert L. Jennings

Carroll P. Foster

Lawton Jay Woodworth

# Red Sentries of the Skies

By Major N. Denisov  
Russian Air Force



AIR patrolling is a very important phase of the combat duties of fighter planes. Patrol fighters can safely cover their own ground troops on the battle-field, on the march and in bivouac. Properly executed patrolling prevents the enemy planes from reaching military objectives. The following is based on the combat experience of our fighters:

During combat it is impossible to have forces everywhere. The main mission of fighters is to support the assault groups or echelons and parties raiding enemy rear. It does not mean, however, that other ground troops are without protection; these latter simply have less air cover.

Combat plans for fighters must include a careful study of meteorological conditions. A cloudless sky simplifies our fighter problem but also permits higher altitudes and greater maneuverability for the enemy. Clouds at average altitudes require close coordination between patrol ships. If it is very cloudy the methods decided will depend on the altitude of the clouds; if our patrols are improperly employed, the enemy planes can approach under cover of the clouds and, breaking through them, make sudden attacks. Conditions of visibility, light and other meteorological factors, studied before hand by the commander, frequently permit the fighters to gain a tactical advantage over the enemy; and also permits anticipating the attack, nullifying the element of surprise.

Very important is the schedule of flights based on *consumption of fuel*. For clarity, I shall cite an example. A squadron under command of Captain Potanin was covering our ground troops attacking an important objective. The captain organized his command on a two-altitude and two-relief plan. The schedule called for half of the planes to be in the air while the other half was refueling. When the fight started the beautiful schedule became practically a worthless piece of paper. What happened was that most of the unit was over the ground troops at the same time so that when refueling was necessary the ground troops were left undefended.

During the critique of the battle it was learned that all the pilots operated their planes at maximum speed all the time. Naturally the schedule, which was based on average speeds, was worthless. Although the number of take-offs was more than the schedule called for, at times most of the planes were in the air and at other times the ground troops were without protection.

This occurred because the personnel of this squadron was accustomed to fly at maximum speed forgetting about the flight time and the effect on the mission. Maximum speed, which consumes the most fuel, is applied to overtake the enemy, for acrobatics and the air fight itself. Using maximum speed in any other case causes the pilot to remain in the air a shorter time and burns up considerable fuel unnecessarily.

In one case, one or two flights can be in the air at the same time to cover a very limited area at all altitudes; in another case patrols may be disposed in groups echeloned in altitude. A combination of these two methods may be used. One cannot prescribe one method for all cases.

The Germans have tried different methods in attacking our troops. Sometimes they concentrate their attack in one place and, echeloning their flights of four to six planes on a time basis, try to bomb our troops. Sometimes they use the so-called tactics of nuisance bombing--their bombers, mostly singly, periodically fly over our troops dropping bombs promiscuously. It is evident recently that, fearing losses, the Germans have applied the principle of force in their attacks. For example, in several sectors of the Southwestern Front recently it was noticed that the bombers were accompanied by a considerable number of fighters. Such mixed groups of 25 to 30 planes were made up of Junkers and Messerschmitts.

One of our squadrons had six Laggs cruising over the front line. The upper flight was flying in a 5 - 6 point cloud density and the other under the clouds at a 1,200 meter altitude. There appeared four Junkers-87's, flying in pairs, at a distance of 1½ kilometers and just under the clouds.

Thd first attack was made by our lower flight on the leading pair of Junkers. One of them caught on fire and plunged to the earth; the other, expending his ammunition, disappeared into the clouds. The second pair came on and, not changing their course, went into the clouds. The lower flight commander, knowing that the other flight was above, kept his altitude and continued observation. The succeeding events proved the correctness of his actions.

Emerging from the clouds a Junkers plane from the first pair headed for his own lines but was observed by our upper flight. Our leading plane began pursuit and the remaining two Laggs continued to patrol. (Continued on Page 38)



TEC

# Thunderbolts

FROM THE BLUE

THE P-47s are girding for action.

These big, tough packages of firepower, long looked forward to as "the best fighter planes in the world", are already on the wing, as these pictures show.

Loaded with eight .50 caliber machine guns and thick sheets of armor plate, the P-47 Thunderbolt weighs six tons--compared to the two and one-half tons of the flimsy Jap Zero. But that doesn't keep it from flying higher and faster than anything else on wings with only one engine.

Turbo-supercharged for high-altitude flying, the P-47's 2000-horsepower, 18-cylinder engine can pull it along at a speed of approximately 400 miles an hour, and can send it zooming up to 40,000 feet without any effort. The engine is made by Pratt and Whitney.

"Eclipsing the best" is what General Henry H. Arnold has said about the P-47. Assistant Secretary of War for Air Robert A. Lovett has called them "the sweetest stuff you ever saw in your life." Engineers and airmen who have flown and tested the Thunderbolt are unanimous in their description of it as the roughest, toughest and best fighter plane so far built by this or any other country.

In the picture at upper left three P-47s hold a tight formation at 10,000 feet. At center a Thunderbolt is silhouetted against the sky.

Below is the "Lucky Seven"--a P-47 presented by the employees of the Republic Aviation Corporation to the Army Air Forces. The men in the picture are, left to right, Lt. Col. Davis D. Graves, who accepted the gift for the Air Forces, Harold Frovo, representing the employees of the Republic Aviation Corporation, and Major Richard Al Ames, another Air Forces representative.

# TECHNIQUE

A Monthly Review of Technical Developments in the Air Forces

## Aerial Ambulances

SWIFT transportation of wounded to behind-the-lines hospitals is the objective of the new Medical Air Evacuation Group of the Army Air Forces.

Transport planes converted into aerial ambulances capable of carrying as many as 40 patients will be used by the Group. Each plane will contain facilities for medical treatment including blood transfusions while in flight. The planes will serve a double function, bringing in supplies as well as taking out the wounded. Over difficult terrain, a trip that may take as many as 18 hours by ground travel can be accomplished in less than an hour by air.

The photograph below shows the interior of one of the converted airliners, filled with practice "patients" being transported speedily to a hospital well behind the "front". The men were brought to the plane in field ambulances.



## Nail Pickup Magnet

AT Gunter Field the Post Utilities Office has developed an electro-magnetic nail pickup device for retrieving old nails and scrap metal from roads, parking areas and runways. The purpose of the device is to eliminate tire punctures on airplanes, trucks and automobiles, and to obtain metal for salvage purposes.

The magnet shown above consists of one piece of four by six inch wood, 72 inches long, two salvaged tail assembly wheels from a training plane, two pieces of angle iron, 11 electric coils and the necessary bolts. The wood is mounted on the two wheels, the coils are mounted between the two angle irons and connected to each other in series. The irons and coils are then suspended by chain under the wood, clearing the ground by approximately two to three inches.

The generator is of the small portable type, gasoline driven, and capable of producing 110 volts and 22.7 amperes direct current at 2400 rpm. The generator is mounted on the front of the motor tug by use of flat iron straps. The magnet is hitched on the rear. The motor tug can be the standard AAF Clark Truck Tractor, or some similar tractor.

## Plexiglas for Face Protection

PLEXIGLAS, the plastic material used in streamlining the Air Forces' fast combat planes, plays a far different role at the Sacramento Air Depot, McClellan Field, California, in protecting the eyes and faces of war workers.

A safety shield, made of the crystal-clear glass-like material, has been developed by the field's safety and fabrication departments. The shields are not only used at the field, they are also made there from salvaged materials. When large squares of plexiglas are cut to manufacture a cowling of a pursuit



Plexiglas Mask In Action

plane or a gun blister for a bomber, the scrap cuts are used for safety shields.

The McClellan Field safety masks cover the whole face. They are held in place by elastic head bands similar to those used on the common sun visor. A simple device makes it possible for the wearer to lift and lower the shield as it is needed.

More comfortable than the old-fashioned goggle it replaces, it is at the same time more sanitary. No part of the device comes in contact with the wearer to pass on skin or eye diseases. Free circulation of air behind the shield prevents fogging. Workers wearing the safety shield have unobstructed vision and those who wear corrective lenses may do so with no difficulty.

Lt. Vahan Eghoian, safety officer at McClellan Field, points out that by actual experiment it has been found that in some cases efficiency has been raised as much as 30 percent, and that less fatigue on the part of the workers has made them less susceptible to industrial accidents.



### For Training Combat Crews

**N**o rivets spoil the smooth exterior surface of this new Air Forces combat crew trainer announced in the June issue of the *News Letter*.

Built almost entirely of Duramold, the AT-13 is one of the largest and fastest of AAF training planes. It was designed to train bombing crews as a unit, and contains places for bombardier, pilot, co-pilot, navigator-radio operator, machine gunner and camera man.

The AT-13 has been successfully test flown, and is going into quantity production.

### Transportation Device

**T**HE word "drip" probably means something to you--but the chances are it doesn't mean what it means at the Air Force Basic Flying School, Gardner Field, California. At Gardner a "drip" is a two-wheeled wood-and-metal frame resembling a truck trailer, designed to carry pilots from their planes to the operations office.

With the drip approximately 30 passengers can be saved the half-mile walk to the flying line at one time. The drip is tiered so that pilots may sit down, and has a top platform that can be used for luggage.

The drip was invented by Major William O. Moore, Commanding Officer of the Sub-Depot at Gardner Field, who got his idea from the "elephant cars" that transported visitors around Treasure Island during the San Francisco World's Fair. Nobody seems to know how the device came to be called "drip".

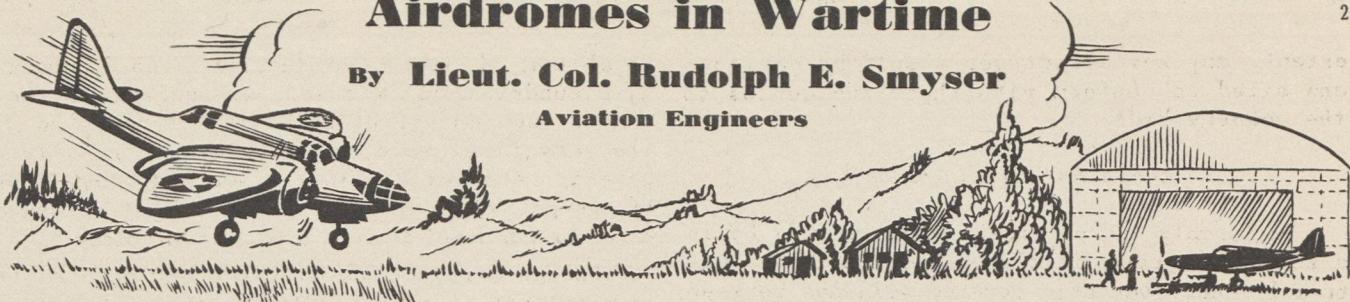


A Trip In A Drip

# Airdromes in Wartime

By Lieut. Col. Rudolph E. Smyser

Aviation Engineers



HANGARS at field airdromes are designed to protect against climatic conditions only. Generally these structures will be simple wire or steel frame buildings or with metal, wood or canvas sides. They should be fire and storm resistant but the size including the vertical height should be the minimum consistent with proper use. If planning for the future, it appears that a hangar will have to be at least 200 by 165 feet with a clear height of 35 feet and with a door opening approximately 125 by 25 feet. Hangars to accommodate the larger type planes will be rare at field airdromes and in lieu thereof simple nose hangars, either single or double will be substituted. If smaller planes are housed at the field as another expedient, plans may include either a blister type hangar, which is a thin metal with canvas nets, or even a revetment with a light covering, which is also equipped with canvas drop to form a door. Essentially, what is desired is that there be some place in which mechanics can work both with protection from the weather and with facilities permitting operation during blackout.

#### *One Hangar Per Airdrome*

Normally, not more than one hangar per airdrome will be constructed. This building must be carefully sited to obtain the maximum concealment. Whenever possible, it should not be on the actual landing and take-off area, but rather in a nearby area to which airplanes can taxi. No aprons will be built as they tend to give the hangar location away.

It has been suggested that these repair hangars be made bomb-resistant, preferably by being underground. Superficially the idea is attractive, but loses merit under close scrutiny. Even were men and materials available, such structures cost roughly two to four times the value of all planes that could be placed in them at one time, yet would never give absolute protection. After all, the important element is not the one or two planes undergoing repair, but the machine tools and essential spare parts. A direct hit on a simple steel hangar as previously described would not destroy the entire structure; in fact relatively slight structural damage would result. Planes within would be seriously damaged or destroyed, but if the machine tools were given a surrounding protective wall of concrete or sandbags, relatively little

damage to them would ensue. At field airdromes these facilities will generally be in trailers which can be parked under trees in the vicinity of the hangar. When a semi-permanent establishment is indicated, these trailers can be given improvised protection of sandbags, or earth traverses.

Under special conditions, it may be necessary to construct Theater of Operations type buildings to house these power tools. In this case, the buildings should not be added as a part of the hangar but should be kept at least 200 yards away. Other technical repair facilities should always be located off the landing area and not within 200 yards of the hangar or other conspicuous targets.

Technical and operational buildings comprise the structures necessary for the operational control and continued technical training of the air units. Although most of these will be located in the immediate vicinity of the landing and take-off area, a formalized arrangement should be avoided. Only the control tower needs to be located in the immediate vicinity of the runways, and even this structure can be made less conspicuous by utilizing an existing structure if available, or by so siting to obtain the maximum amount of screening possible from topography or existing ground cover.

Operation buildings should not be near conspicuous features of the runways or other prominent landmarks. Buildings should be low and inconspicuous, should duplicate local architecture and should have no standard location with respect to other airdrome features, or similar features at other airdromes. This building should be splinter and gas proof. Where existing shelter is inadequate and tentage is unsuited, Theater of Operations type housing will be constructed. Before actual construction is undertaken, thorough reconnaissance of the area near the airdrome to find suitable areas is necessary. Except for the shelter required by airdrome defense personnel and crews on 24-hour duty, all other housing, messing and recreational facilities should be in 200 to 300 man groups off the airdrome area but within 1,000 yards. These groups should be not closer than 300 yards to each other, and centered roughly on a communal site which contains post exchange, mess, and other facilities shared in common. Fullest possible use should be made of any existing building, and to the greatest possible

extent, any new structures should be designed and sited to conform with those indigenous to the country side.

#### *Avoid Pattern Layouts*

Preferably the hospital buildings will be in a separate group by themselves, and the extremely characteristic covered walkways between buildings should not be used, nor should a formalized close-knit layout of buildings be used unless such groups are to be found elsewhere in the vicinity.

As an adjunct to all living accommodations, as well as other buildings in which personnel habitually stay, air raid shelters are required. The simplest and one of the most effective is the slit trench, revetted and braced to resist earth shock. Splinterproof overhead cover should be provided both for protection and to assist in hiding the location of the trench. In lieu of trenches, dug-outs or cut-and-cover shelters can be made. Simple ones designed for 25 men are readily constructed of corrugated metal with earth, or earth and concrete covering.

Defensive structures are required on all field airdromes. No airdrome is immune from the threat of hostile attack, so provision must be made to meet and overcome this danger. In peacetime airdromes at least, such installations are conspicuous by their absence, being generally confined to a fence around the airdrome and a siren or whistle suitable for audible signals.

On an operational airdrome, an audible signal system is also necessary, and may be supplemented where possible by a loud-speaker system connected with the various dispersed elements of the command. Through this system the command can not only be placed on the alert, but can get specific information about the type of attack expected.

#### *Use Barbed Wire*

Instead of industrial fencing, which is primarily an anti-sabotage measure, barbed wire is used to inclose vital elements of the station, thus forming defended points of resistance. As with any obstacle, it must be covered by the fire of defensive weapons.

For weapons, a variety of emplacements are needed, most being of the typical field type of earth and sandbags. However, concrete pillboxes may be constructed where opportunity permits. These should be sited to be mutually supporting, and to cover the landing area and routes of approach to the airdrome. Too much reliance can not be placed on these fixed emplacements, for even with a liberal use of dummies and camouflage an attacking enemy will succeed in destroying a good percentage by bombing.

No description of an operational airdrome is complete without a discussion of camouflage, yet

no element of passive protection is so frequently misunderstood, misused, or neglected. For some reason an air of unreality is connoted by the very first word, even though it is only a general term for a number of common sense ways of preventing an enemy from seeing what is being done, or has been done at a particular place.

For an airdrome subject to enemy attack, it is vital not only to hinder the enemy bomber in locating the general area of the flying field, but to make the identification of a particular target confused, if not impossible. Concealment from the camera is the final goal, but from practical standpoints, ability to deceive the eye is sufficient. Like any other remedy for an ailment, it works best the sooner used. In fact, best results can only be obtained when camouflage is considered simultaneously with the first plans. Camouflage must be a forethought, not an afterthought.

Without going into the technique of camouflage, we may state that there are four general steps or procedures which may be employed.

The first is to make the airdrome less conspicuous, primarily by merely reducing contrasts. Thus sharp white concrete runways are darkened, and large hangars and administrative buildings are given neutral dull colors.

#### *Landing Area Disguised*

Next we attempt to lessen its resemblance to a conventional airfield, by making it appear like something else. This may be accomplished by disruptive patterns and screens, with the idea of breaking up form lines and shadows of buildings.

The third step carries the deception to the point of actual disguise. The landing area is given false hedge lines and roads, while buildings are made to resemble farm houses or other structures of the neighborhood.

The last step is to draw the enemy away from the actual location through the judicious use of a dummy or decoy. At some convenient point, preferably from  $1\frac{1}{2}$  to 3 miles from the installation to be protected, a replica is built. This dummy faithfully follows the general pattern of the original, but is allowed to remain not too well concealed. Camouflage is placed poorly, and obvious marks of activity are simulated. Properly done--and not overdone--the decoy will give the real installations good protection for a long period. At night, excellent results can be obtained with a few lights, placed to simulate the markings of the real field. When operated under direct control of the real field, the decoy can be darkened while friendly planes land at the real airdrome, then turned on again as soon as the need for the lighting is past.

## We Scour the Seas

(Continued from Page 10)

craft engines growing louder on the night air. The attack at Aalesund is perhaps typical. In November, 1941, nine Hudsons attacked at mast height shipping in this small harbor deep in the Norwegian fjords. Four enemy ships were sunk or left sinking. A fifth was left in flames and an escort vessel was severely damaged. A fish oil factory was set ablaze and a power station and German barracks were bombed. And to complete the night's work a lorry was hunted along a road and forced to crash into a ditch!

Behind all these activities lies the Battle of the Atlantic--that grim war which goes on unceasingly and relentlessly against the U-boat, waged to keep open the supply lines essential to the Allied war effort. The U-boats leaving or returning to their harbors in Germany or the Bay of Biscay are forced to travel submerged while within the range of aircraft or to take the consequences of being caught on the surface. This means a prolonged passage and less time on actual operations: and so the U-boat tends to take a chance even when actual necessity does not force him on top of the water. But he is a small target and a wary one. Many hours of flying in all weather conditions are necessary to sight him. Again there are convoys to be protected when threatened by the U-boat pack. Experience has taught that no more effective antidote to sinkings exists than the maintenance of air escort through the threatened zones. In this, as in all its operations, Coastal Command works in the closest co-operation with the Admiralty; and that so many convoys arrive unscathed is a tribute to the effectiveness of this teamwork.

### Just a Few

These are but a few of the activities of the pilots and aircrews of Coastal Command--space prevents little more than their mention, and others, such as the work of the Long Range Fighter Squadrons, Meteorological Flights, and Air Sea Rescue, must be passed over.

The coats-of-arms of the Coastal Squadrons hang on the walls of the Mess at Headquarters. Their devices are numerous, their mottoes are many--but the latter are summed up in that of the Command, "We search and strike". Day and night, in fair weather and foul, the pilots and aircrews of the Command have been flying on operations since the first day of the war. It has been computed that already more than 50 million miles have been flown, or approximately 2,000 times round the world. This has not been carried out without cost: nor has it been without successes, as well perhaps as disappointments. The Command will so continue with increased numbers and increased effort until the day of final victory comes.

## One in a Million

(Continued from Page 12)

taking the full load of preliminary examination and study of ideas submitted.

In addition, the Council serves to coordinate ideas throughout the military establishment. It will send reports of devices to all branches of the War and Navy departments which might remotely be interested, thus making sure that no possible use for the suggestion is overlooked.

When an idea or proposal is submitted to the National Inventors Council, it is classified in one of three categories: (A) "Hot stuff"; (B) "Has possibilities", and (C) "Not good". This classification is directed by Colonel Lent's engineering staff, and meritorious suggestions are referred immediately to the appropriate office or agency of the Army or Navy. In the case of the Army Air Forces, ideas considered useful in the AAF are coordinated through Colonel Benjamin W. Chidlaw, who acts as liaison officer between the AAF and the Council.

### Board Acts On Ideas

Three officers, respectively representing the Air Forces, the Ground Forces and the Services of Supply, review all worthwhile ideas connected with the war effort, and a monthly line-up of those proposals considered to have value by the armed forces are submitted to Colonel Lent, so he can keep his scoreboard up to date.

Colonel Lent's interest in inventions connected with the airplane is understandable; he is one of the founders of America's present-day air strength. He joined the Aviation Section of the Signal Corps back in June, 1917, after several years experience in designing, building and operating gasoline engines, and one month later was commissioned a Captain. After considerable service as engineer officer, he won his wings in May, 1918, serving variously as Commanding Officer of Brindley and Roosevelt Fields. His rise through the ranks was continuous until 1919, when he was honorably discharged with the rank of Major--but eleven years later he was soon back in harness again as a reserve air officer and in 1931 advanced to the rank of Lt. Colonel in the Air Corps Reserve..... a rank he holds today.

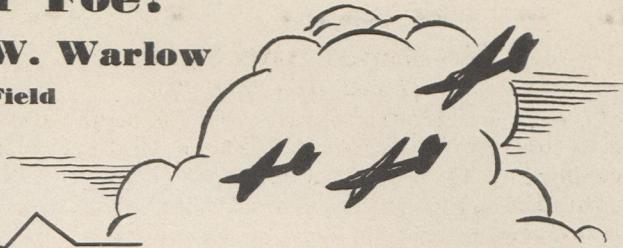


The U.S. Treasury has created a "War Contributions Fund" into which all private donations for the furtherance of the war program will be deposited.....Next time you fellows in the Hawaiian area write home, ask the folks to reply by regular mail rather than air mail except in emergencies, to help cut down the overload of billet-doux that tie up needed aircraft space.

# Friend or Foe?

By Captain F. W. Warlow

Wright Field



If you won't look up, you'd better look out. Most of the world learned that the hard way. We still have time to learn it the easy way.

When the bombs began to fall from the skies over Europe and China the people looked up--but too late. When they tried to retaliate, ignorance frustrated their efforts--many times they didn't know their enemies from their friends.

Sometimes they were slow in firing and got bombed; sometimes they were hasty and shot down a friendly plane. Even the British, who staved off invasion, made mistakes. Through bitter experience they learned the importance of a tested spotting technique.

With the stern lesson of Europe fresh in our minds, Americans are beginning to realize the importance of being able to identify the planes that in ever-increasing thousands are spreading their wings over continents and oceans. But it is doubtful if the average American knows with certainty the silhouettes of five AAF military planes. Too few men in the AAF can make positive identification of an equal number of foreign types.

In a nation committed to total war, this is a serious deficiency that can only be corrected by a definite overall program of instruction. For the establishment of such a program a number of different identification systems have been under consideration.

## The "Common Sense" Method

The most basic of these is the "common sense" method. This study, which was used until recently by the majority of service schools, begins with general characteristics and leads into specific. First, the airplane's structure is divided into units and terminology is established for each unit. Then, types of airplanes and, later, individual models are identified from the top, side and bottom by beginning at the nose and working backwards; and from the front by beginning at the wingtip and working in toward the fuselage. Realistic perspective views are also included.

When Pearl Harbor loosed a cry for identification material, the Signal Corps Training Film Production Laboratory at Wright Field under Col. F. W. Hoorn, began production of 30 Air Forces' films based on this method, photographing models, silhouettes, and actual planes. The completed motion pictures of this series have been used extensively to complement other aids to

identification instruction now used in the services.

Another popular identification method is the Block System. In this system, which originated in England, the parts of an airplane's structure as seen from the side, top, bottom and front are represented by standardized blocks. Each one of these represents a structural unit, such as fuselage, engine, tail.

After a student learns to associate particular blocks with the structural units of an airplane, he learns to identify types of airplanes and then individual models by variations in the arrangement of the blocks. For instance, the block representing the vertical fin and rudder will be farther from the end of the fuselage on one airplane than on another, and the blocks representing the engines will be in the wing on one multi-engined airplane and slung below the wing on another.

On the surface, the block system seems too general. Those of us who have had experience in identification usually stress details like the belly line of the fuselage or the location of a radiator for quick identification. We forget that the block system is designed to get green students quickly under way. It accomplishes this by developing an eye for form rather than for the details that confuse beginners. Finally, the door is left open for limited advanced training through the representation of details, such as turrets, with additional symbols.

## The WEFT System

A third method of identification is the WEFT system, another British development. This is the system now used generally throughout the Army and Navy in conformity with the Allied Nation's program of standardizing equipment and training. The WEFT system gets its name from the structural units which the student is drilled to take up in order: W--wings; E--engines; F--fuselage; and T--tail. By constant drill, the observer is taught to study airplanes systematically, his eyes moving to the four salient features. In time, he learns speedily to synthesize these features.

In some respects, the WEFT system is the same as that first described, the "common sense method". This similarity exists because the wings and engines of distant airplanes are not

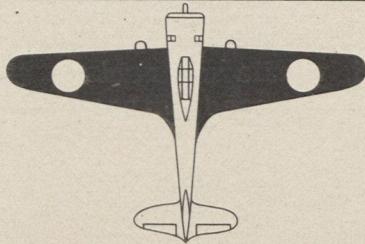
# How to spot JAP AIRCRAFT

WING

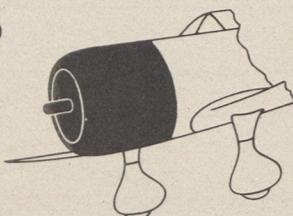
ENGINE

FUSELAGE

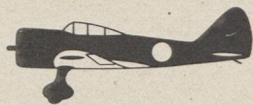
TAIL



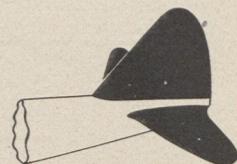
ROUND TIPS



RADIAL

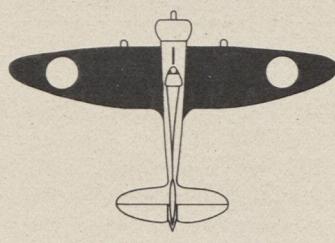


FIXED GEAR

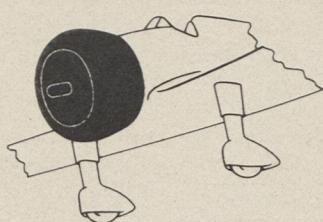


ROUNDED RUDDER

## MITSUBISHI - 97 - FIGHTER



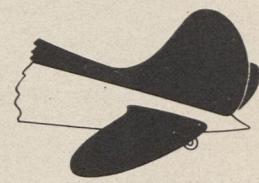
ELLIPTICAL



RADIAL

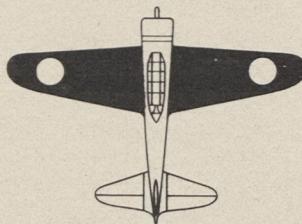


FIXED GEAR,  
OPEN COCKPIT

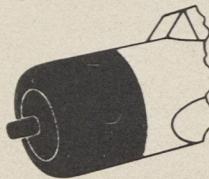


DORSAL FIN

## MITSUBISHI - 96 - FIGHTER



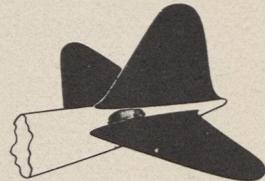
ROUND TIPS



RADIAL

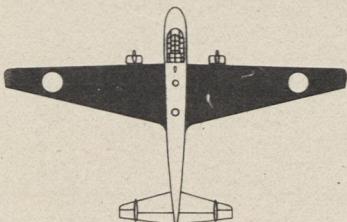


RETRACTABLE GEAR

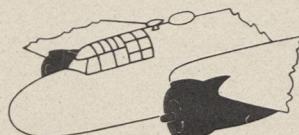


ROUND TOP

## MITSUBISHI - 96 - BOMBER



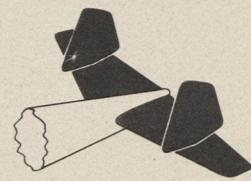
SQUARE TIPS



TWIN RADIAL

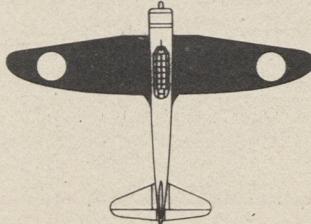


ROUND NOSE

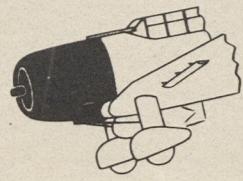


TWIN TAPERED FIN  
AND RUDDER

## AICHI - 99 - DIVE BOMBER



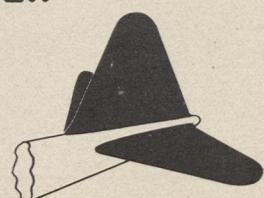
CURVED TRAILING EDGE,  
ROUND TIPS



RADIAL



FIXED LANDING GEAR



TAPERED FIN  
AND RUDDER

a twin-motor airplane at three or four miles will reveal a silhouette of fuselage and tail alone. By necessity, the WEFT system sometimes becomes an FT system. Just as in the common sense method, the fuselage is studied, beginning with the nose, and then the tail.

However, the WEFT system is better for our purposes than the "common sense" or the Block system. It does not involve too radical a change from the methods of instruction employed until recently by our armed forces. It has a catchy name, which is important in securing popular support. It is emphatic, stressing as it does only four points. It lists in order of importance to the beginner's eye the basic elements of an airplane's outline as seen in classroom illustrations and in flight nearby. It has been adopted officially by Great Britain after several years of experimentation with various systems; and finally, our adoption of it has made it the standard of the English-speaking world.

#### *Other Methods Needed*

The WEFT system alone, however, will not make Americans reliable airplane spotters. Like all present systems it emphasizes almost exclusively the elementary stage of instruction. Other devices must be employed to prepare our soldiers, sailors and civilians for split-second identification. This can be achieved by drill in details. Advanced students should be taught to identify airplanes by peculiarities in one structural unit. Cards or slide films bearing no more than a tail, nose, or section of wing should be enough clue for the keen spotter. Gradually, the time allowed for study of these details can be shortened until speed and accuracy in recognition are developed.

More realistic methods of teaching speedy recognition are through motion pictures. The Signal Corps Training Film Production Laboratory at Wright Field has experimented with "Quiz Reels." Two-engine fighters, for instance, are reviewed and then shown in short flashes while the commentary challenges the audience to test its skill in identification. The media employed are animation, model photography, and stock shots, some of which are actual battle scenes.

Major R. C. Locke, working under the Air Forces' Director of Individual Training, is preparing training films which dramatize identification. Through these screen stories, identification instruction is subtly woven. The hero is the man in the cockpit of a P-39 or the tail of a B-17E who knows which fast flying silhouettes deserve a squeeze of the trigger. This project is in a preliminary stage at the Signal Corps Training Film Production Laboratory at Wright Field. When the WEFT system is augmented more fully by advanced forms of instruction, the me-

thod for a thorough, nation-wide identification training program will be at hand.

The systems and facilities we already have and those to be developed, however, must be centrally controlled. We have an indoctrination program of national scope to administer, and we have to make up for a late start. Some beginnings in centralization have been made. Lt. Col. J. M. Hayward of the Foreign Developments Laboratory at Wright Field has fostered the collection and organization of identification material for military uses. Files are kept of aircraft by nationalities and individual models. Periodically, this information is condensed into pamphlets dealing visually with all the leading military aircraft of one nation or with an outstanding individual model.

In addition, a chart presenting the principal Japanese aircraft according to the WEFT system has been prepared. The Signal Corps Training Film Production Laboratory found this information invaluable for identification films. The Foreign Developments Laboratory, however, is primarily interested in technical changes in aircraft rather than in changes in appearance. Colonel Hayward has tried to keep abreast of identification only because he thought it a neglected area in our military preparations.

#### *Standardized Program*

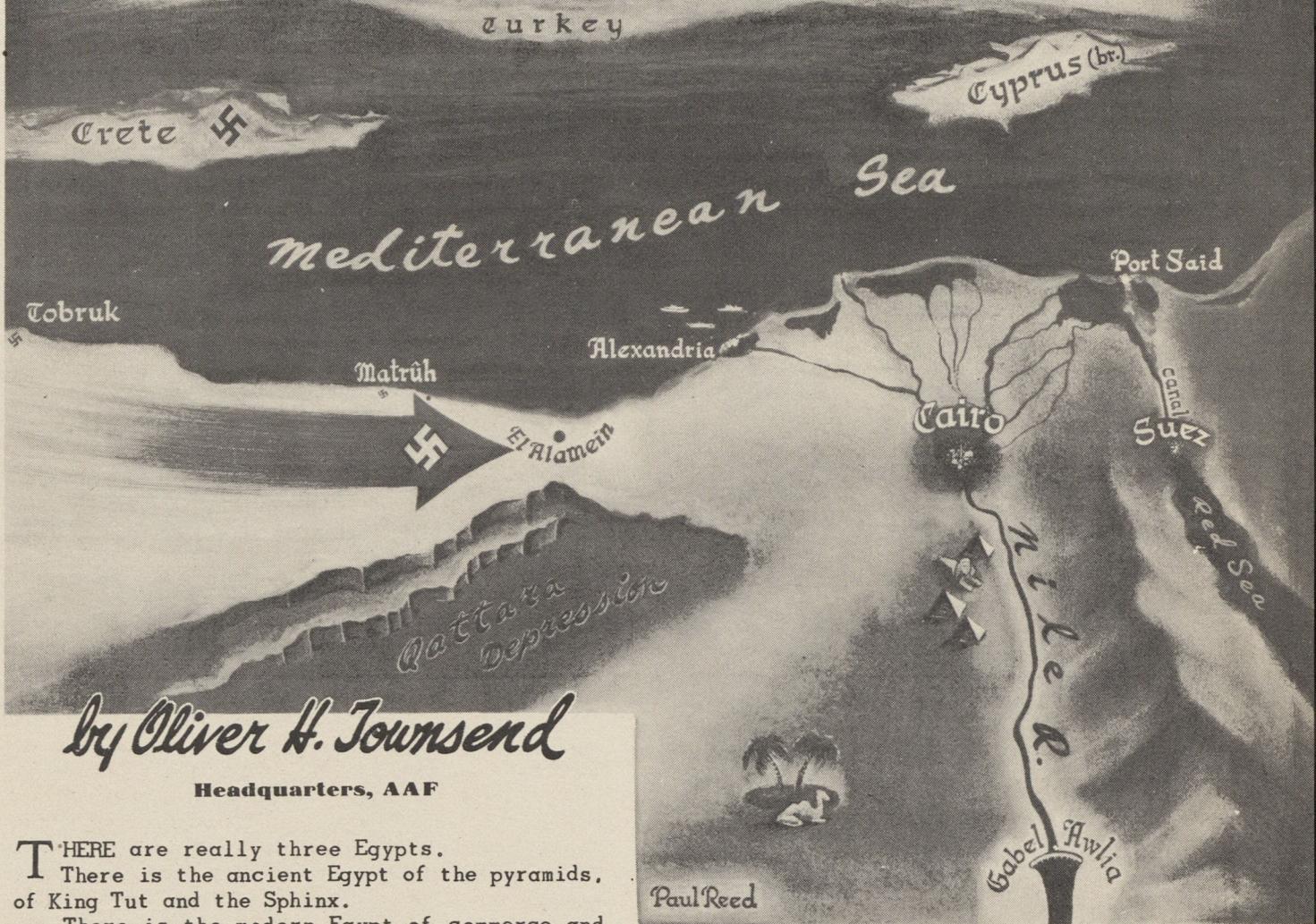
A standardized identification program should include a centralized agency to administer national identification. It would be desirable if this agency could be composed of representatives of the Army, the Navy, the Federal Office of Education and the press. This agency could not only develop methods of teaching aircraft recognition but could also prepare teaching aids and distribute them to service schools, public schools, Boy Scout organizations, the press, motion picture syndicates and other responsible organizations. In addition to Army and Navy sources, this agency could utilize the photographic files of newspapers and newsreels in obtaining material for educational purposes. It would be the duty of the Army and Navy to determine the correctness of the silhouettes, photographs and models that were utilized.

Many other advantages and means of identification instruction through a centralized agency could be enumerated. It is of the utmost importance that both military and civilian Americans be indoctrinated with this important subject. The time required would not be great; but the need is tremendous. Our lives and those of our pilots must not be lost through ignorance and our airplanes needlessly demolished through mistaken gunfire.

Let's learn to spot the enemy in order to pot him!



# EGYPT



by Oliver H. Townsend

Headquarters, AAF

THERE are really three Egypts.

There is the ancient Egypt of the pyramids, of King Tut and the Sphinx.

There is the modern Egypt of commerce and agriculture, of boat traffic on the Nile, of busy wharves at Alexandria, and of rich, irrigated farm land stretching along the Nile Valley all the way from the Mediterranean southward into Sudan--the Egypt of modern peasant and modern laborer, toiling in the fields and shops, virtually oblivious to the war and the part it must play in his own destiny.

And there is the foreigner's Egypt that sits astride the lifeline of the British Empire, the Egypt of the Suez Canal, of the great naval base at Alexandria, of the airdromes that have sprung up in the desert--the cosmopolitan Egypt the foreigner sees in Cairo, the Egypt of dancing girls, dress uniforms, martinis mixed by bartenders from London and New York, Shepheard's Hotel, and of cheap honkytonks that have grown up in the native quarters to give the foreigners a good show.

The war has brought a business boom to the

Egyptian's Egypt, and it has made the foreigner's Egypt one of the two or three most important spots on earth. But ancient Egypt it has not affected at all.

## Sphinx Still Watches

The Sphinx still watches the armies swarm across the desert just as it has watched armies swarm across the desert for 45 centuries. It has seen the great empires of Assyria, Macedonia, Rome and France crumble there. Most recently it has seen the German Field Marshal Erwin Rommel reach out for Cairo, Alexandria and Port Said, only to have them slip through his army's long mechanized fingers like the hot sand of the desert.

Rommel seeks the foreigner's Egypt. He is after the naval base at Alexandria, the airdromes, the Suez Canal and all the land beyond.

He wants Egypt because then he could move against the Holy Land and Syria, Iraq and Iran. And perhaps he could join forces with the other Nazi armies coming down through the Caucasus--maybe even with the Japanese in India.

As this is written, Rommel, after a see-saw battle climaxed by an 800-mile dash across the desert, is stalled at El Alamein in the narrow "isthmus" between the Mediterranean and the great, cliff-bordered marshy lowland known as the Qattara Depression. This narrow stretch of sand between the sea and Qattara is like the mouth of a funnel that lets the desert into Egypt from Libya.

Rommel, as soon as he can, will try to break through the funnel into Egypt. The British will try to stop him. Also trying to stop him will be the U.S. Army Air Forces.

If you are one of the officers or men that are being sent to fight the Nazi in Egypt you ought to know something about the land you are going to defend.

Egypt is like a huge mass of protoplasm living from one great single artery--the Nile River. The Nile begins back in the mountains of central Africa and flows for 4,000 miles to the sea. Only the last 960 miles of its course are through Egypt.

#### Nile Valley Narrow

The Nile Valley, though long, is very narrow--not more than 10 to 12 miles wide--until it reaches its delta just north of Cairo. There the river fans out into a myriad of small streams, creating one of the most fertile regions on earth. The Nile delta and the lower valley support a population of over 1,100 people to the square mile. Even Belgium, the most crowded country in crowded Europe, has only 600 people to the square mile.

But the rest of Egypt's 386,000 square miles are little more than barren wasteland. Although the Nile bisects the desert, it has no tributaries in Egypt proper, and the single stream has made only about 14,000 square miles arable, even with the aid of the most modern irrigation methods. It is in this area that most of Egypt's sixteen million people eke out their existence.

In ancient times the Nile used to dry up to almost nothing during part of each year, and overflow into cities and farms the rest of the time. Now the river is harnessed by a series of control dams, with the system built around the great Gabel Awlia dam that spans the Nile several hundred miles above Cairo. Its 16,400 feet of concrete make it five times as long as Boulder Dam, but only one-fifth as high. Probably the most important bastion in all Egypt, Gabel Awlia controls the flow of the Nile, preventing floods and keeping the valley fertile.

About 100 miles from the Mediterranean,

gleaming in the hot sun like a jewel in the handle of the fan-shaped Nile delta, is the great city of Cairo--capital of Egypt and the largest city in all Africa. A large, cosmopolitan metropolis in ordinary times, Cairo's normal population of over a million and a quarter is today swelled by thousands of soldiers from all the United Nations.

Cairo's crowds have made living quarters almost impossible to locate. They jam the cafes and restaurants, they raise the price of food and they make entertainment hard to find. Social life is practically nil. Most of the cafes outside of the two or three ultra-swank spots are honkytonks with an artificial "atmosphere", often operated, not by natives, but by former "pub" owners from all over the British Empire.

There are a few movies in Cairo. All but one are outdoors under the cloudless Egyptian sky. Most of the films are made in Hollywood, but the Egyptian subtitles, the jabbering of the natives, the eat-and-drink vendors and the long intermissions make them at least "different" to attend. The one modern enclosed, air-conditioned cinema in Cairo is operated by an American firm.

#### Pound is Used

The money used in Cairo, as in the rest of the country, is the Egyptian pound. It can be purchased for \$4.10, but if you don't watch out it won't go very far. Prices are high and you have to know how to deal with the natives to keep from going broke, especially if you feel like patronizing the many street vendors.

Although Cairo is an ancient city, it has many modern sections, and the large foreign population gives it some of the aspects of an occidental town. Automobiles and streetcars are everywhere, and modern office buildings are mixed in with the domes and minarets. Perhaps because of the large foreign population, you can easily find western food that is fairly good, though expensive. Too much experimentation with the native foods should be avoided--it might lead to that common African affliction known as "gyppy tummy".

The Egyptian people are generally apathetic toward the war. But they are friendly toward the soldiers who have come to keep the Nazis out, and a tolerant and friendly attitude toward the native will usually find a warm response. Mostly the people are interested in the business the war has brought them. Many of them will want to sell you souvenirs or take you sight-seeing.

The sight-seeing around Cairo is good. Just across the Nile and upstream a little is Giza, where the famous pyramids and the Sphinx are located. Sight-seeing parties leave often for Giza, or you can go over by yourself. In Cairo,

(Continued on Page 38)

## Fireworks Over Europe

(Continued from Page 3)

or shine. Actually, both Bennie and I learned some navigation from Dorton.

### Tempo Picks Up

Finally July came and things began to move with plenty of speed. Just three days later the entire thirty-six men, composing the first American combat group on an operational basis in England, found themselves assembled in the crew room, listening to our Commanding General tell us that we were to have the honor of celebrating the coming Fourth of July in a way which we had never celebrated it before. The general's predictions were quite concise and true.

The evening of the Third of July, a "Battle Order" for the succeeding day appeared on the bulletin board in the crew room, and on that battle order were six American crews, or a total of 24 men.

We had all seen R.A.F. crews come out of the briefing room, each man wearing a different expression, but in the eyes of all of them a strange determined look, which defied any questions which might be asked.

We were wondering if we too would be that way! Without exception we were.

Our first look inside the briefing room was rather terrifying. Maps, with colored pins all over them, covered the walls. Aerial photographs of previous raids were posted on bulletin boards around the room. Occupying the most prominent spot in the room was a large display board, which was divided into four parts. In each one of the sections were photographs and scale drawings of one of the four targets for this particular mission.

The particular target in which our crew was interested was an ME 110 aerodrome at DeKooy, which is located at the northern-most tip of Holland. In our particular formation of three planes, besides ourselves, was another American crew and one British crew, captained by Squadron Leader Kennedy, who was a veteran of unnumbered operations.

The room was in a roar, with everyone speaking at once, but suddenly silence fell as the Wing Commander and Group Captain walked into the briefing room from the Operations Office. At once everyone focused their attention on the Wing Commander and listened attentively to every word he uttered.

First he explained to everyone that the operation was to be a joint effort by American and British crews. From that point on he carefully outlined each target, where they were located, what kind of planes we could expect to find based there, and most important, what kind

of anti-aircraft defense we could expect to find there.

From that point on, the leader of each *vic* of three planes took over, and laid out the plans for his particular job.

We were to go in low level, line abreast, with each of the three planes concentrating on a definite part of the aerodrome. It was to be our particular job to get the hangar, while the other two got dispersed airplanes and the barracks. Of course any enemies which might be caught on the aerodrome were to be open to attack from the man nearest them.

Captain Kegelman, S/Ldr. Kennedy, and Lt. Leehrel, the pilot of the third plane, were busy discussing the way in which we would approach the target, the manner in which we'd leave it, and what evasive action would be taken. Lt. Dorton was busy checking his course with the other two navigators, and Bennie and myself were questioning every R.A.F. gunner on the mission as to the correct radio procedure, colors of the day, and what sort of calls we would use if enemy aircraft were sighted.

### Silence Again

Then silence fell again, and I think for just a second every fellow in the room held his breath for just a second. Anyway, I know that I did, and then the Wing Commander said something like, "Gentlemen, your time of take-off will be 07:15 a.m., tomorrow morning; be in your ships by 07:00 a.m. Are there any questions? Good luck, gentlemen".

After that we started filing from the briefing room, each crew instinctively getting together, but not one of them saying a word about "tomorrow." That night it is doubtful that anyone slept very much; everyone, I think, kept turning over in his mind what we had been told, what we were expected to do.

Early next morning, at 5:00 a.m., we were roused out of bed by the orderly and after dressing proceeded to the mess hall for breakfast. It is surprising when I look back on it, how very much was said, and yet not one word was mentioned about the coming operation, which I am quite sure was uppermost in every man's mind.

That hour, between six and seven o'clock on the morning of July 4, 1942, is probably the hardest I've ever spent, waiting for the zero hour. Finally we were in the airplane, and with the starting of the engines, all nervousness and impatience vanished. We were about to begin our first operation.

Taking off and circling into formation actually took minutes; to me it seemed to take hours, but eventually we were down low, in close "vic" formation out over the English Channel. We could see the other three "vics" off to our

right, all four vics holding a loose formation.

At that time Bennie and I were checking our equipment for about the ninety-ninth time, and forever looking out for anything that might come out of the blue above and down at us. It wasn't too long before the other three "Vics" started to leave us, as we changed our course in a northerly direction and they went south, and from then on we knew it was we three crews against the Germans, and we could hardly wait.

*"Terribly Long Time"*

It seemed to take a terribly long time before we were across the Channel. But before we were within range of his 30 millimeter anti-aircraft guns "Jerry" started sending out a barrage of tracer that looked impenetrable to the leader of our "vic". Immediately we knew that our approach had been noted and sent ahead of us, and that the Germans were ready and waiting for us.

The only recourse left open was to attempt to circle the field and come home, and this was the course that S/Ldr. Kennedy followed. Immediately after crossing the Dutch Coast, the No. 3 plane of our vic was hit, and crashed, the speed of the impact causing the plane to disintegrate entirely. Shortly following this incident, the right or starboard engine of our ship was hit, and the prop was shot away, came sailing past my hatch in the bottom of the plane.

It is easy to imagine what a startling effect this had on me, and as if that wasn't enough, that was followed by a loud "whrump", and suddenly both my legs were thrown to the top of the fuselage.

My first impression or thought was that Bennie had knocked down a Messerschmitt, but when the right wing went down and we hit the ground with a terrific crash, I didn't have to be told that it was our propeller; I was very much aware of it.

Lying on my stomach in the bottom of the plane, I received a terrible shaking when the plane struck. A hole of about two-square feet was knocked through the bottom of the fuselage just aft of the bomb-bay doors. The force of striking the ground numbed both my legs, and for a few seconds I thought they had been shot up. It wasn't until we were actually away from the target and I could examine them was I at all sure.

With our right engine gone, a big hole in the belly, and the right wingtip crumpled for about a foot back from the end, the right wing and engine nacelle caught fire.

This had all happened while we were flying at about 300 m.p.h., and consequently lasted but a few seconds, although in those few seconds, I made a few hasty resolutions. In the meantime, the leader had drawn away from us and was quite

some distance ahead, and firing at him directly on his right was a flak tower. In order for us, on one engine, to effect a safe passage back to the coast, it would be necessary for us to pass this tower. As slow as we were on one engine, it seemed impossible. Therefore the captain flew directly at the tower, knocking it out with his forward guns.

In the meantime, both Bennie and myself had been busy with our flexibles, and both feel confident that we accounted for one gun emplacement each. After getting back over the channel again, nothing was said by anyone for a couple of minutes, and with the cessation of gunfire, the silence was deathly.

Then all of a sudden Capt. Kegelman called back and asked if we were all right. We answered yes, and checked on him and the bombardier... they were both O.K., and then we really talked the thing over. Every few minutes we'd check each other to be sure that all possible angles of attack were covered, and to eliminate that awful nervousness that follows a terrible nervous tension such as we'd just been under.

It seemed that it took us hours to get back to the English coast. We were overdue at the base, and everyone was getting anxious about whether or not we'd return.

*Shaken But Safe*

It's hard to find words to describe the feeling you get when you come so close, and then once more get back and can crawl out of the old "kite" onto good old mother earth again, but believe me it is one of the most sensational feelings I've ever experienced.

Immediately following our return, we were interrogated by the intelligence officer. At the interrogation a complete story is told, as accurately as can be observed and remembered by all members of the crew, of any thing which pertains to a military nature. This might mean the type of flak encountered, enemy ships which attacked you, troop movement observed, or anything else which might catch the eye and appear out of place on the landscape.

In our case there wasn't much to tell except that the Germans had a devil of a lot of guns over there and sure knew how to use them. Of course the loss of number three ship had to be reported and all possible details concerning it given. After the interrogation we had lunch and at lunch we could and did freely discuss all points of the trip.

In closing this story I'd like to say to anyone who reads it, especially aerial gunners about to pull their first operation, that the job of the aerial gunner is comparable to any other job in the Army, and to do that job successfully and completely, there must never be an end to your training, for training can begin, but it must never end.

## Midway

(Continued from Page 5)

the middle and broke into what looked like half a dozen big pieces."

Anderson complained he didn't get a chance at the second vessel either, said it met a similar fate almost simultaneously.

"There our ship was in the air 17 hours, and I didn't get to drop a single bomb," Anderson said.

Lieutenant L.W. Felling, navigator of a B-17 told of his first battle impressions.

"In the distance we saw hundreds of fighter planes hovering above the fleet of burning ships. Someone said on the inter-phone, 'Everybody at battle-stations, here come the Zeros'. In spite of what appeared to be long odds against us every crew member took his battle-station and got ready for action. The flight then continued to fly on course to bomb the Jap ships.

"Finally we had another, but a more pleasant, surprise. We found that those clouds of Zeros were nothing but bursts from the Jap anti-aircraft guns. In the future our crew plans to study identification until we can at least tell the difference between Zeros and A.A. fire".

### "Zeros Dove On Bombers"

Lieutenant Balfour Gibson told of one way of getting injured in the Battle of Midway:

"We started our run across the Japs with the sun directly in back of us. Their battleships and cruisers were giving us broadsides as well as heavy anti-aircraft fire. The Zeros had been diving on us and suddenly I heard Major George Blakey, our pilot, holler. Looking up I saw a Jap plane slow-rolling over us,--bullets from four '50s' hit him, that's all there was to that. Upon landing at Midway and leaving the plane I walked into the wing, cutting my eye".

Lieutenant Otto Haney, Springfield, Missouri, pilot of a B-17, tells this story:

"After our first engagement with the Jap Fleet and we had landed and serviced the planes, some of the crew members were sitting around talking about the battle and I overheard one of them say, 'Did you see that big ship of ours out there flashing us signals'? When we determined what he was talking about, we all knew we had seen the big ship. We had seen the flashing all right, but it wasn't our ship--it was a Japanese battleship and the flashes were nothing less than broadsides. You might call them signals, at that".

Lieutenant W.A. Smith, who works with his brother, Bob, as co-pilot in a Flying Fortress reported this incident:

"This was the real thing and we were in the middle of it. Jap A.A. fire all around us and Zeros beginning to dot the sky. Sergeant Yeomans was at his gun most of the time and, naturally, was pretty excited, which was proved when he

ducked his head into the cockpit and yelled, 'Look at that Zero down there. Why, that damn fool will kill himself if he doesn't pull out of that dive'."

Technical Sergeant A.D. Johnson enjoys telling the following story about Lieutenant Sid Ingram, bombardier in Major Ernest Manierre's Flying Fortress.

"We were going in our bombing run", Sergeant Johnson said, "Anti-aircraft guns, machine guns, and pom-pom were bobbing us around like a cork. We were all kind of tense and excited. About that time Lieutenant Ingram's voice came over the inter-phone in a calm southern drawl: 'Bombs away. Let's get the hell out of here, Ernie'."

One of the pilots reported a crash landing at sea. "Our gas supply was getting low. At about two o'clock in the morning we started down to make a crash landing in the water. All the crew were in the radio compartment except for me and the co-pilot. They had taken all our winter flying suits and padded the compartment the best they could. Well, we mushed into the water and skipped twice, like a rock skipping across a lake, and then we hit. If you can imagine a large truck weighing about 15 tons going about 90 miles an hour, crashing into a brick wall about 10 feet thick, you can imagine the noise when we crashed. Water flew everywhere. Then there was complete silence for a moment. then the crew started coming out of the rapidly sinking airplane. We piled into two life rafts and then took a rapid count of who was present. One man was absent. We watched the ship go under. Then everyone settled himself as best as he could to get some sleep and wait for the coming dawn".

### Like Swarm Of Bugs

Lieutenant Dave Everitt of Milwaukee sums up the accounts with this typical experience:

"My first impression of the Jap fleet was that of a great swarm of water bugs tearing around all suffering from hot feet. As we approached they took on a more real shape, as they shot wave after wave of anti-aircraft fire at us. When we were just starting the bombing run the Zeros hit us. I'll always remember Corporal Blair, bombardier, hollering, 'Somebody shoot that first clown'. About then all three ships in our formation opened up on him. The Jap fighter pulled up over the formation in preparation for a diving attack, and when we hit him, he just seemed to wilt and fall out of the sky. The tail-gunner, Corporal Dickson, reported that he hit the water burning.

"We dropped our bombs on a big cruiser that was putting up a terrific blast of A.A. trying to protect a Jap carrier that had burned almost to the water line. We got one hit on the stern.



## Landing Gear

*(Continued from Page 17)*

nose wheel down on the runway. Under icy-runway conditions, the best technique is to come in low and slow, under power, and land tail low using flaps and attitude to slow the airplane as much as possible. Apply the brakes in quick, light actions, never putting on or holding much force.

An airplane usually has provisions for a tow bar to be attached (by means of a locking pin) to the nose wheel fork. If this pin is not locked, the nose wheel is free to turn exclusive of the shimmy damper making a 180 degree turn of the wheel probable, with possible strut breakage. It is the pilot's pre-flight duty to see that the locking pin is in its proper position.



## Red Sentries

*(Continued from Page 23)*

The second pair of Junkers-87's, after spending several minutes in the clouds, tried to dive-bomb our troops but was intercepted by our lower flight. One plane began to smoke and tried to land--the crew was killed. The other plane tried to slip through the clouds but ran into the upper flight again--it too caught on fire. Out of the four Junkers, three were destroyed and none accomplished its mission.

The schedule of patrol reliefs in the air must be worked out very carefully. There have been times when our planes have had to return for fuel ahead of time, leaving the air free to the enemy for five to seven minutes. The Germans would observe from the air and ground, and when our planes returned for fuel they would signal their own planes by radio to attack at that time.

Efficiency of air patrols depends considerably on control. It is inadvisable to have patrol landing fields too far from the front line. This not only lessens the fighting time but also hinders the control by the commander. Airdromes and command posts must be as close as possible to the front line troops. By being close, coordination between the air commander and ground commander is facilitated. If airdromes cannot be located forward, advance landing fields must be provided for refueling. Control of planes in the air can be accomplished from the ground with radio and signals. These methods of communication are employed to designate targets. All ground commanders must be able to give signals understood by air patrols. Whenever air support is given, the air commander must establish the signals to be used.



All Officer Candidate School graduates who are discharged to accept commissions may retain all their clothing that is serviceable.

## Egypt

*(Continued from Page 34)*

Alexandria and Port Said there are other famous sights to see. Most of Egypt is filled with historical landmarks, mosques and ancient tombs and palaces.

### Enemy Is Dust

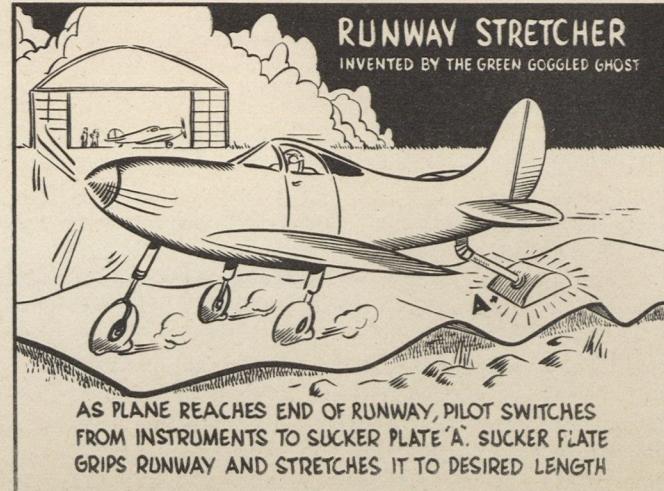
Outside of Cairo is the desert. It rolls right up to the very gateways of the city. Out on the desert life is hard. The soldier's great enemy is the dust. It gets in his eyes (it's a good idea to take goggles if you're going to Egypt), in his ears and in his clothes. It gets in his food. It gets in the motors that drive his trucks, his tanks and his planes.

The other great enemies of man in the desert are the heat and the lack of water. Getting water to drink is hard enough--to find water for bathing and washing is sometimes impossible.

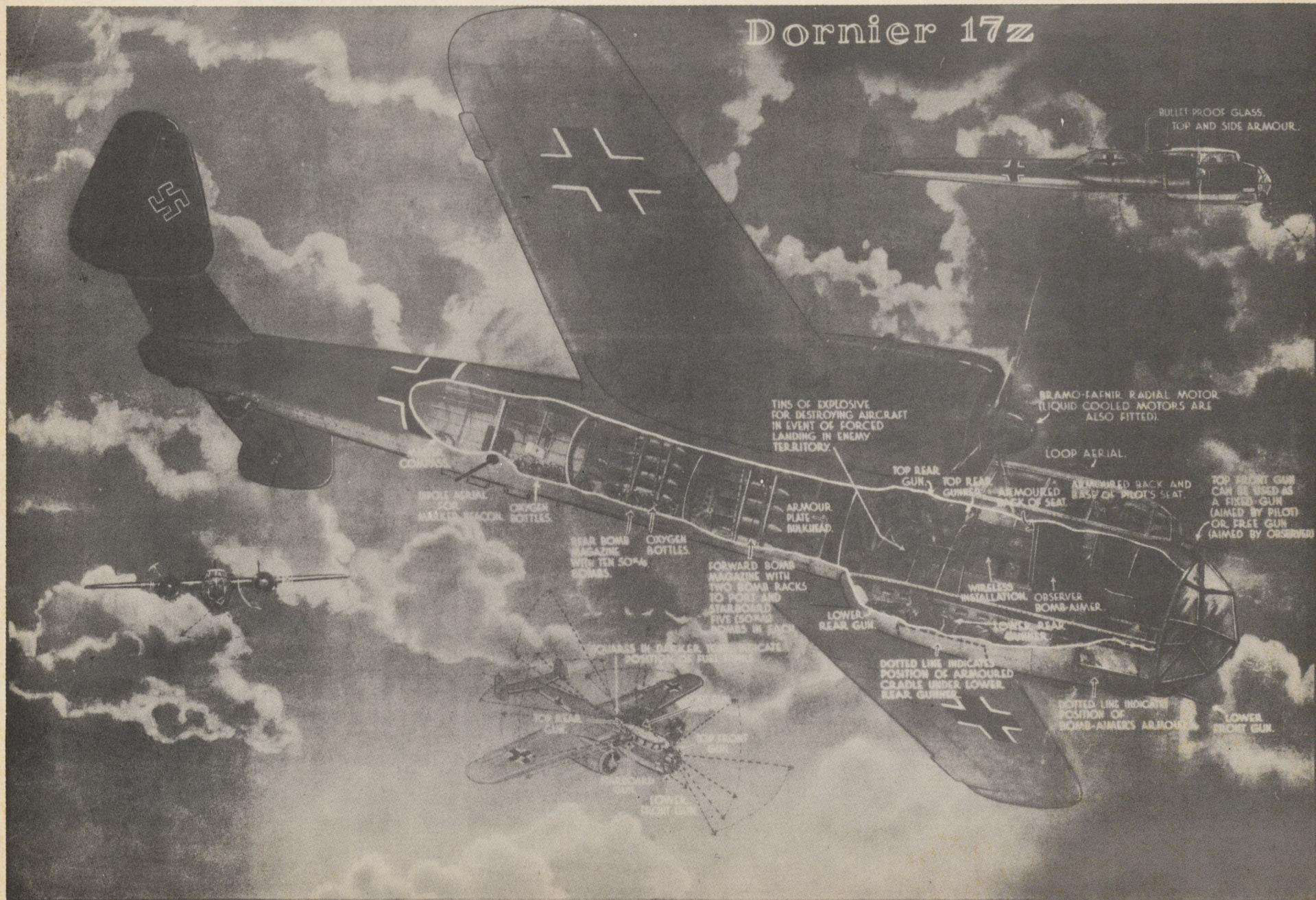
But in spite of the hardships many soldiers have developed a kind of fondness for the desert. The crisp cold nights, the dry air and the cloudless skies are all to the desert's advantage. Sometimes it gets so cold at night that you need to sleep under four or five blankets. The desert moon is big and bright, and good for romance--but good for bombing, too.

Desolate or not, forbidding or not, the German covets the desert--and he's tried hard to get it. He has tried it from Libya, and he will try it again. He can also try by air from his bases in Crete, Greece and Italy.

The fight to keep the German out of Egypt and to drive him back where he belongs is a big one--one of the biggest of the war. If you're going to Egypt to fight the Nazi you'll probably know you've been in a fight before you get back. But you'll also know you've had a part in writing one of the most important chapters in the history of the desert, of the United States--and of the world.



Dornier 17z



# COMPARATIVE Insignia

of the

## ALLIED AIR FORCES

### UNITED STATES



GENERAL



LIEUTENANT  
GENERAL



MAJOR  
GENERAL



BRIGADIER  
GENERAL



COLONEL



LIEUTENANT  
COLONEL



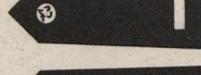
MAJOR



CAPTAIN



FIRST  
LIEUTENANT



SECOND  
LIEUTENANT

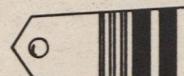


FLIGHT  
OFFICER  
(Proposed)

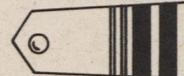
### BRITISH



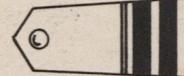
MARSHAL OF  
THE ROYAL  
AIR FORCE



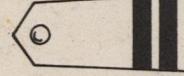
AIR CHIEF  
MARSHAL



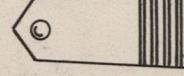
AIR  
MARSHAL



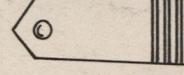
AIR  
VICE-MARSHAL



AIR  
COMMODORE



GROUP  
CAPTAIN



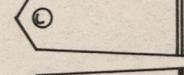
WING  
COMMANDER



SQUADRON  
LEADER



FLIGHT  
LIEUTENANT



FLYING  
OFFICER



PILOT  
OFFICER

### RUSSIAN



MARSHAL



GENERAL OF  
AN ARMY



COLONEL  
GENERAL



LIEUTENANT  
GENERAL



MAJOR  
GENERAL



COLONEL



LIEUTENANT  
COLONEL



MAJOR



CAPTAIN



SENIOR  
LIEUTENANT



LIEUTENANT



JUNIOR  
LIEUTENANT