

# AIR FORCE

THE OFFICIAL SERVICE JOURNAL OF THE ARMY AIR FORCES ☆ DECEMBER 1945

EMBERS OF EMPIRE

Special Issue - AIR WAR IN THE PACIFIC





A N N O U N C I N G

# The Air Force Association

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Established at 1603 K Street, N. W., Washington, D. C.,  
under the supervision of Col. Willis S. Fitch, Executive  
Director. All inquiries should be made to this address.

Watch for further announcements in this magazine and the press.



# Rendezvous

## Bettered

Dear Editor:

I have just read with much interest a letter in "Rendezvous" of October, 1945, issue of AIR FORCE. The letter is from Maj. Andrew J. Milstead, Pope Field, Fort Bragg, N. C., in which the Major tells of the 316th Troop Carrier Group returning from the ETO with three Distinguished Unit Citations and nine campaign stars, and is wondering if this record has been topped.

This is to inform the Major that I believe I can top his unit's record. Until quite recently, I was a member of the 98th Bombardment Group (H), whose personnel returned to the States in April, 1945, after 35 months in the ETO, with two Distinguished Unit Citations and fourteen campaign stars. Since the Distinguished Unit Citation has no point value, it looks like the record of the 98th Bombardment Group tops that of the 316th Troop Carrier Group by 20 points.

Capt. Jerome H. Keating,  
Hq., Continental Air Forces,  
Bolling Field, D. C.

Dear Editor:

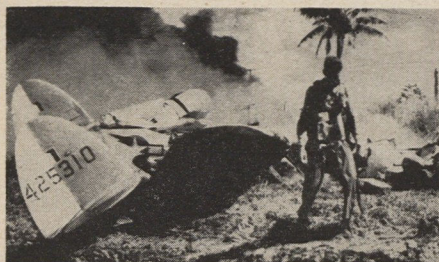
... My old outfit, the 98th Heavy Bombardment Group in North Africa and MTO (15th Air Force) received three Distinguished Unit Citations and thirteen battle stars. This B-24 group pulled the low-level attack on Ploesti from North Africa. This information is based upon official War Department publications.

Capt. Alfred A. Paradise,  
AAF PDC Port Liaison Officer,  
Fort Meade, Md.

## Wrong Crash

Dear Editor:

On Page 36 of your August, 1945, issue is an article entitled "Plane Luck," in which I am personally interested, particularly the accompanying photograph. From what I've heard and as far as I know, the picture is of myself. I received a jolt on my head when my plane was hit, causing



a lapse of memory for the period of time between 8,500 feet and a hospital five miles from where I crashed.

I've seen the crash in movies (Combat Bulletin No. 37), and I'm quite interested to know where this still picture came from.

Lt. Orin M. Anderson,  
Luke Field, Ariz.

*Lightning must have struck twice on Min-*  
(Continued on Page 2)

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# AIR FORCE

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# In This Issue



Appropriately, since this is a special issue on the air war against the forces of Japan, this month's *AIR FORCE* cover is symbolic of the consequences of Japanese aggression. Though this picture was snapped in Tokyo,

our staff correspondents who have visited Japan since the surrender say that this scene is typical of dozens of industrial centers on the islands that were blasted into rubble by our aircraft. In this debris thousands of Japanese men and women who once worked in the belief that they were destined to be masters of a Greater East Asia now poke around in charred embers for what little they can find to keep them alive.

Back of these scenes of desolation is the story of conquest and greed, then retreat and desperation, finally chaos and surrender. Two-thirds of this issue of *AIR FORCE* is devoted to an important phase of this story—the air phase. In order to provide the maximum possible space for such coverage, it has been necessary to eliminate several of our regular features, but, judging from the number of readers who have expressed interest in a comprehensive review and interpretation of the air war in the Asiatic-Pacific theater, we believe you will agree that their omission is worthwhile.

Actually, *AIR FORCE* has been gathering material for this issue direct from the theater, from its own correspondents and other sources, for more than two years. At the time of the Japanese surrender, two of our Pacific staff members—Maj. Ben J. Grant, chief of our Far East office in Manila, and Maj. Robert V. Guelich, covering the activities of our B-29 outfits in the Marianas—were assigned to head the project of rounding all this and other material into a single package.

While Majors Grant and Guelich were seeking out interviews, reports and other

pertinent data in the Philippines, Guam, Okinawa and Japan, other correspondents were gathering additional information in Asia. Maj. Robert B. Hotz prepared copy on the 14th Air Force; air activities in Burma were covered in manuscripts received from the 10th Air Force historical division. Concentrating on interrogation reports, enemy documents and similar material in the Tokyo area was Lt. Harvey F. Yorke of the *AIR FORCE* Far East staff.

The basic pattern of the coverage was set up and most of the content of the issue drafted in Manila and Tokyo before Majors Grant and Guelich set out by plane for the States in late October, armed with so much paper that they nearly exceeded the 65-pound baggage limit.

The story told in these pages is not intended as the gloating of a victor. It is a sincere, objective effort to fit many tiny pieces of a tremendous real life epoch into a single comprehensive pattern. This is not the whole story; 32 magazine pages could not hold the overwhelming accomplishments of almost four years of fighting. The stories of single AAF units—even some AAF individuals—would require volumes to cover in their entirety. Nor can we possibly give credit to every unit and every individual who deserves credit in the air victory over Japan. Most of the men in the AAF who fought against the forces of Japan never had an opportunity to see more than one small part of the war, or to understand what an airdrome construction project in China had to do with the landing of General MacArthur's forces on Luzon. If this issue helps the readers of *AIR FORCE* to understand more clearly how their jobs or their outfits dovetailed into the huge jigsaw of war against the Japanese, its purpose is achieved.

To list the names of officers and enlisted personnel to whom we are grateful for assistance in preparing this special issue would require an entire supplement. From commanding generals right down the line, utmost cooperation was extended our staff members, and because of it our task was made more pleasant and the net product more comprehensive. ☆

## VETERANS' ISSUE

In the last few months, *AIR FORCE* and other AAF offices have received hundreds of questions about civilian job prospects, business opportunities, the economic outlook, housing, farming, insurance and many other subjects of particular concern to men and women about to be separated from the service. With the help of various military and civilian agencies, our staff members have run down many of the answers to these questions and have compiled what amounts to an economic prospectus for the veteran. In order to make this information available to all AAF personnel, *AIR FORCE* will devote most of its February issue to material which provides the answers to questions most frequently asked by AAF separtees.

doro. According to the source, the pilot in this Signal Corps photo is Lt. S. F. Ford of Baltimore, Md.—Ed.

## Grandpappy's Record

Dear Editor:

I was very interested in reading a recent account in the October 1945 issue of *AIR FORCE* regarding the "very honorable discharge" of the B-15 airplane, under the heading "Farewell to Grandpappy." However, I was a little bit surprised that a more complete record was not available in your office regarding several memorable flights of the B-15 on which I was pilot. They are as follows:

Mercy flight to Chile, February 4, 1939—Carrying 3,500 pounds of urgently needed medical supplies to earthquake victims in the vicinity of Santiago, Chile, this flight was more than 11,000 miles round trip. On the return trip, the non-stop flight from Santiago, Chile, to Panama (3,180 miles) was at that time the longest overwater flight on record. For this mercy flight, Major Haynes received the Mackay Trophy Award for 1939, the highest Chilean award—Commander of the Order of Al Merito—and the U. S. Distinguished Flying Cross. The copilot on this flight was Capt. W. D. Old and the navigator, Capt. S. Sanford.

Flight to Mexico City, June 9, 1939—This flight in the XB-15 was for the purpose of returning the body of the celebrated Mexican aviator, Captain Serabia, the "Lindbergh of Mexico," who had flown non-stop from Mexico City to Washington in a small GB plane, but had been killed at Bolling Field when his plane crashed on take-off for his return flight. As a good will gesture, President Roosevelt ordered the body to be flown to Mexico City where it would be received with full military honors. There had been some rumors of sabotage to Captain Serabia's plane and a story which appeared in a Mexican magazine intimated that there might be some reprisal measures taken against the XB-15, as well as Major Haynes. Upon arrival at the airdrome in Mexico City, it was found that a huge crowd of 300,000 persons had gathered and it took considerable time and effort on the part of the Mexican police to clear the crowds sufficiently for Major Haynes to make a landing. There was no evidence of ill-feeling or attempted sabotage, although several persons in the crowd were injured due to their avid curiosity which forced the Mexican police to use rather drastic measures to keep them under control and away from the plane. The good will and appreciation of the Serabia family was evidenced when they presented Major Haynes with a "tigra" (ocelot) which had been delivered from the lowland 120 miles away by runners. The animal is now in the Washington Zoo and has grown considerably since the day in 1939 when he was presented as a cub. The copilots on this flight were Captain Old and Lt. J. B. Montgomery. Lt. Gerald Williams was the navigator.

World's record payload flight, July 30, 1939—This flight broke the existing world's record (Federation Aeronautique Internationale) (Continued on Page 48)



A black and white photograph showing a large formation of military aircraft, likely B-29 bombers, flying in a V-shape over a body of water. The lead aircraft is at the top, and the formation tapers downwards. The background shows a hazy horizon with some landmasses visible. The overall tone is somber and historical.

# AIR WAR IN THE PACIFIC

BY MAJ. BEN J. GRANT AND MAJ. ROBERT V. GUELICH

*Air Force Staff Correspondents*



## AIR WAR IN THE PACIFIC: I INTRODUCTION

*Victory over Japan punctuated the primary  
lesson of World War II—that absolute control  
of the air by peace-loving nations is essential  
in avoiding another global conflict*

The dramatic suddenness of Japan's surrender left some Americans with the feeling that our Pacific enemy had wriggled out of the war before he was beaten. We know better now. At least we who have seen Japan from the ground know better. Without being invaded, without losing a foot of territory in the homeland, Japan was as surely and as utterly defeated as was her Axis partner in Europe.

Japan's capacity to make war was shattered. Her cities lay in ruins. Her factories were skeletons of twisted steel. Her home islands were isolated. Her air and sea powers were impotent. Her army was demoralized. Her government was ineffectual. Her people were homeless, hungry and afraid.

Japan was a ghost. The surprise is not that she quit when she did, but that she lasted that long.

It is idle to try to name the weapon or the event that persuaded Hirohito to surrender. It was not the atomic bomb or the Russian declaration of war or the B-29 or the blockade. It was the combination of all these and more. It was the attrition of three and a half years of war. It was Japan's progressive loss of the empire without whose resources she could not make war. It was the fall of Germany, which left Japan friendless and alone. It was defeat in the war of production and research. It was the abortion of her original scheme of conquest and the absence of a secondary scheme. . .

It was the whole magnificent Allied show from Guadalcanal, New Guinea, Hawaii, China, Burma and the Aleutians to Tokyo. It was airpower, ground power, seapower and industrial power. It was the L-5 and the B-24. It was the Marines on Iwo Jima, the Infantry at Leyte, the Engineers on Okinawa, the Artillery in Luzon, the Navy at Midway, the Aussies in Borneo, the British in Burma, the Chinese at Hengyang.

It is not too much to say that the Jap's greatest blunder was his misuse and misconception of airpower. When he opened his eyes to the capabilities of aircraft, it was too late. He had lost the battle for air supremacy, and there was no recovering it. We recut the pattern of warfare, and the Japanese never quite got the measure of the new pattern.

So clear was the lesson of airpower in World War II that some of our best military thinkers have become convinced that in another war the side that loses the fight for

control of the air will give up, and that will be the end of it. This is not the flight of fancy it may seem. If World War II proved anything at all, it proved that that nation which loses the fight for air control will lose the war. Conversely, it proved that the nation which wins and holds control of the air will, if it exploits that advantage, win the war.

This does not mean that wars will necessarily be decided by temporary or local superiority in the air such as Japan won over us at Pearl Harbor and the Philippines in 1941 and 1942. It means an enduring command of the air, supported by superior research and production and by superior ground and sea power.

One might argue that in the last analysis the outcome of any war will depend upon the power of one combatant or the other to invade and destroy. Perhaps so, but the invasion record in the Southwest Pacific is worthy of examination. During the ship-to-shore phase of 112 landings in that theater between October, 1942, and July, 1945, there were only 235 casualties, a little over two per landing. In 103 of those operations, not a single casualty was suffered in the landing phase. In 107 operations on which complete figures are available, there were only 851 casualties during both the landing phase and the remainder of D-Day up to midnight. In 78, there were no casualties at all on the entire first day.

It is a doctrine as old as warfare that amphibious landings are the most difficult and costly of all offensive operations. Almost none had succeeded prior to World War II. Why, then, were General MacArthur's forces able to make landing after landing with almost negligible losses?

There were many reasons, including the skill and coordination with which the landings were handled, but primarily the answer is found in the application of airpower—before, during and after the landings—in the air blockade of the landing area, in the aerial bombing and strafing of the beach defenses to prepare the way for invasion, in the destruction of the enemy air force in the blockade and landing area, and in the direct air support of the invasion itself. As successful amphibious landings depend upon the application of this air formula, the formula itself depends upon air supremacy. Thus, air control is the first essential element of the power of any combatant to invade and destroy.

This was true all the way up the road to Japan. It would



have been equally true of Operation Olympic, the Kyushu invasion scheduled for November 1, 1945, and of Operation Coronet, the Honshu landing scheduled for March 1, 1946. The invasions of Japan would have differed from the others only in size. They would have been the greatest amphibious shows in history, greater than Normandy. Two thousand B-29s of the 20th and 8th Air Forces, more than 1,000 bombers and fighters of the 5th, 7th and 13th Air Forces, and at least 1,500 Navy planes—more than 4,500 aircraft altogether—would have prepared the way and covered the landing of over 150,000 troops at Kyushu.

Looking back over the air war against Japan, certain characteristics stand out:

It was a war of movement. Some of our air forces never knew the meaning of a permanent base. When necessary, complete airbases moved by air. Entire groups moved without losing operational time. One heavy bomb group took off from Port Moresby, bombed Rabaul on the way, and landed at its new base at Dobodura, there to be interrogated by the same intelligence officer who briefed them a few hours earlier at Moresby.

It was a war of jungle survival. Jungle warfare is tough at best, but we adopted disease control measures and developed disease weapons that greatly reduced the incidence of malaria and other tropical ills. Actually, malaria became a potent ally, because Jap control measures were ineffective, and as long as the war lasted their jungle garrisons were plagued by the disease.

It was a war of deception and surprise. The first great application of these principles of war was the Jap sneak attack on Pearl Harbor. Later in the war, we turned these elements against the enemy with astonishing regularity.

It was a war of airdromes. Our engineers dropped landing fields into mountain spots accessible only by air, and then pulled them out again when they had served their purpose. At the other extreme of combat airdrome engineering, Okinawa would have become, if the war had lasted a little longer, the modern marvel of large-scale airfield construction. As one example of how we won the battle of airdromes, we took over five strips on Okinawa which the Japs had used for about 70 planes each; by making them over, enlarging them, and converting them to double-strip fields, we were able to handle about 400 planes on each one.

It was a war of improvisation. Until the late stages of the campaign, we were handicapped by shortages of nearly everything. In China, having nothing better in the way of incendiaries, pilots used to drop belly tanks on boats, and a second wave of planes would set them afire with tracers. In India, quick-disconnect electrical plugs were fashioned out of carabao horns. Jeeps and trucks have been run on alcohol, pine oil and charcoal. We dropped everything from garbage to beer bottles on Jap troops.

It was a war of tactical ingenuity. Skip bombing found its most lucrative employment in the Pacific. Masthead and treetop level bombing, developed in the Pacific, became the accepted system for destroying ships and airdromes. The medium bomber developed forward firepower and the fighter grew long legs in the war against Japan. The B-29 laid mines in Jap waters. The Japs could not keep pace with these techniques. They fought by the book. We rewrote the book or threw it away.

It was a war of research, resources and production. By the end of the war, Jap equipment, category by category, was inferior. His radar was primitive. He did not have a heavy bomber worthy of the name. He was bewildered by our never-ending stream of new weapons and devices—napalm, rockets, proximity fuses, aerial mines, computing

sights, the superbomber, the atom bomb. By blockade and recapture, we cut off Jap supplies until, at the end, the nation was unable to provide for barest civilian needs, let alone its war effort.

It was a war of coordination. Differences arose among individuals and arms of the service. Often we achieved success only in spite of such differences, but we attained a degree of coordination beyond anything we had a right to anticipate. One needs the perspective of time to understand the extent to which each separate stroke against Japan fits into a single pattern.

It was a war of weather. It would be an exaggeration to say that we solved the problem of Pacific weather—mortal man will never do that—but we learned enough about it so that weather was as often our friend as our enemy. With superior equipment and a global reporting network, we were able to fly on days when Japanese airplanes and even the gulls were grounded. We developed equipment which permitted us to bomb through the overcast with surprising accuracy. In July, 1945, 75 percent of all bomb releases by B-29s were by radar rather than by natural vision.

Although in the final days the Pacific air campaign achieved an intensity greater than the peak of the European effort, it was, by comparison, a war of small expenditure. The statistics are eloquent on how much we accomplished with the little we had. We dropped three times as many tons of bombs in the European campaign as in the Asiatic-Pacific campaign. We ran three times as many sorties in Europe and lost twice as many airplanes and more than three times as many men. The AAF overseas strength reached a peak of 627,510 in the European war area, only 467,165 in the vast war area against the Japanese.

It was a war of grim forewarning. After World War I, earnest men talked of outlawing future wars. They thought in terms of protecting life and property and preventing human suffering. Today, to be realistic, nations must think of war prevention in terms of preserving the very civilization of this earth.

Anyone who has seen the pulverized remains of Hiroshima or Nagasaki knows that this is no idle talk. Yet this was little more than a side-show of World War II. At Hiroshima and Nagasaki, we dropped atomic bombs by conventional means from conventional aircraft flying at conventional speed and altitude. Multiply these two bombs and these two cities by any number you will, think of it in relation to other actual or foreseeable developments in aerial warfare—pilotless aircraft and spacecraft, supersonic speeds, greatly increased ranges, radar-controlled or target-seeking missiles, super-bombers capable of carrying 50 tons of bombs, television sights, radar gun sights and turrets, huge airborne rockets, 105 mm nose cannons, these and many others—and you get some idea of what the world might expect of World War III.

The three and a half years which ended last August will live as an heroic period of American history. It will also live as a hideous period—hideous because of suffering and hardship, because of its heavy cost in life and property, because we came perilously close to defeat.

The Jap dared to attack Pearl Harbor because he knew, as all the world knew, that we were unprepared for war. It is no good now to rebuke ourselves for past blunders, but let us understand what those blunders cost us as a nation and as individuals. And let us not be lulled into those blunders again.

In 1941 and 1942, we were protected by time and distance. In another war, we shall not have such protection.

Too little, too late was our lesson in World War II. It could have been our epitaph. ☆



# DECLINE AND FALL

*Jap airpower, so decisive in the war's early stages, tailed off into chaos near the end*

When war began the Japanese air force was no youngster. We can't support the Jap claim that in 1901 a native son named Ninomiya built the first heavier-than-air craft to fly, but we do know that the Jap was building experimental planes as early as 1911, and in 1919 laid the foundation of his modern air arm under the guidance of French military aviation instructors.

Before Pearl Harbor, the Jap air force got in some combat time over China, and although the opposition hardly provided a true test of strength, this experience permitted the Jap to refine tactical concepts, just as Germany had done in Spain. As a result, Japan had a better opportunity than the United States to formulate a combat air doctrine and build a combat air force.

By standards which prevailed four years ago, the Jap was a first-rate air power. He went to war with 3,500 combat planes. We had less than half that number fitted for combat and only 600 of them were in the Pacific. His aircraft had been designed and his pilots trained for the particular kind of warfare he forced us into during his initial campaign.

It should have been no surprise that at Pearl Harbor, in the Philippines and in other early attacks, the Japanese air force could strike with skill, precision and overwhelming power. But it was surprising that after this brilliant beginning, the Jap deteriorated so sharply that by the end of 1944 his air force could challenge us only by wasting itself in suicide attacks.

This examination of the decline and fall of Japanese airpower is based on a great variety of source material, including Japanese documents, statements of informed Japanese leaders, and our own observations. Unfortunately, many official enemy documents were burned on August 15, 1945, "in accordance with Japanese custom," but it has been possible to piece together enough information to make an assessment of the principal factors which led to the Jap failure.

To understand these factors is important, not because they make absorbing history, but because in the enemy's mistakes (many of which we ourselves might have committed under less able leadership) there are fundamental lessons for us.

Reasons for the failure of the Jap air force seem to fall under eight broad headings (not necessarily listed in order of importance):

1. Misjudgment on the part of the Jap high command.
2. Basic misconception of the potentialities of airpower.
3. Lack of flexibility in the employment of airpower.
4. Command adherence to the "divine rule" concept.

5. Failure of the Japanese air training program.
6. Defeat in the contest of research and production.
7. Inadequacies of the aircraft maintenance system.
8. Conflict and confusion within and between the Japanese Army and Navy.

The greatest strength of the Japanese air force became its greatest weakness. When war began, the Jap was superbly trained and equipped for his lightning offensive. His airplanes were light, fast, and highly maneuverable. The fighters that attacked the Philippines from bases in Formosa had a range of 1,200 miles, twice the range of our P-40s. They could land on or take off from beaches, corn patches or clipped kunai grass. The Jap thought he could afford to build them that way. He could assume that after his air attacks in the first days of war, our air strength in the Pacific would be all but done for. After that, he would move with little or no opposition.

It had to be that way, for the Jap was geared only to victory. His whole aerial doctrine and mechanism were based on attack. He had built his air force with little thought of defense, because he expected to win before we were able to fight back. That bad guess—or misjudgment—cost him the war.

The Jap had neither the equipment for nor the tactical understanding of the kind of warfare we later compelled him to fight; under attack, his light, fast, high-performance aircraft became flimsy firetraps. Then, his original air plan having been thwarted, he failed to come up with a successful secondary plan. His pilots, having been trained for offensive warfare, often proved incompetent in defense.

After his first few reverses, the Jap lost confidence in the type of air operation he had exploited in the early stages. After that, he rarely had aerial superiority, but even in campaigns like Leyte, where he had overwhelming numerical superiority, he failed to mass his attacks in anything like the strength the job required. Except in the first few months of war, Jap planes rarely undertook anything more than small harassing raids, and when they did attempt a large scale operation they usually suffered fearful losses.

For want of adequate equipment and of confidence in the capacity of his air force, the Jap seldom concentrated bombing attacks on our supply centers and communications lines. Instead, he expended his major effort in medium altitude attacks against non-strategic forward positions. Even as early as the summer and fall of 1942, when the Jap was pressing his drive over the Owen Stanleys toward Port Moresby, his air force made an intensive effort in close support of advancing ground troops, but his offensive strikes



against Moresby itself, which was the center of our defense, were weak and ineffective.

Early in the war, the Army air force was headed by flying men of considerable ability. Later on, when senior air officers became scarce, the high command moved ground men into the top air spots instead of promoting junior flying officers. At the end of the war, there was not a single flying officer in a top air force command. This helps to explain many things, including the Japanese loss of confidence in airpower, the bewilderment caused by each new tactical and technical development in U. S. airpower, and the lack of flexibility and ingenuity in the Japanese employment of aircraft.

The lack of tactical ingenuity was a failing that extended all the way from high command decisions to individual pilot performance. This weakness is bound up with the spiritual background of the Japanese people. Discipline is as much a part of them as is reverence for their Emperor. The military passed its commands down in the sacred name of the Emperor, and these commands no mortal could question. They had to be carried out to the letter, no matter what the consequences. When the plan of conquest was upset at Midway, Coral Sea, Guadalcanal and New Guinea, field commanders found themselves without adequate alternative plans. Until they received countermanding orders from the top, they had no choice but to pursue their last divine directives, and plunge ahead at huge sacrifices of men and materiel. Commanders had to choose—if you can call it a choice—between the disgrace of disobeying the Emperor, even though they knew him to be wrong, and the disgrace of defeat. They took the latter.

This discouragement of individual initiative is part of the concept of Shintoism. It is the discipline of the Japanese faith. As the intermediate commander does not question the decrees of Tokyo, so the individual does not question the orders of his own commander and, in, turn, is not permitted to use his initiative to meet changing situations. Given a rule book, he follows it. Hundreds of Jap pilots in China, New Guinea and the Philippines were shot down trying to follow rules that were no longer applicable. So long as methods and decisions could be orthodox, the Jap pilot was more than competent. But when he had to fall back on his own ingenuity, he was no match for a resourceful enemy. This "divine rule" concept of command influenced, of course, all phases of the military, but its weaknesses were particularly apparent in the employment of air power, which demands maximum flexibility.

Out of this spiritual background came the enigma of the Kamikaze Corps. In the early days, when it was merely the desperate impulse of a moment that sent a Jap pilot crashing into an Allied ship or airplane, suicide attack was understandable. Occidentals, on a few occasions, did the same thing in this war. But when, at Leyte, we pulled a dead Jap pilot out of his crashed airplane and found him dressed in a green and gold ceremonial gown, indicating that before taking off he had attended his own funeral service, it was almost beyond belief.

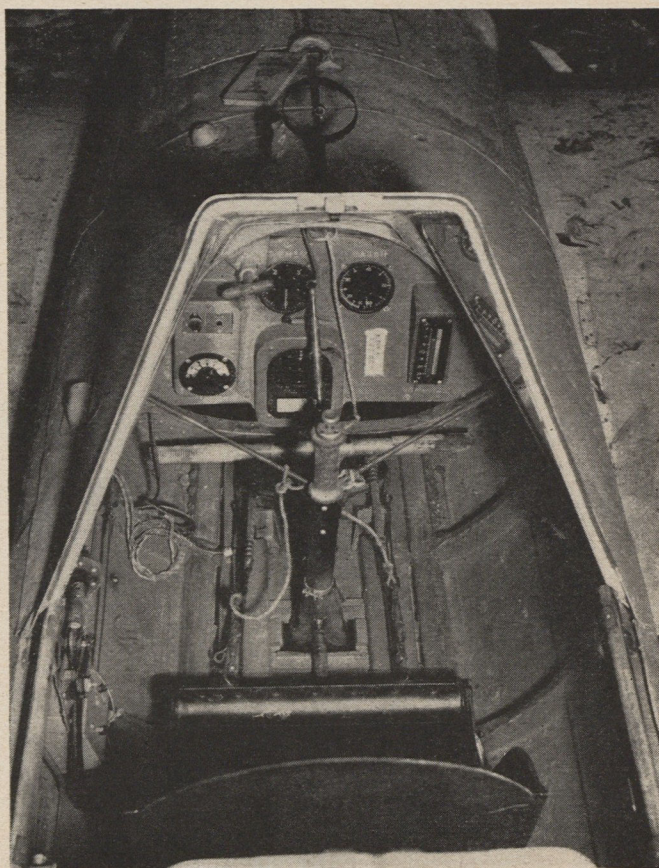
The "special attack" was officially incorporated into the Japanese military doctrine at Leyte. Later, during the Okinawa operation, according to the commanding general of the Army air force, General Kawabe, "it became apparent that we would ultimately have to use all planes for special attack."

So the Japs called for Kamikaze volunteers. By the end of the war, about half of the Jap airmen had been accepted for the Kamikaze Corps. Early in 1945, the Japs dropped all pretense of regular combat training, and air cadets were given flight instruction only for special attack. These Kami-



**Spectacular** Jap phosphorus bomb bursts near Liberators over Truk.

**Baka bomb** close-up, showing stick, instruments and sighting ring.





kaze schools, which Americans dubbed "finishing schools," gave cadets anywhere from eight to twenty-five hours of flight training, enough to qualify them for Kamikaze duties. The older and better seasoned pilots were withheld for other types of missions.

However, the entire Army and Navy air organizations, veterans and novices alike, were to be hurled against our Kyushu invasion forces in a final desperate Kamikaze effort. Every flyable aircraft was to have been sacrificed if necessary. At that point, the Japs would have had 8,000 to 10,000 planes, less than 2,000 of them operational fighters. One out of four planes would be expected to hit a ship, and as the Jap military figured it, that would have taken out 2,000 ships, enough to thwart the invasion.

There was a lot of wishful thinking in those figures. They made no allowance for counter-defensive measures on our part, for the effectiveness of our ack-ack defenses against obsolete trainers and transports, or for the destruction our 4,500 aircraft would have visited on the 30 airfields from which the Kamikaze attacks were to be launched.

Lieutenant General Tazoe, chief of staff of the Air General Army, asserted with considerable feeling during recent interrogations, "The full air force, led by our commanding general, was made ready to destroy the Allied ships near the shore. We expected annihilation of our entire air force, but we felt that it was our duty."

General Kawabe commented, "We did not have any power to attack by air (with conventional methods). We could only defend the home islands. We expected this special attack defense would bring us to the point where we could win the war."

Such was the pride of the fathers of Kamikaze. To this day, Jap air leaders will correct anyone who refers to special attacks as suicide attacks. As they explain the difference, suicide is taking one's life by one's own volition, while special attacks were made by military order. The fact that all members of the Kamikaze Corps were volunteers does not alter the distinction, as the Japs explain it, because in each case the fatal attack itself was ordered officially and the Kamikaze pilot had nothing to do with the decision.

Yet, Kamikaze was in itself, as General Kawabe admitted, acceptance of the failure of Jap airpower. Early in the war, Japanese training schools turned out high-grade pilots, as U. S. airmen who fought them will attest. Most of them were, as has been observed, lacking in personal initiative, but the blame for that can hardly be laid on the aviation training system. As the war progressed, the manpower shortage became so acute that cadets had to be rushed into com-

bat before they were adequately trained. As another difficulty, the Allied blockade of Japan and the destruction of oil production facilities reduced the aviation gasoline supply below the quantity actually required for combat operations. Full scale flight training was out of the question. That was another situation that led to the complete conversion to Kamikaze training.

Japanese equipment was improved to some extent during the war, but by comparison with U. S. technical advancement, the Jap made a miserable showing. At the end of the war, he had few major items of equipment that were exclusively his own. The baka suicide bomb could have been duplicated easily. His radar was primitive, which partly explains his continuing failure to intercept our attacks effectively. The firepower of his aircraft was stepped up considerably during the war, but it failed to keep pace with ours.

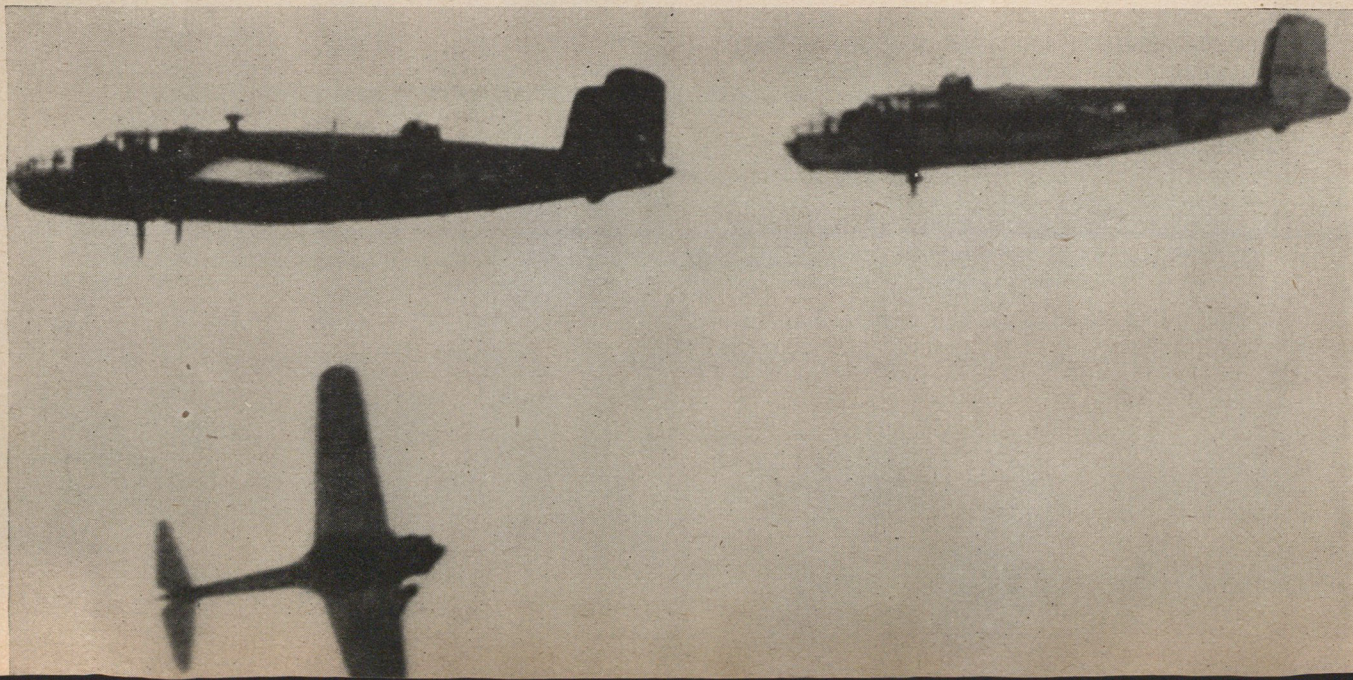
He badly needed a force of heavy bombers, but the development project came to a farcical end. A high Jap officer told the story. It seems that Jap engineers noticed U. S. newspaper pictures which showed the number of men that could stand on the wings of our B-17. It looked like a good wing pressure test, so they applied it to their own experimental model. The wing broke off. They built a stronger wing, and it passed the test. After this triumph, the engineers found only one airstrip in Japan long enough for the plane, and materials, equipment and manpower were lacking to build others. The heavy bomber never went into quantity production.

With information supplied by the Germans, the Japs undertook to develop jet and rocket planes, and at the end of the war they were completing detailed specifications. This was to be the answer to the B-29. The first Jap rocket interceptor crashed, but others were being built with the hope of getting them into combat by the end of the summer of 1945.

Navy experimental work at the time of the surrender was being continued on many carrier-borne fighters, torpedo and dive bombers, long range bombers, wood transports, and a jet-propelled flying wing. The program involved 38 different test-tube planes, but there were few successful models.

The Jap military mind was far from stagnant when it came to ingenuity in use and development of strange weapons. No idea was too fanciful to be given a try. Air-to-air bombing with phosphorous type bombs was used extensively in an effort to break up our bomber formations. Phosphorous rockets also were developed for launching from the Zeke 53 against our air formations. Neither, however, ever

An Oscar turns under two 11th Air Force B-25s, its landing gear dangling as a result of hits scored by gunners of the medium bombers.





approached the effectiveness of our proximity fuse in destroying aircraft.

With their stratosphere balloons, the Japanese were successful in dropping bombs in our northwestern states. Since the missile drifted with the winds, no accuracy could be expected but the expense of sending bombs to the U. S. by free balloons was small enough to permit launching thousands of them. But, again, the method was extremely crude in comparison with the German development of jet and rocket missiles.

All research and development were under military domination. There was no real effort to make use of civilian initiative and experience. Airplane manufacturers were so pressed for production that they had neither the time nor the military sanction to divert any part of their effort to technical developments.

The Army and Navy made demands throughout the war which the aircraft industry was unable to fill. In 1944, the peak year in aircraft production, the industry was good for only 54 percent of the requirement schedule. After the June, 1944, record of 2,857 planes, deliveries fell off as factories began changing over to new planes, and before the slack could be taken up, B-29s started bombing aircraft factories. The Jap tried to disperse his factories, a job that grew increasingly difficult because of transportation troubles and the slow construction of new plants. By July, 1945, production was down to 1,000 planes.

The final effort was to burrow underground. The plan was to increase underground production fast enough to deliver 2,000 planes per month by the summer of 1946. The program fared badly, and at the end of the war the underground production rate had reached only a meager 100 per month.

The bureaucratic cleft between the Army and Navy often hampered the sincere effort of industry and labor to fulfill their commitments. In the huge Mushashina plant of Nakajima, which turned out 38 percent of all Jap aircraft engines, there were two complete production lines, one for the Army and one for the Navy. The fetish of secrecy between the two services was carried to such ridiculous lengths that a high wall was built between the two sections of the plant so that neither could spy on the other.

There was an attempt to remedy this situation following a governmental inspection report that output could be trebled through a coordination of effort. In November, 1943, all aircraft production was placed under the control of the Munitions Ministry, but the Army and Navy nullified the efforts of the Ministry by bludgeoning through their own specifications and requirements.

This was just one of the many evidences of the conflict between the Army and Navy. It was more than the absence of a coordinated effort. It was open hostility. Later, in interrogations at Tokyo, each blamed the other for failure to stop the Allied advance.

Actually, most of their failures were common failures. For example, both services proved incapable of providing their airplanes with repair parts and of supplying needed parts in combat areas. When it became too difficult to move service personnel because of inadequate transportation facilities, service personnel were left behind. This meant that maintenance units often were called upon to repair aircraft, including new models, without any training in their construction or operation. A technical order system theoretically was operated from Headquarters in Japan, but it lagged so far behind that it was of little use in the field.

There were no facilities for engine overhaul or other major repair of aircraft at combat bases, but only at principal air centers far to the rear. It is no wonder that com-

bat units seldom could fly more than 50 percent of their available planes.

From a Nakajima company official, we learned that two-thirds of the aircraft engines produced were ruined or lost before reaching combat. The reasons were poor installation, poor maintenance and ship sinkings.

One of the Jap's greatest weaknesses was his lack of equipment for building airdromes. He could have bought big, modern earth-moving machinery in the States before the war, but this was something he either overlooked or never expected to need. Much of the small equipment he did send into the combat areas was lost at sea. In the words of a Jap major general who had a sense of humor, "We transferred our construction equipment to General MacArthur. What he did not have in New Guinea, he had on the bottom of the ocean."

Short on equipment for more active defense, the Jap carried dispersal to such lengths that he actually lost supplies on his own airfields. At Hollandia and at Clark Air Center, some of the buried items were ferreted out by our mine detectors and latrine diggers. At Mabalacat, near Clark, we found more than 200 Jap aircraft engines, most of them still crated, hidden in shacks, under houses and in alleys.

The Jap was more skillful in camouflage, especially in the use of natural foliage. He hid river boats and coastal barges by turning them into the river banks during daylight hours. He put trees and shrubs over railroad sidings. Some buildings in Tokyo had small forests growing on their roofs. Dummy planes and out-of-commission aircraft made convincing decoys.

Organizationally, the Japanese air establishments were similar to our own Army and Navy air arms. At the top of the command pyramid for both was the Imperial General Headquarters, which corresponded to our Joint Chiefs of Staff. At the next echelon were the War, Navy and Munitions Ministries, which had no direct control over military matters but exercised administrative and procurement functions.

Under Imperial GHQ came the Air General Army Headquarters and six Air Armies, the latter corresponding to our air forces. Each one, except for those defending the homeland, was responsible to the ground Army commander in the theater. There was no command channel from Tokyo air headquarters to the theater air forces until late in the war, when Tokyo assumed the responsibility of directing offensive air strikes, mostly Kamikaze.

Top headquarters for the Navy air force was the Combined Naval Force Headquarters. The air force operated under the Grand Fleet and was divided into six air fleets, each of which was charged with the defense of its assigned ocean area except the 10th in the Tokyo area. That one conducted pilot training and in the last five months of the war was the center of Kamikaze training for the Navy.

In both air organizations, especially the Army's, there was never-ending confusion. Simultaneously, a squadron might receive opposite instructions from its homeland headquarters and from its area Army headquarters. Administrative policies of the War Ministry often conflicted with those of the area army or air headquarters. These difficulties, which persisted through several military reorganizations, told off in inefficiency and indecision.

In interrogations after the capture of Luzon, a Jap squadron commander was asked why the Jap air force never seemed to get hold of itself again after the first series of victories. He seemed surprised that anyone would ask such a question.

"Why, I thought you knew," he said. "It was because of the confusion in our air organization." ☆



# JAPANESE TIDAL WAVE

*The leap-frogging Jap caught us off balance  
and shoved us back to the very gates of  
Australia and India before we could make a stand*

In 1942, more than a few responsible men talked gloomily of a 10-year, 15-year or even 20-year war against the Axis powers. A few, shocking as the idea now sounds, frankly doubted that we could ever achieve anything better than a stalemate and a negotiated peace.

For the excellent reason that Germany was the center of the Axis system and its principal military power, we gave the European effort first call on personnel and equipment. In the Pacific, the best we could hope for was enough strength to harass, delay and finally, at a point somewhere short of the Jap goal of empire, hold against the day when we could muster our own offensive.

It was perhaps as well that most Americans never fully realized how close we came to defeat in the Pacific and East Asia. Realism and defeatism in those days were separated by a hair line. Except for the grace of God, the inspiring support of China, and an incredible Allied recovery in New Guinea and the Solomons, the Jap tide might not have been checked.

If December 7, 1941, will, as Franklin D. Roosevelt said, live in infamy, it will also live as the date of one of the most brilliant military performances of all time. Superbly planned and as superbly executed, the surprise attacks on Pearl Harbor, Hickam Field and U. S. bases in the Philippine Islands were successful beyond the Jap's wildest anticipation. In Hawaii, the Jap sank or put out of commission 10 ships, half of them battleships, and damaged three battleships and five other warships; the Army lost 97 planes, the Navy 80. Two-thirds of the U. S. airplanes on the islands were destroyed or damaged beyond repair. In the first two days of war, we lost three-fourths of our Philippines' force of 300 airplanes.

Jap planning and execution in these first attacks bear examination mainly because of their striking contrast to the fumbling, frittering use he made of his air force during the middle and closing stages of the Pacific war. On December 7, 1941, he achieved complete surprise. He struck swiftly, boldly and accurately. He successfully applied the principles of mass attack. By striking again and again, wave after wave, he made full capital of the paralyzing effect of his initial assault. Although his failure to follow through with an invasion of Hawaii deserves criticism, nobody will deny that from the standpoint of air employment alone, his first stroke was masterful.

Until the fall of 1941, the U. S. air striking force in the Philippines consisted of a few outmoded B-10s and B-18s,

hardly suitable for combat. In September of that year, the 19th Bombardment Group arrived in the islands and by late November had 25 B-17s. Our aircraft program was being geared for quantity production. The Jap, ever watchful, knew that before long his chance of crippling our defenses in Hawaii and the Philippines would pass. Even as the Jap was bombing Pearl Harbor, B-17s were over Hawaii enroute to the Philippines; they never reached their destination.

The Jap knew that if he could knock us out effectively in the Philippines and Hawaii, then occupy Wake Island promptly, U. S. airpower in the Pacific would be all but neutralized. He knew that if this initial strike were to achieve what he asked of it, our aircraft losses in the Philippines would be irreplaceable. The occupation of Wake would cut the B-17 ferry route from Hawaii. Destruction of Naval forces at Pearl Harbor would prevent transporting pursuit planes to the Philippines by convoy. And finally, the destruction of hangars, depot facilities and aircraft parts at Clark, Nichols and Nielson fields in the Philippines would break down our maintenance system. And since the master plan included the occupation of the rest of the Netherlands East Indies and New Guinea, the route to the Philippines from Australia would soon be pinched off.

How thoroughly the Jap carried this plan through is grim history. Our naval and air strength in the Pacific were badly crippled. Our ground installations at airfields in the Philippines and Hawaii were blasted into uselessness. On December 10, we lost Guam, which might have kept the air route open to the Philippines. Thirteen days later we lost Wake, and the breach was complete.

The Jap, following through with the same swiftness that characterized his whole advance, landed in the Philippines on December 10. The same day, Nichols Field was finished off by a heavy air raid. At Clark Field, we were still trying but everybody knew that the jig was up on Luzon. Five B-17s flew into Clark from San Marcelino that day and took off on individual attacks. One of them, piloted by Capt. Colin P. Kelly, scored hits on a battleship of the Haruna class. This was the most publicized of our few feeble counterblows against the initial Jap attacks.

On Bataan, our fighters challenged the Jap advance, contributing as they could to the ground force effort to delay the inevitable fall of the peninsula. Ingenious mechanics hung bombs on several P-40s, which surprised a Jap convoy in Subic Bay; this was our first fighter-bomber attack of the war.



Our B-17s moved to Australia and Java, then were pushed out of the East Indies. By early 1943 Darwin had become the center of our Pacific air effort. Relatively, but a handful of AAF personnel got out of the Philippines. Bataan was the end of the road for the great majority of the 8,000 in the islands. Most of the AAF men were absorbed by the Infantry, and those who did not fall in the long defense of Bataan became prisoners of the Japs.

The British were faring no better. Twenty-four hours after the Pearl Harbor attack, Singapore, which had been called impregnable, was blasted by Jap bombers. Two days later Jap torpedo planes off Singapore, sank the new British battleship Prince of Wales and the battle cruiser Repulse.

The Jap had us tottering, and he gave us no opportunity to get our balance. He leap-frogged across Asia and the Pacific. On December 18, he occupied strategic Hong Kong and on January 2, 25 days after the outbreak of war, he took Manila. Twelve days later, he overcame Tarakan, one of the last of the Dutch garrisons in Borneo. By January 23, he had occupied Rabaul, later to become the most important single bastion of his whole southern empire; Balikpapan, the great oil center of Dutch Borneo, and Kavieng on the northern tip of New Ireland.

An underrated enemy had gone far in 47 stunning days of war. It is over 3,000 miles—as the crow flies, not as the Jap traveled—from Hong Kong southeast to Rabaul. It is nearly as far directly eastward from Hong Kong to Wake. Singapore, 1,600 miles south-southwest of Hong Kong, was being softened for the blow which would sweep it into the Jap conquest 23 days later. The Jap was proving to a bewildered world that he was a genius of amphibious advance. As we were to do later, improving on the technique he had demonstrated, the Jap spearheaded his assaults with massed air attack, dropped parachutists behind defense lines, isolated his objective, moved in with his amphibious forces, consolidated, sealed off his route and usually managed to keep us guessing where he would strike next.

Unlike our strategy of by-passing strong Jap defense locations on the road back, the Jap took his lightning advance by overpowering all our strong points, island by island. He could afford to do it that way, because he had no opposition worthy of the name. We had only a few underarmed, unescorted B-17s. Australians were flying Wirraway trainers, the Dutch antiquated B-10s.

Although the Aussies knew what they were in for, they tried to intercept the Jap air force at Rabaul, and every Australian plane that went up was shot down. The Dutch B-

10s were so vulnerable to air and antiaircraft weapons that sections of steel oil drums and the heavy base plate of electromotors were used as armor to protect the gunners.

More than three months before Pearl Harbor, we had settled on an air war plan which anticipated that we might be at war with Germany and Japan simultaneously. It assumed that Germany would have to be dealt with first, that meanwhile we would be compelled to follow a "strategic defensive" in Asia and the Pacific.

What we did not and could not anticipate was that Japan would catch us so wretchedly unprepared that our "strategic defensive" would take us all the way back to New Guinea and the Solomons and to the very gates of Australia and India before we could make a stand. As events moved in those early days, the term "strategic" rather over-dignified our defensive. Actually, what it amounted to was a desperate and usually unsuccessful effort to slow down the Jap advance. In the early days, our air war plan was of an hour or a minute. We fought on Jap terms.

In China, the Chinese Air Force had been all but eliminated. Maj. Gen. Claire L. Chennault tried to help by establishing a training school for Chinese pilots, but progress was impeded by Jap attacks and shortages of equipment. General Chennault formed the American Volunteer Group to defend the Burma Road, and soon the P-40s of the AVG were in the thick of the struggle against the Jap advance through Burma.

By the end of the first week of March, the Japs had completed their conquest of Malaya, Java and virtually all of the Netherlands East Indies. Singapore was captured by overland advance through jungle swamps, which military men thought impenetrable, foreshadowing the type of fighting we were to face in New Guinea and elsewhere in the Pacific. The Jap had won control of much of New Guinea and was established in the Solomons. The Philippines, where the Allied air strength had been reduced to 20 planes, were isolated and it was only a matter of time until the islands would be completely in Jap hands.

The outlook for Australia was dark. On February 19, Darwin was bombed for the first time by 147 Jap planes. Of 12 intercepting P-40s, 11 were shot down. On March 7, the air defense of Australia consisted of 16 heavy bombers, 16 medium bombers and 136 fighters. The base commander at Darwin was moved to report officially on March 15 that if a Jap attack were made in force, "the Darwin area would be lost within six days." The next day, as if to underline the words, the Jap bombed again.

**Chinese soldiers** escort four Doolittle flyers to protective shelter of a village near which their B-25 crashed after 1942 attack on Japan.





It was in March that the 49th Fighter Group, the first combat unit to leave the States after Pearl Harbor, made the first U. S. fighter interception of Jap planes over Australian territory. In those days, our flyers were navigating with maps torn out of the geography books of Australian school children. Some borrowed charts from shepherders.

On March 8, the same day that Lae and Salamaua in New Guinea fell, other Jap forces 4,000 miles away were occupying Rangoon in Burma. Moving on swiftly and easily from there, they cut the Burma Road on April 26, and forced the AVG back into China, which was then cut off from outside aid by land and sea. Chinese and British forces fled from Burma after taking what General Stilwell, their American commander, aptly described as "a hell of a beating."

In the United States, as well as among the Allied forces in Asia and the Pacific, an attitude of defeatism was spreading dangerously. In four months of war, all news had been bad news. The only exception had been the high box scores of the AVG Flying Tigers, and for want of equipment and manpower their successes could not be followed through with anything like a sustained drive. There was little that Allied leaders could do or say to stem the wave of pessimism.

And so, in a stroke which we like to regard as typical of American ingenuity, we contrived to make some good news. On April 18, Lt. Gen. (then Lt. Col.) James H. Doolittle led 16 B-25s in a spectacular raid from the U. S. Carrier Hornet against Tokyo, Yokohama, Nagoya and Kobe. It was a costly undertaking and hardly a successful one by military standards, but it was no discredit to the mission when military men privately termed it a "public relations raid." That was its purpose, and it succeeded admirably. The Allied cause around the world was given new hope and new courage.

Less colorful but infinitely more significant was the good news that followed three weeks later. In his first major setback of the war, the Jap was defeated decisively in the Battle of the Coral Sea where, by air action alone, a convoy headed for Port Moresby was beaten and turned back. U. S. Navy planes shot down 104 Jap aircraft, sank the Jap carrier Shoho, a light cruiser, two destroyers and one aircraft tender. Our carrier Lexington was lost, the carrier Yorktown was damaged, and 55 Allied planes were destroyed. Surface vessels never came in contact. A few Army planes participated in the action.

This battle demonstrated to all the world that airpower would be the determining factor in the Pacific war. And to that extent the Coral Sea was no less important to the land-based air arm of the Army than to the carrier-based air arm of the Navy. It was a convincing preview of things to come.

We learned the hard way at Coral Sea the need for coordination of effort between Army and Navy. In that battle the failure to exchange intelligence information caused B-17s to drop bombs on our own fleet. Our airmen did not know the U. S. fleet was in the area and believed the ships were Japanese. Fortunately, none of our vessels was damaged.

Coral Sea denied to the Jap his most important objective of that moment, but Australia remained dangerously exposed. From Rabaul, the Jap renewed his drive, forcing a two-pronged advance westward along the northern spine of New Guinea and eastward into the Solomons. That gave him a potent triangle, but he still needed Port Moresby and New Caledonia if he was to succeed in breaching our supply line to Australia. He was to try again for Moresby later, taking the relatively safer overland route.

There were other events to temper the public jubilation over Coral Sea. Even as the remnants of the Jap convoy retreated, General Wainwright was surrendering on Corregidor. On the same day, the Japs occupied Hollandia. The enemy conquest of Burma was completed on May 13, and on June 3 landings were made at Attu, Agattu and Kiska in the Aleutians.

Nevertheless, the skies were beginning to clear. Our growing confidence was substantiated in June, when Army and Navy air units repulsed a Jap invasion fleet headed for Midway. A damaging raid on our Midway air defense was accomplished by 150 Jap planes, but 43 of the raiders were destroyed and the Jap fleet was attacked with astonishing success. The Jap lost 50,000 troops, 275 airplanes and 20 ships, including four carriers. Three carriers were destroyed by aircraft, while the fourth, badly crippled by aerial attacks, stayed afloat until a submarine put three torpedos in her side. U. S. losses were the carrier Yorktown, one destroyer and 150 airplanes.

Before the Midway battle, the Jap feinted in the Aleutians, trying to draw our fleet into the North Pacific, and almost succeeded. Just in time, we learned exactly what he was up to, and turned the element of surprise against him.

The relatively small size of the Dutch Harbor striking force made it clear that this operation was subsidiary to the powerful thrust at Midway. U. S. forces in the Alaskan-Aleutian theater were under Navy command and had only 52 vessels and 169 airplanes.

First sighted June 2, the enemy force attack Dutch Harbor and nearby installations June 3 and again June 4. For 48 hours, in weather that was bad even by Aleutian standards, planes of the 11th Air Force pressed a continuous counterattack, aided by naval anti-aircraft units and search planes. The Japs were caught by surprise when U. S. bombers and fighters attacked from a secret forward base at Fort Glenn on Umnak Island, 100 miles west of Dutch Harbor. Although fog prevented an accurate count, there was good evidence that the 11th, in addition to shooting down a number of Jap planes, damaged two cruisers. The damage to our ground installations included the loss of 22,000 barrels of fuel oil.

Details of the Jap plan at Dutch Harbor remain obscure, but it is apparent that the attacking forces ran into heavier opposition than they bargained for. While the Jap planes were making their final attacks on ground installations late in the afternoon of June 4, their carriers withdrew, leaving many planes to go down at sea. Our radio picked up the Jap pilots' frantic calls for their missing carriers which, along with other units of the force, had headed for Kiska, Attu and Agattu.

The Jap avalanche was beginning to lose momentum. We were gathering strength, and while we were not yet able to say with assurance that the enemy would be denied his remaining objectives, we were confident that he would no longer be able to move unchallenged.

We were catching our breath after six months of almost frantic training and deployment of airpower. In Burma and China, the AVG was running up a remarkable score against the Jap air force. The 10th Air Force had flown its first heavy bomber strikes against Jap bases in Burma, and had started flying supplies to China over the Himalayan Hump. The 7th Air Force had spread out into South Pacific islands to contest new Jap landings. The 11th Air Force was prepared to take the offensive against Japanese forces in the Aleutians. Australian and 5th Air Force strikes were beginning to jolt the enemy in New Guinea.

We were ready to fight back. Our withdrawal in the Pacific had ended. A new phase had begun. ☆



# TURNING THE TIDE

*New techniques in use of airpower, born of  
desperate necessity in New Guinea and China,  
gave us hope—and a plan for the road back*

**T**here was little reason to rejoice in the summer of 1942, but there was abundant cause for hope and courage.

We had improved the prospects of saving Australia and of making that island continent, before many more months, the springboard of a northward offensive. The Jap needed to take or isolate Australia to complete and seal off his southern empire, and was prepared to go to any length to do it. But New Guinea—where in the Battle of the Coral Sea his conquest had been checked for the first time—stood between him and Australia.

The Jap had raised his flag over some of the richest areas on earth. The Asiatic conquest had given him Manchuria, Korea, much of China, Malaya, Burma, Thailand and Indo-China. In the Pacific, he had the Netherlands East Indies, the Philippines and most of the other islands worth taking west of Midway. He had a foothold in the Aleutians and, as he thought at the time, a good chance of completing the capture of New Guinea.

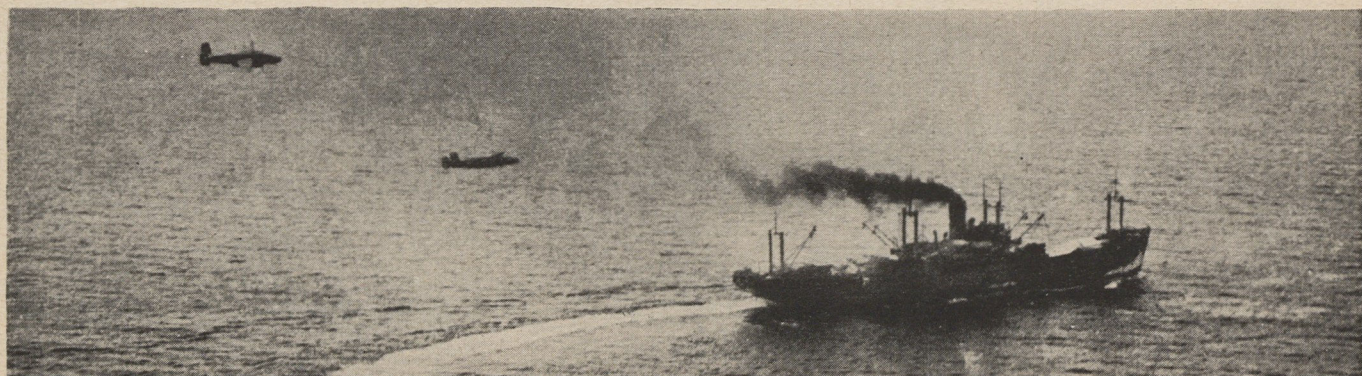
Resources of his sprawling empire were almost endless. He had rubber to burn. He had oil, tin, bauxite, tungsten, nickel, alcohol, quinine and food stuffs, and except as we were able to challenge his shipping arteries from our China bases, he had free access to the sources of all these materials.

For the next two years, it was only from China that we could interfere with his major shipping of raw materials, an interference that cost him heavily in ships, troops, railway equipment and airplanes.

No doubt the Jap would have been satisfied, so far as empire was concerned, to forget Australia, but he knew that unless he at least neutralized that continent the rest of his empire would be in peril forever. And we knew that if he were to succeed in capturing or surrounding Australia, our offensive could not be launched for years, possibly never.

We were beginning the critical phase that would determine whether Japan's so-called Greater East Asia Co-Prosperity Sphere would come to fruition. The battle for New Guinea would become the seal or the finis of Nippon's bold bid for domination of the Far East.

Now we were able to plan weeks and months ahead. We were thinking in long-range terms of the missions and capabilities of airpower. We settled upon the principles on which we would base the employment of our air force. The record of our adherence to these principles is the story of why our air campaign succeeded. The record of the Jap's violation of them is the story of why the Jap air campaign failed.



From epic Battle of the Bismarck Sea came this photograph showing two 5th Air Force B-25s moving at low level on Jap troop transport.



Here are the basic rules and principles which we set up:

1. Make full use of the elements of surprise, mass and flexibility of force.
2. As the first objective of airpower, neutralize the enemy's air strength.
3. Keep the battlefield isolated.
4. Make the enemy spread his forces thinly.
5. Don't advance ground forces beyond the range of land-based aircraft.
6. Coordinate the effort of all elements of the striking force.
7. Follow through to make full capital of air strikes.

Having thwarted the first Jap thrust at Port Moresby, we faced another immediate threat from the direction of the Solomons. The Jap bases on those islands, now well established, imperiled our defense of Australia, and it was logical, as our next step, to land there and slug it out for control of the islands. It was a daring strike, perhaps as daring as any major operation we were to undertake in the Pacific war. We knew it would be costly, and it was.

On August 7, 1942, Marines landed at Guadalcanal in the first U. S. amphibious operation of the war. The landing was preceded by 56 strikes by B-17s from the New Hebrides. The day before, 15 B-17s had struck Vunakanau, Rabaul, in preparation for the Guadalcanal operation, destroying 75 Jap planes.

Before we were able to get adequate servicing facilities into Henderson Field, which became the center of our Solomons' air effort, the boys used to fill their fuel tanks by bucket brigade, passing five-gallon cans along from hand to hand. Foxholes and dugouts were the best protection they had against Jap warships which shelled the field. When a foxhole wasn't handy, they would lie on their bellies behind logs or in bomb craters.

For any value the islands possessed in and of themselves, they would not have been worth the effort, but strategically they were vital, and military necessity dictated that we hold on at all cost. Finally, in February, 1943, we were able to tell a relieved world that the bloody Solomons campaign had ended in success.

A campaign, no less decisive, was proceeding meanwhile under almost intolerable conditions in the jungles and mountains of New Guinea. The enemy, having failed to reach Port Moresby by the water route, pushed over the Owen Stanleys and, by September 17, 1942, had penetrated to within 20 miles of Port Moresby. AAF personnel at Moresby hastily organized into infantry units for defense

of the base. All aircraft were on the alert to evacuate on a moment's notice. However, strengthened by supplies and manpower from the threatened city, the Australian forces were able to counter attack and push the Japs back across the Owen Stanley ridge, thus setting the stage for something new in the employment of airpower.

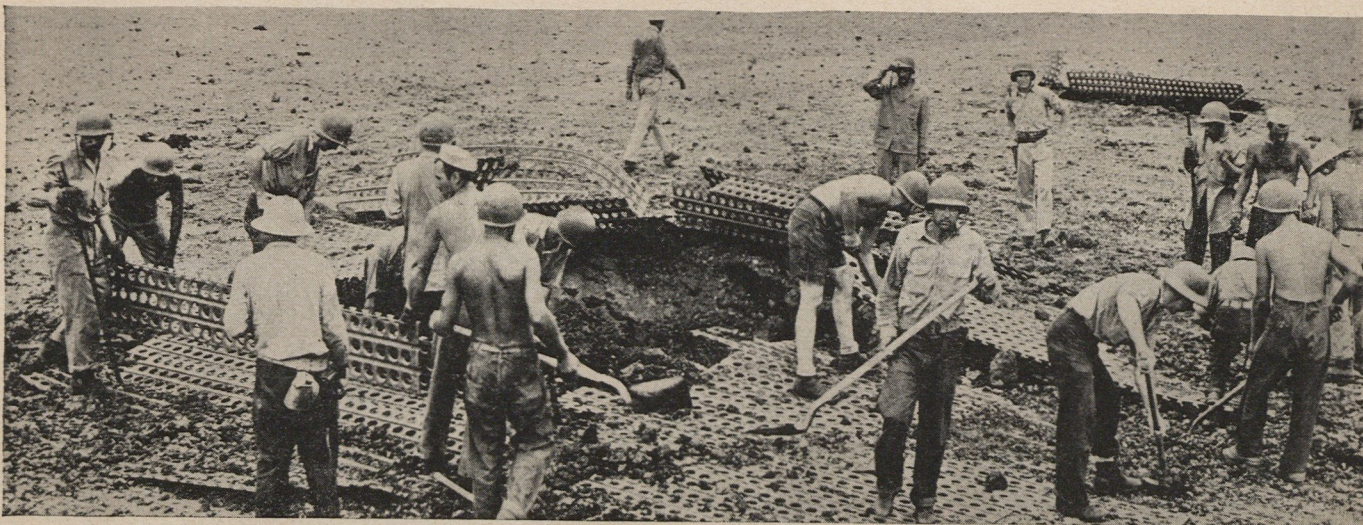
General (then Lt. Gen.) George C. Kenney, who headed both the Allied Air Forces and the U. S. 5th Air Force, told General MacArthur he could reinforce and supply the defenders of the peninsula by air. There was no precedent for an airborne operation of such proportions, but General MacArthur agreed it was worth trying.

However, before our airpower could be brought into full play, it was necessary to recapture the landing field at Kokoda, on the enemy's side of the Owen Stanley Mountains. This was a slow, costly process, and it required six weeks before Allied troops succeeded in driving the Japs back up the jungle track and over the ridge to take Kokoda on November 2. Within two days our engineers, already demonstrating the skill which was to become a major factor in our advance, had the strip ready for use.

A division of U. S. and Australian troops, fully 60 percent of the forces to be involved in our counter-offensive across the peninsula, was flown from Australia to Moresby and thence to the front lines. Complete airdromes and equipment were moved in by air. Trucks, graders and draglines were dismounted and loaded on airplanes. Within the next 10 days we were landing troops and supplies at Waningela Mission on the Papuan coast, and then the drive for Buna began. Beaufighters and A-20s operated in direct support of the ground troops, strafing and bombing ahead of the advance. By the end of November, the enemy force had been reduced from 13,000 to 4,000. Our flow of airborne supplies and reinforcements continued. One by one, the three remaining pockets of Jap resistance—Buna, Sanananda-Soputa and Gona—were overcome.

Papua was one of the great air achievements of all time. If that 110-mile march over the Owen Stanleys had been made on foot, the conventional way of advancing over such terrain, the campaign no doubt would have stretched out for many months.

No less noteworthy than the success of the immediate objective of Papua was the demonstration that campaign offered of flexibility of airpower. To be sure, we had lessons to learn. We didn't yet know how to drop supply bundles accurately. Many went wide, landing in places inaccessible to the ground troops, and some fell into Jap hands. But



Runway mats at Henderson Field, Guadalcanal, required plenty of repairs in the early days as a result of periodic visits by enemy bombers.



we kept trying, learning by doing, and before the campaign was over we were dropping with remarkable accuracy. On one occasion an Australian made a white cross on the ground to indicate the center of the target area, and then stood on the cross to wait. A bundle hit him and killed him.

There was no question after that campaign of the manifold functions which airpower, no matter what the terrain, could serve and serve well. The Jap used the airplane in the Papuan campaign and later campaigns the only way he knew to use it. Conventional employment of airpower has its place, a vital place, but that was not enough. More perhaps than any other single factor, our exploitation of new ways to use airpower was the margin that finally gave us superiority of the air.

The Jap still had notions of consolidating his position in New Guinea and of neutralizing Australia. On December 18, 1942, he occupied Alexishafen, Finschhafen, Madang and Wewak, the latter to become, next to Rabaul, the principal air center of the southern empire. Earlier, the Jap had tried unsuccessfully to establish a landing at Milne Bay, which would have served admirably as a springboard for a flanking attack against Port Moresby.

By January of 1943 it had become apparent to both the Allies and the Japanese that the coming phase of the war would depend in large measure upon the outcome of the battle for domination of the air. Land movements were still. The Jap had us outnumbered in the air. Our hope was to outdo him in ingenuity and employment.

We were doing just that in China. The 14th Air Force, the pioneer in tactical ingenuity, was flying hit-and-run attacks with outstanding success against Hankow, Canton, Hong Kong, Haiphong, Nanchang and Kiukiang, bombing coastal shipping and ports the Japs had thought safe from air attack. The Jap finally had to start diverting planes, guns and troops from other fronts to protect his holdings in China.

Meanwhile, our Pacific air forces were developing new attack techniques, notably low level bombing. It is commonplace today to say that masthead and treetop level bombing became the deciding factor in the 1943 contest for air superiority, so commonplace that few realize the full significance of it. This technique, more than any other single accomplishment, may be said to have enabled airpower to carry the load of the coming campaign to neutralize Jap strongholds in the Pacific for either occupation or by-passing. Its record is one of getting maximum results with minimum expenditure. It was the air achievement that

allowed us to make the successful shift from defensive to offensive warfare.

The first major test of the low level attack technique came in early March, 1943, in the Battle of the Bismarck Sea, the most astounding victory of the period. A large Jap convoy transporting reinforcements to the Lac-Salamaua area of New Guinea was attacked by the 5th Air Force and soundly beaten. In one 15-minute period of the three-day battle, 12 B-25s, newly modified by the installation of eight forward-firing .50 caliber guns, sank 10 Jap ships, getting 65 percent direct hits against maneuvering vessels; every B-25 got back safely.

General Kenney messaged that he was so happy he could "blow a fuse."

Bismarck Sea caused a great disturbance in Jap naval circles. Two and a half years later, Rear Admiral Toshitane Takata, Deputy Chief of Staff of the Combined Fleet, said the massed low level air attacks in that battle were "the greatest shock" of the war so far as Japanese naval strategy was concerned.

The significance of Bismarck Sea was deeper than the mere demonstration of the effectiveness of low level attack against shipping. It meant that never again would the Jap dare to send a convoy outside his own land-based range and into ours. It proved that the open water defense concept upon which he had relied was no longer adequate.

It was apparent that the Jap had extended his perimeter too far. He would be compelled to move his defense line back. His offensive in New Guinea was finished, and his opportunity to take Australia had passed.

As if to double-check his situation, the Jap ran a 100-plane raid against Port Moresby on April 12 and took a beating. The next day, he sent nearly as large a force against Milne Bay and was beaten again. It was another example of the Jap's dissipation of his air strength. He should have learned by then that major air campaigns do not succeed by hitting here today, there tomorrow, without following through and completing the job of destruction. But he didn't learn.

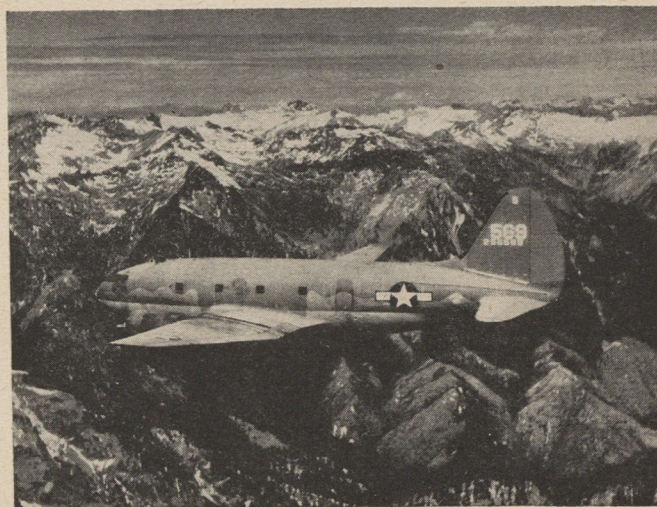
The Jap's static front in Burma and South China also was causing him concern. ATC was flying supplies to China in increasing quantities, and the 14th Air Force was beating back the fringe of Japan's once undisputed aerial superiority over China, while protecting the fragile aerial life line from Jap fighter attacks.

The events of March and April, 1943, dictated a schedule. It was time to start the long road back. ☆



Airmen relax in Aleutians hut before bombing mission over Kiska.

DECEMBER, 1945



High over The Hump, this C-46 flies vital India-China air route.



# ROAD TO JAPAN

*How airpower led the way in pushing the Jap back to  
his home islands and crushing his dreams of empire*

If the soundness of our timing for the Allied offensive needed confirmation, the Jap provided it in late April, 1943, when he began the construction of a secondary defense system of 31 airdromes along a semicircle west of New Guinea from Palau through the Halmaheras to Ceram.

The Jap had determined to hold on for dear life to positions which constituted his primary defense line. This was along the northern coast of New Guinea, New Britain and the Admiralties. He would make Wewak, Rabaul and Hollandia the centers of the air system in his lower southwest holdings and would keep them strong at all cost. However, it was apparent that he had abandoned any thought of using his bases in those areas for another major offensive.

Our first job obviously was to neutralize the Jap bases at Wewak, Rabaul and Hollandia, because our offensive would be in jeopardy as long as the Jap maintained his air strength at those strategic locations. Also, it was clear that because of the great concentrations there, we had an opportunity to deliver the Jap air force a blow from which it could never recover.

As a part of our plan of advance, we had concluded that it would not be necessary to go through the tedious and costly process of invading and capturing every island on which the Jap had established himself. We would take only the ones we needed for springboards or for defense or supply bases, bypassing the others and keeping them neutralized by means of a continuing air blockade. So effectively did the 5th, 13th and 7th Air Forces accomplish this neutralization plan that not one bypassed Jap establishment was able to interfere with our advance.

Our offensive opened in May in the Aleutians where American forces, preceded by 11th Air Force bombings of the area, recaptured Attu. Two months later, his supply line having been cut and his positions bombed repeatedly, the Jap gave up Kiska without a struggle. With the Aleutians in U. S. hands again, the 11th Air Force was free to bomb Paramushiro and the Kuriles, which the Jap for a long time afterward had to regard as a possible route for invasion of his homeland. Our operations from the Aleutians throughout the war distracted the Jap's attention from his main effort elsewhere.

In the south, Jap defensive raids were faring badly. On June 14, Allied aircraft shot down 94 of 120 planes attacking our positions at Guadalcanal. On June 21, they shot down 22 of 48 Jap planes raiding Darwin.

An Allied landing at Lae, New Guinea, was scheduled for September, but we knew better than to try it without first reducing the enemy air strength at Wewak, which was building up rapidly. To make a successful attack on Wewak with B-25s, we wanted a staging point for fighter escort. The answer came at Tsili Tsili in the Owen Stanleys, where airborne engineers whittled a strip out of the kunai grass in a spot accessible only by air.

At Wewak on August 17 we employed strafe-bombing attack, the effectiveness of which had been demonstrated at Buna nearly a year earlier. Three squadrons of B-25s from Port Moresby picked up their P-38 escort at Tsili Tsili and proceeded to the target, letting down to treetop level for the approach. They came in line abreast, attacking at a slight angle for better concentration of firepower. Jap planes were lined up alongside the runways. Others were being fueled. Mechanics were working at their stands. On the beach nearby, soldiers were sunning themselves and some were playing medicine ball. AA gunners were pinned down by our blazing 50s. The airdromes were ripe for our parafrags, which floated down all over the runways and parking areas. Photos showed that more than 200 enemy aircraft were destroyed that day. It was easily the most effective single airdrome strafe-bombing attack of the war. Japs who were there still talk about "terrible Wewak."

Having reduced Wewak temporarily, we were ready for the Australians' Lae landing and succeeding operations leading to quick occupation of strategic points in New Guinea. On September 4, the landing took place behind 5th Air Force aircraft, and the operation was completed by September 16. Meanwhile, on September 5, the day after the Lae invasion, paratroopers landed at Nadzab, later to become a major 5th Air Force base for operations against Wewak, Hollandia and Rabaul. On September 11, Salamaua was captured. On October 2, Allied troops captured Finschhafen, closing the Vitiaz Straits.

By October 12, we were ready to attack by air in force



against Rabaul. On that day, in a repetition of the technique used on Wewak airdromes two months earlier, 5th Air Force planes destroyed three Jap destroyers, 46 cargo vessels, 70 harbor craft and 126 airplanes in an attack on the harbor and airdrome. The 5th came back to Rabaul three weeks later, sinking three destroyers and eight merchant ships and destroying 85 enemy aircraft on the ground and in the air. This job took just 12 minutes. Our capture of Green Island on February 15, 1944, virtually ended the air offensive against Rabaul, which thereafter was kept impotent. This was bypassing on a large scale. Ground resistance at Rabaul continued throughout the rest of the war, and in Japan, whenever new civilian sacrifices were called for, the government reminded the people of the stamina their soldiers were showing at Rabaul despite deprivations.

Meanwhile, the Jap had suddenly discovered that the 14th Air Force was making China a major battlefield again. A network of airbases in East China had put our planes in easy range of coastal shipping. Applying low-level skip-bombing tactics, the 14th began the first major campaign against Japan's raw material supply lines. The China Sea had become a battleground in the heart of the Greater East Asia Empire. Merchant vessels were being forced to go farther out to sea where our submarines were waiting for just such targets.

Major Jap air strikes against these forward bases were repulsed. Then the 14th struck its Thanksgiving Day blow at Jap morale by blasting Formosa's principal airdrome with B-25s, P-38s and P-51s. In China, for the first time in many years, an offensive operation was building up so fast that the Jap couldn't stop it without diverting reinforcements and supplies from another critical battleground, New Guinea.

The New Guinea operation was proceeding in jigtime. Taking the northern coast in quick jumps, always covered by land-based aircraft, our forces landed at Cape Gloucester on November 26 and at Saidor on January 2.

The Japs continued to pour airplanes into Wewak, using Hollandia as the main supply base. On February 3, B-24s attacked Boram and Wewak airdromes, leaving them unserviceable. Having received a warning, Jap planes on the two airdromes took to the air, and since they could not return to their own bases, they landed at nearby But and Dagua dromes, just as we expected them to do. When B-25s came in and strafed But and Dagua, 80 Jap planes were destroyed. The effectiveness of this Jap network of airfields was finished in mid-March with the destruction of 59 enemy aircraft and the probable destruction of 24 others, but Wewak remained in Jap hands until May 6, 1945.

By the time Wewak was reduced, we had started operating against Hollandia, the third of the great Jap air centers in the area. Taking off from Nadzab, we staged at Gusap, where engineers had built another airdrome in a place accessible only by air. In late March and early April, we virtually finished off Hollandia with attacks which destroyed 300 airplanes and most of the remaining airdrome installations, and on April 22 our forces landed at Hollandia, encountering no air opposition. Our troops got into the Jap airfields so fast they found hot meals on the tables where the fleeing enemy had left them.

Now we had tied a loop around the enemy's 18th Army, dispersed along the coast of New Guinea, and choked off Wewak, Hansa Bay and the Madang-Alexishafen areas. The ultimate fate of New Guinea, and more important, the fate of the Japanese air force had been sealed. The disaster at Wewak had seriously crippled Jap air strength in New Guinea. That at Hollandia had all but finished it.

It was during the Hollandia operation that Capt. (later

Major) Richard I. Bong shot down his 27th enemy plane, thus bettering the World War I record of Capt. Eddie Rickenbacker. Major Bong, later killed in a P-80 test flight in the States, had at least 40 victories to his credit by the time he left the theater, and that remained the U. S. fighter-pilot record of the war.

We were moving ahead. From the Gilberts, the 7th Air Force was neutralizing Wotje, Mille, Malcelap and Jaluit. Allied forces had captured Kwajalein, which opened the way to the Marianas. Eniwetok had been taken, thus providing a staging point for 7th Air Force bombers.

The invasion of the Admiralties had been set for April 1, 1944, to be preceded by a heavy aerial bombardment. In February three reconnaissance planes returned from a mission with the news that the Japs had but little strength on the islands. General Kenney recommended that we strike immediately and seize Momote airstrip on Los Negros Island. Additional reconnaissance missions confirmed the initial report, and it was agreed to advance the schedule.

The landing was made on February 29, and the ground troops quickly secured their positions while our aircraft bombed and strafed under the direction of a ground controller. By capitalizing quickly on the findings of aerial reconnaissance, we had effected the operation with minimum difficulty.

By mid-March, the 13th Air Force was able to begin its long bombing campaign against the Jap naval stronghold at Truk, operating from our new airfields in the Admiralties. These raids protected our flank in the advance on the Marianas, the next major objective of our Central Pacific forces.

By now the Jap's primary defense line had been breached at every point, and the secondary defense west of New Guinea was in extreme jeopardy. In July, the Jap started withdrawing airplanes in large numbers from the Halmaheras to the Philippines. Definitely on the defensive, he was establishing a new defense perimeter along a line east of the home islands, east of the Philippines and down through the Celebes, with a second line around the Marianas, which he was desperately afraid of losing.

**T**he Jap also was faring badly in Burma. After a year and a half of shooting up trains and river boats, blasting bridges and military installations in Burma, the 10th Air Force suddenly lashed out in offensive strikes that pushed other campaigns temporarily into the background.

While the 10th pounded the Japanese in Burma, facilities to increase the flow of supplies from India ports to China were built up rapidly. The original depot group of the 10th, which had arrived while the few B-17s evacuated from Java were still operating from India, had spread out to set up service centers from Karachi to Chabua, almost 2,000 miles, to keep ATC cargo ships flying the Hump route. It also was servicing B-24s, B-25s, P-40s, P-38s and P-51s which were flying daily strikes, as well as troop carrier units which were keeping the isolated British-Indian Army in Burma supplied and reinforced.

The struggle of the 10th had won little recognition in its defensive battle to gain time. When our forces finally were augmented and the time came to push the Ledo Road through the northern part of Jap-held Burma, the 10th Air Force not only had cut the Jap supply line to a trickle but also had gained aerial superiority over most of the country.

Rangoon was the Jap's only remaining major supply center, and here enemy fighter strength and antiaircraft were heavily concentrated. This stronghold had to be neutralized. To do the job the 14th Air Force's lone B-24 group was flown to India to join the 10th Air Force's only



group of B-24s. Together, in late November, they blasted rail and port facilities in the largest operation ever flown in Asia except for later B-29 missions.

New long-range fighters flew their first escort over Rangoon, surprising the Japs who never before had seen our fighters so deep in Burma. Then, to finish the destruction, B-25s swept in at medium altitude to saturate Jap defenses. Completing around-the-clock operations, RAF bombers struck at night.

Four strikes by this combined force crippled Rangoon's dock and marshalling yards and the largest railway repair shop in Burma. At the same time, the attack prevented the Jap fighter force from interfering with the simultaneous launching of General Stilwell's offensive.

Two months later, the 10th threw its second surprise blow at the Japs in the first and only use of gliders in the Asiatic theater. Troop carrier planes towed glider-borne Gurkhas and American airdrome construction units deep behind the enemy's front lines. In the midst of the jungle country, our forces built an airstrip from which our fighters harassed the enemy's rear areas.

The isolated task force, fed and supplied by air, managed to divert some Jap troops away from the three-pronged pincers drive of American forces from Assam, Chinese forces from China, and Indian troops struggling through the Arakan hills of western Burma. The campaign through the jungles was long and bitter, but it eventually led to the reopening of the Burma Road.

A final, convulsive thrust by the Japs in March penetrated into India and came within 20 miles of severing the vital Bengal-Assam rail line that carried the bulk of China's supplies from Calcutta to the Hump airbases. British-Indian troops opposed the drive while RAF and 10th Air Force planes strafed and bombed the Japanese until they were forced to retreat.

The battle for Burma was practically won. Ground support strikes for the British drives to Mandalay and Rangoon ended the mission of the 10th Air Force in India. A few days before the war ended, it moved into China to join the 14th Air Force in clearing the Japs from China.

In June, 1944, two developments aimed at a single objective were taking place in areas nearly 3,000 miles apart. In the Chengtu area of China, B-29s were taking off on their first mission against the Japanese home islands. In the Marianas, our forces were invading Saipan, which five months later would become the Pacific base of the B-29s.

Support of the initial assault on Saipan was principally a Navy job, but on D plus 7 our P-47s started landing on the island. They were catapulted from the decks of carriers and flown ashore. Here was close air coordination in the fullest sense of the term. Their missions were so short that at times they were strafing enemy positions within sight of the ground crews back at the airstrips. In one type of operation that delighted the ground men on Saipan, a first wave of P-47s would strafe an anti-aircraft emplacement, shooting down the gunners or else driving them to cover; then a second wave would come in unmolested and finish off the target by glide bombing.

While nearby Guam was being overcome, engineers were beginning the major job of building B-29 bases on Saipan for the coming strategic bombing of Japan. The Jap, aware of the use we intended to make of the Marianas, was desperate. His carrier fleet, which had been hiding out since June, 1943, was riding at anchor in the Philippines, where increasing AAF raids led the Jap to believe we would attempt a landing in the summer of 1944. The enemy was caught by surprise when we landed at Saipan instead. His

carrier fleet headed for the Marianas. With the carriers keeping out of our range, Jap planes took off from the decks and made for our landing fleet. The plan was for the planes, having accomplished their raids, to land at bases which the Jap still held on the Islands. The carriers would have fled by that time to the safety of Philippine waters.

But Jap cunning was not clicking. We got wise to his plan, and when the carrier planes attacked, 402 of them, nearly the whole force, were shot down. Then our Naval Task Force 58 overtook the retreating carrier fleet and gave it a terrific licking. In the three-day operation, the Jap losses were 428 planes and five ships destroyed, three ships possibly destroyed, 10 or 11 ships damaged. Our losses were 110 planes and superficial damage to two carriers and a battleship.

At that point, the Jap war effort had reached such a sorry state that Premier Hideki Tojo and his cabinet resigned, and General Kuniaki Koiso became premier.

Our advance in the summer and autumn of 1944 exceeded our expectations. The European war was going well, the production of war materials back home had reached a remarkable rate, and supplies were flowing to the Pacific in ever-increasing quantities. On July 23, with the support of 7th Air Force B-25s, our forces had moved into Tinian, the third of the major islands of the Marianas. Four days later, the 5th Air Force struck the first major blow of the war against the Halmaheras. The 7th Air Force opened its 72-day campaign against Iwo Jima. We landed at Peleliu in the Palaus on September 14 and at Morotai, 300 miles from the Philippines, on September 15.

The capture of Morotai brought all of the southern and central Philippines into the range of our heavy bombers. Also, from Morotai we could run daily reconnaissance missions not only into the southern and central Philippines but also to the northeast coast of Borneo. Operations from Morotai could properly be called the first phase of the Pacific air blockade which later was to strangle the home islands into virtual helplessness. When the Jap lost Morotai, he lost his short route from Japan to Java, Sumatra, the Celebes and the Halmaheras. To escape the aerial cover of fire we had laid over that route, his shipping had to go all the way around western Borneo.

The Jap flew some airplanes from the Philippines to the Halmaheras to defend the islands, but it was a feeble effort. In our first mass surprise attack, on July 27, we were intercepted by only 48 aircraft. After that, enemy planes there were no problem.

After his miserable showing in the Halmaheras, the Jap withdrew the remainder of his serviceable aircraft to the Philippines. Because he knew that those islands would be our next major objective, he started concentrating his air and ground strength on Luzon, which he believed to be outside the range of our land-based aircraft. He called in aircraft from the Kuriles, Burma, China, Manchuria and the homeland. By early autumn he had 1,500 planes in the Philippines, and it was apparent that he intended to defend the islands at all cost.

We had bypassed the Celebes after bombing them effectively. It was a severe blow to the Jap when he lost the supply of nickel from that source—we did not know how serious until after the war when Jap military men disclosed that nickel had become one of their most critical shortages.

During this period, the Jap was shocked by a remarkable bombing campaign of the 13th Air Force, joined by units of the 5th, against Balikpapan, one of his principal sources of oil. The first two 2,600-mile missions, September 30 and October 3, were made without fighter escort. After the second mission, although bombing results had been good,



we realized that we had to contrive somehow to provide escort. Enemy aircraft had destroyed or damaged 37 of 100 B-24s in the two raids.

We rigged up fighters with one 310-gallon tank and one 165-gallon tank, and test flights showed them capable of the 1,600-mile round trip from Morotai to Balikpapan. In the remaining missions of that devastating series of raids on the Borneo oil center the Liberators were escorted by P-38s and P-47s.

The Balikpapan campaign is but one incident in the story of our long-legged fighters. Back in the early days fighter escort was available for only extremely short missions; P-39s, P-40s and even P-38s had to strain to complete three-hour missions. By 1945, our fighters were good for missions of 2,000 miles, staying in the air 10 hours or longer.

Although overshadowed by the string of U. S. victories in the Pacific, the 14th Air Force by this time was approaching its maximum effort.

From the early days of AVG operations, American airpower provided the most tangible support to beleaguered Chinese forces which had been fighting desperate battles with practically no other material help from the Allies.

**A**lthough its total air strength never exceeded 500 planes, our air force in China had accomplished its two tasks: (1) it had helped develop the aerial supply line from India and (2) had protected this route over enemy territory from Jap aerial attacks. It had also secured platforms for B-29s and its own bombers and fighters.

These tasks were accomplished with less than half of the personnel and only one-third the supplies normally

provided for corresponding air units in other theaters. The 14th Air Force never received more than 15,000 tons of supplies a month, less than the bomb tonnage of a single heavy bomber mission over Europe. In the early days our China planes dropped French, Russian and Chinese bombs; trucks and jeeps were run on alcohol, pine oil and charcoal; air and ground crews lived on a diet of water buffalo, fat pork, bean sprouts, rice and tea.

But for all its problems and its necessarily unconventional methods, the small force of General Chennault's airmen had slowly pushed the Japanese back. By early 1944 it had established a base only 350 miles from the South China Sea. From this base, a B-24 Snooper squadron set some of the most amazing records of the war. In six months, these planes sank a ton of Jap shipping for every pound of bombs dropped. One crew alone sank 58,000 tons of cargo vessels and one cruiser. On one mission, two Snoopers sank four merchant ships in the Formosa Straits with twelve 500-pound bombs. The 17,000-ton Italian liner Conte Verde, being used by the Japs, was sunk by a lone Snooper off Shanghai.

Fighters of the 14th blanketed Southeast Asia. They were protecting the Hump run, supporting the Chinese Salween River Drive and flying harassing raids into both French Indo-China and North China, at the same time protecting the B-29 airbase in Chengtu. This strain and enforced dissipation of effort, among other things, later cost us our East China bases, but the 14th had held on long enough to support the Philippine invasion by reconnaissance and diversionary raids all the way from Shanghai to French Indo-China and the Philippines themselves.

## Aerial Blockade of Japan's Supply Lines



Basic map, courtesy Richard Edes Harrison and Time, Inc.



There had been some discussion among our top military and naval leaders about bypassing the Philippines. If the subject ever reached the stage of direct disagreement, the resolution came in the discussion with President Roosevelt at Hawaii in the summer of 1944.

In the original plans for the Philippine operation, we would land at Sarangani Bay in southern Mindanao, then at Misamis in northwestern Mindanao. Leyte landings would be delayed until December. After the successes in the Marianas and in naval strikes in the Philippines, the Philippine Sea and Formosa, the Joint Chiefs of Staff, anxious to speed up the Pacific drive, decided on the bolder route of landing first at Leyte.

Leyte was daring for two reasons: First, the defenses there were relatively heavy; second, the landing area was outside our effective land-based range and well within that of the enemy. The Leyte invasion marked the first time we had departed from the principle of keeping our major landings within land-based air range—and we had a close call, closer than is generally known. As it turned out, nobody can argue with the decision. We held our positions at Leyte, thanks in large part to the Jap's poor use of naval and air power, and as a result we advanced the recapture of the Philippines by at least two months.

Our first difficulty was weather. Rain was twice as heavy as one might reasonably have expected at that season in the Philippines. Land-based fighters were scheduled to arrive October 25, A plus 5, but airdrome sites were muddy and construction of strips moved slowly, so that the first land-based fighters did not land at Tacloban until October 28. Our heavy bombers could not operate from Leyte, because the earth was too soggy to support the mats under heavy loads.

We were covering the best we could from distant bases. The 7th Air Force was operating against the area from Angaur. The 13th was flying in from Morotai and the 5th from Biak, the latter staging through the Palaus.

If the Jap had made good use of his airpower, we might

well have been pushed back into the sea. He had us greatly outnumbered. By necessity, we lined up our aircraft along the one runway at Tacloban so close together that if a pilot got into trouble he was likely to take out one or two other planes along with his own. That was the vulnerable position of our Leyte aircraft; yet the Jap, with all his concentration of airpower in the area, failed to knock us out.

To the boys who saw it from the ground at Tacloban, the Jap attacks were terrific. But the fact is that instead of concentrating his great air strength on the best target he had seen since Pearl Harbor, the Jap sent out forces that dwindled from 125 planes to 40 or 50, and those usually were so fiercely attacked by our fighters and AA guns that damage to the airdrome never denied us the use of it for more than a few hours at a time.

In a three-day naval battle that began October 24, our fleet units turned the threat of a major disaster into the greatest naval victory of the war. Two Jap fleets approached Leyte, one through San Bernardino Strait and the other through the Surigao Strait; the latter fleet had been reported two days earlier by a 14th Air Force search plane. A third fleet, far northeast of Luzon, moved southward in a diversionary attempt. Our 7th Fleet engaged the Jap units moving through Surigao Strait and knocked them out. The U. S. 3rd Fleet, our principal force in the area, moved north to intercept the diversionary Jap units north of Luzon. That left our landing force exposed to the big San Bernardino fleet, which moved in on our escort carrier force and put six of its seven escort carriers out of commission.

At this point, only our 7th Fleet was left to protect the American beachhead and ships at Leyte. Then came a great surprise. Instead of pressing its advantage, the big San Bernardino fleet turned tail and fled from the area, apparently unaware of our weakness. By that time the 3rd Fleet had engaged the Jap diversionary force in the north, given it a beating, and headed back towards Leyte.

**Balikpapan blazes** after attacks by 13th Air Force Liberators.



**Their target,** an enemy supply dump, smoldering in the background,





In this battle, which became known as the Second Battle of the Philippines Sea, the Jap fleet was so severely weakened that it never again became a major threat. Most of the remaining ships were destroyed months later trying to run the blockade to Japan.

It was during the Leyte operation also that Jap suicide air attacks reached major proportions. Up to that time, such tactics had been the result of individual pilot desperation, but now the Jap had established this type of operation as a definite part of his system of defense.

From Leyte, our job was to prevent reinforcement of the Jap forces and to neutralize airfields in the central portion of the islands. As late as December, the Japs were trying to get convoys in to reinforce the losing defense of Leyte. On December 7, a Jap convoy and an American convoy proceeded towards Ormoc simultaneously, one from the north, the other from the south. The 5th Air Force, together with attached Navy and Marine planes, sank the Jap force and the American landing, a flanking move, was made without difficulty. The Japs admitted later that they lost 84,000 men by our air action in their efforts to move troops into Leyte from other Philippine islands and Formosa.

In December, the 5th Air Force started reconnaissance missions from Leyte the whole way across the South China Sea, relieving the hard-pressed 14th Air Force, which finally had been forced for want of fuel to evacuate its East China bases.

On December 15, we landed unopposed at Mindoro, which we needed for airstrips from which to attack Clark, Nichols and Nielson fields prior to the coming Luzon invasion. These strips substituted for fields which we had failed to get into operation at Leyte.

For over a week before the Mindoro landing, heavies and mediums of the 5th Air Force had reached out from Morotai, Palau and Leyte to neutralize fields in the Visayans from which the landing force might be attacked. The

13th Air Force joined in, shifting its attacks gradually northward. Enemy airfields on Luzon were attacked by the Third Fleet. In long range reconnaissance missions from rear bases in China, B-24s of the 14th Air Force and B-29s of the 20th Bomber Command searched the South China Sea. We encountered some resistance as our convoy proceeded toward Mindoro, Jap planes sneaking over the mountains to make attacks which sank two LSTs and damaged the cruiser Nashville.

A dramatic but little publicized incident occurred on December 26 when a Jap naval force moved in to raid and shell our installations on Mindoro. Since U. S. fleet units by that time had withdrawn towards Leyte, our forces were vulnerable. Every available aircraft on Mindoro went up to attack the Jap forces. They fought fiercely to keep the ships out, but the Jap persisted and for seven and a half hours the airdrome was under almost constant attack. The enemy force moved in so close that some of the ships could be seen from the shore. Afterwards, the count showed that Jap losses were two destroyers and three other ships sunk and two cruisers badly damaged. We lost 20 aircraft, and our ground installations were severely damaged by Jap air raids; shellfire from the ships was consistently short, probably because our air attacks damaged their fire control mechanisms.

By the time of the invasion of Luzon at Lingayen Gulf on January 9, the Jap air force had been so reduced that only two planes rose to challenge the landing. Suicide planes attacked our convoy en route to Lingayen, but by the time the troops went ashore, opposition had all but ceased. The AAF and Navy divided the task of direct and indirect support of the landings either by times of day or by map coordinates. From China bases, B-29s flew photo missions over Singapore and the South China Sea to locate the southern Jap attack force. Other B-29s knocked out bases in Formosa. The 14th Air Force flew night and day reconnaissance and attack missions to Camranh Bay and up

these B-25s head for home over the rugged jungle of Bougainville Island.



**Camouflaged barge** is set aflame by mast-high attackers off Timor.





the China coast to Shanghai. From Saipan and Tinian, B-29s were raiding Japan. The 7th Air Force hit the Bonins. The 13th Air Force attacked shipping and other targets from Morotai.

Throughout the first half of January, the declining rate of sorties by the Jap air force in the Philippines showed the effectiveness of our blockade and neutralization. On January 1, the Jap had 480 operational aircraft on Luzon and 1,191 in the Southwest Pacific. By the end of the month, this strength had been reduced to 34 operational aircraft on Luzon and 529 in the Southwest Pacific.

There were too many Jap airdromes in the Philippines for us to expect to keep all of them neutralized, so we did the next best thing. We destroyed the principal ones, concentrating on Clark Air Center, on which the whole Philippine air force depended for supplies and maintenance. We knew that without Clark the Japs could not operate as an integrated air force.

The good sense of that attack plan was apparent after the capture of Luzon. We found 1,505 Jap planes on Luzon alone, most of them destroyed. Few of the others were serviceable. Some needed only a single part to be flyable again. A typical case was the George we found on one of the airdromes. It was in perfect shape except that the carburetor was worn out, but at Clark Field we found dozens of carburetors buried for storage by the Japs.

We had an old score to settle at Corregidor. We settled it on February 16 when Allied parachute troops and amphibious forces, protected by continuous strafing to keep the Japs' heads down, landed on the memorable "rock" following an aerial campaign which had been in progress since January 23. The landings were virtually unchallenged. In two days, C-47s dropped 1,999 paratroopers and 1,292 bundles of supplies on a target area of little more than one square mile. On February 27, the Japs having lost nearly 9,000 killed, organized resistance on Corregidor ceased. It was appropriate that on the same day General MacArthur reestablished the Commonwealth Government of the Philippines.

If the effectiveness of napalm, our new jellied gasoline incendiary bomb, still needed any confirmation, it was abundantly provided at Ipo Dam in Luzon on May 17. This was air support at its best. A garrison of 3,000 to

4,000 Japs had been cut off between Ipo Dam and Angat River. Holed up in caves, as was his fighting fashion all the way from New Guinea to Okinawa, the Jap was prepared to exact a heavy toll of American lives before giving up their positions. The 5th Air Force, using 200 P-47s, P-38s and P-51s, dropped 350 tons of napalm into the pocket, and as flames seeped into the caves, Japs ran out wildly into the current of ground and strafing fire. Resistance quickly ceased; Ipo Dam was taken three days ahead of schedule.

With the Philippines in our control, we had cut off the whole of the southern empire. Even if the range of his aircraft had permitted it, the Jap had seen enough of our blockade to know that there was no hope of reinforcing his holdings in the Indies. And what frightened him most, we now had our springboard for the final drive on Japan.

From the Philippines, we were able to use our heavies, mediums and fighters in attacks against the major industrial installations on Formosa, where the coastal bombing became so intense that the population was moved to the interior in a mass relocation. Also from the Philippines, we initiated a new phase of the blockade, which by now had choked off the home islands. The end was in sight.

While the drive for the Philippines was in progress, B-29s of the 21st Bomber Command on November 24 had opened their strategic bombing offensive against the Japanese homeland, an offensive that finally was to crush the enemy's industrial capacity. Thus, our knockout blow, the fourth and final phase of the war against Japan, proceeded simultaneously with the third phase, the advance and the blockade. (The story of the B-29 offensive against the inner empire, climaxed by the atomic bomb in August, will be told in the following chapter.)

By the time the Marines landed on Iwo Jima February 19, the tiny strategic island had been bombed for 72 consecutive days by 7th Air Force planes based in the Marianas. These attacks served their purpose, which was primarily to keep runways cratered so that the Japs could not use them either for staging raids against our B-29 bases in the Marianas or to thwart the Marine landings at Iwo.

Nobody expected the pre-invasion bombing to make the Marines' task at Iwo Jima an easy one. The Japs were protected by caves, which had to be blasted one by one

**Waves of paratroopers descend on northern Luzon in final drive.**



**This Hollandia debacle finished Jap airpower in New Guinea.**





before resistance could be overcome. Our Marines lost heavily; Jap losses were twice as heavy.

Iwo gave us a base for P-51 escort of B-29 missions over Japan. Later, to the surprise of the Japs, Iwo-based 51s ran fighter sweeps over the homeland, directly joining the knockout blow against vital industry and airfields. The island provided a haven for B-29s which got into trouble en route to or returning from missions over Japan, and also became a staging point from which B-29s were able to reach as far as northern Korea, 2,000 miles from their bases in the Marianas.

The principal part of the AAF task in preparation for the Okinawa landing took place in areas far distant from the immediate operation. Over a wide area, elements of the 5th, 7th, 13th and 14th Air Forces were attacking a great variety of targets to prevent reinforcement of Okinawa, which we assumed—quite correctly as it turned out—would be our toughest invasion effort to date.

The 14th Air Force, though chased out of its east China bases long before, had undertaken guerrilla air tactics from six airfields behind enemy lines to continue its attacks against Jap coastal shipping and overland communications, and in April, as the Japs were massing bombers at Shanghai for attacks on our Okinawa invasion fleet, 14th fighters swept in to wipe them out. The Jap did not make a single attack from Shanghai against our Okinawa operation.

The Jap suicide force made a desperate effort at Okinawa, and an impressive one. These attacks cost us 35 ships sunk and 299 damaged. The threat became so serious that B-29s were called upon to help knock out the inner island bases from which suicide planes were being launched.

One can only guess how much faster the Okinawa resistance could have been overcome if maximum air support had been called in. As it was, the battle for Okinawa lasted 82 days. During that time, as many as 400 to 600 enemy aircraft, including many suicide planes, were thrown against the occupying forces in a single day. In the battle for this strategic island, the Japs used every plane they had except those regarded as essential to the later defense of Kyushu and Honshu. It was the enemy's greatest air effort.

What Okinawa meant to us as a base for air operations is obvious. It opened the front gate to the Japanese home islands. It began the final phase of the blockade, because

from Okinawa we were able to roam the whole of the Nippon inner empire with whatever aircraft types suited our convenience. This was mastery of the air, final and complete. In those last days, when the Jap air force wouldn't or couldn't come up to resist, the route to Japan was the final "milk run" of the war.

The Jap had only a taste of the punishment Okinawa held for him. When the war ended, the yellow mud of Okinawa was being replaced by long hard runways on fields which soon would be lined with a thousand B-29s of Lt. Gen. James H. Doolittle's 8th Air Force. The island was becoming, as someone put it, "the Pacific Grand Central of the Air." Convincing proof is the fact that we used more men to build the Okinawa airfield system than to build all our airfields in France and Germany.

As the Okinawa show developed, we were tying up some loose ends in the south. Balikpapan, which had been given a breather during our operations up the line, was on the list. From early 1945 until the July F-Day, the 13th Air Force plastered the Balikpapan oil center with 3,400 tons of bombs. Eighteen consecutive days of bombing preceded the landings, and 7,000 Jap defenders moved back into the hills. On the night before the Australian forces landed, General Wurtsmith, 13th Air Force Commander, reported to General Kenney that of the 87 pinpoint targets selected for the air campaign, 85 had been knocked out. He added, "We'll get the other two before the landings." They did, and when the Aussies went ashore next day, not one was killed and only 20 were wounded. Later on, when the Australians reached the hills where the Japs were holed up, the going got tough. Close support came from the air again, and the advance continued. It was a repetition of the formula that had been standard since New Guinea.

The China campaign also had reached the final stage. For five weeks, the veteran Chinese-American Wing had supported Chinese ground troops in repulsing a Jap drive to take the 14th's Chihkiang airbase, supply center for the guerrilla airfield system. This success marked virtually the end of the war for the remarkable 14th. The Jap was retreating from the bases he had captured six months earlier, abandoning his last supply route to Malaya. After May, Hump supplies were diverted to Chinese ground troops for the southern offensive, to be coordinated with an American landing which never took place.

Step by step, the blockade of Japan had encircled and choked off the home islands. The operations summaries, the communiques and the newspapers reported "shipping strikes" day after day until the term almost lost its meaning. But what it added up to at the end of the war was that Japan's once mighty fleet of ocean-going merchant ships had been reduced to 600,000 tons, and a good third of that was in repair yards.

In July and August, the Japs didn't dare to send out the remnants of its air force in defense of sea traffic. The Navy had been so decimated that our fleet was able to stand off-shore and shell Honshu. B-29s had mined the Inland Sea, vital inter-island artery for shipping.

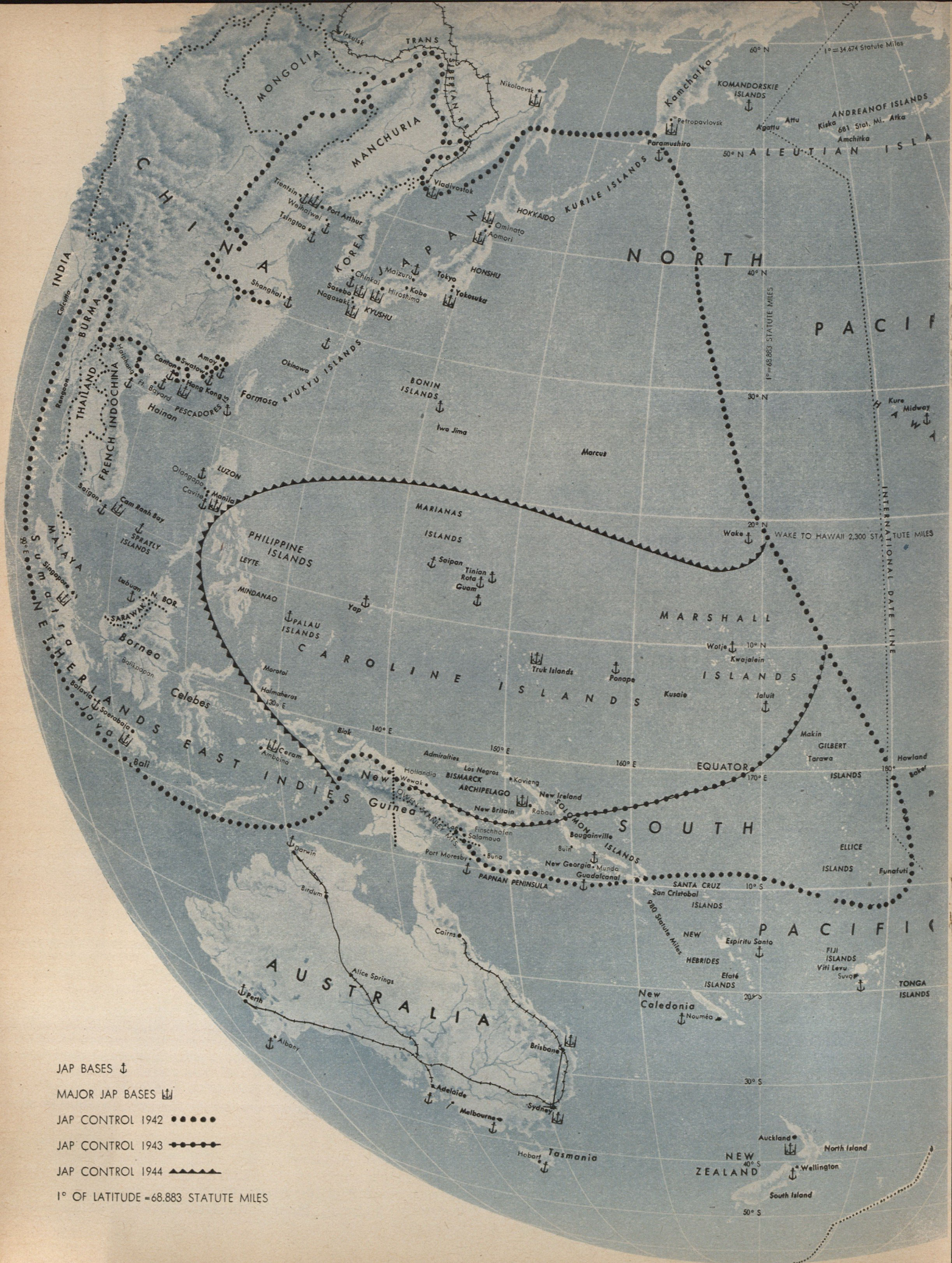
Not one tanker reached Japan after January 1, 1945. It seems almost ridiculous that in the closing days of the war 40 percent of the Jap's available fuel stocks were in Kyushu, and they could not be moved because the home islands had been cut off, not only from the outside but actually from each other.

It was a matter of time. The emperor had a choice. He could listen to his military advisers, let the war go on, make a stand on the shores of Kyushu, and then watch us finish off what was left of his nation. Or he could listen to his own reason and quit. He chose the latter. ☆

**Bulldozer clears** parking area for P-51s at Pacific staging base.









# END OF AN EMPIRE

*When the Japs had been driven back to their  
home islands, our Superfortresses delivered  
the blows that brought them to their knees*

Japan could not defend her home islands in a last-ditch suicide stand with any hope of success because we had destroyed her capacity to wage war—destroyed it more completely than we had Germany's. We had paralyzed her industry and shaken civilian morale. Before the atomic bomb, before the Soviet entry into the war, Japan was a vanquished nation.

That the B-29s could be credited with the knock-out punch that ended the war has been emphasized innumerable times by the Japanese leaders themselves during interrogations, by ground inspection of the extent of industrial destruction and by examination of preliminary economic statistics. Japan already was groggy from Superfort attacks when on August 6 one of the dreaded "Hellbirds" dropped the world-shaking atomic bomb that not only wiped out a city but also gave notice to the japs that our 1,000 B-29s now could do the job of 250,000 Superforts. The war was over.

The costly naval and ground battles and the desperate expansion of our own air force's striking power had given the AAF bases from which it could launch its strategic air war against Japan's industrial heart. Once the Superfort bases were secured in the Marianas, the fate of Nippon was sealed.

From the Joint Chiefs of Staff in April, 1944, the 20th Air Force received its assignment: to accomplish "... the earliest possible progressive destruction and dislocation of Japanese military, industrial and economic systems and to undermine the morale of the Japanese people to a point where their capacity for war is decisively defeated."

Primary objective during the ensuing months, in accordance with our doctrine that the first job of aerial warfare is to neutralize the enemy's air strength, was destruction of his engine and airframe factories. High altitude precision bombing was the pattern followed. Directly related to aircraft factory targets were the thousands of small home-industry sub-contractors which produced about 25 percent of aircraft engine components and about 55 percent of airframe parts. These were scattered through the urban areas of all industrial centers, so incendiary attacks were directed against them as the most effective way of blanketing the wide areas.

Next came the principal armament and munitions industries that fed the Japanese army, navy and air force. We

then immobilized vital parts of the war machine by destroying fuel supplies. And finally, the attacks on Japan's railway system had just begun when the war ended.

In addition to these industrial targets, the Superforts also carried out a vital part of the blockade which isolated the home islands from their sources of raw materials and food. In operation "Starvation," they parachuted more than 12,000 mines into the ports of Korea and North China, the principal harbors of the home islands, and in the Inland Sea—main shipping artery for commerce and the haven for the remnants of the Japanese navy. Thus they helped seal the last gap in the iron ring of isolation that had been welded by the 5th, 13th, 14th, 7th and 11th Air Forces and the Navy.

With these accomplishments, the 20th Air Force had surpassed the expectations of General of the Army Henry H. Arnold when, at the time of the first official announcement of the existence and operation of the B-29s, he declared: "The Superfortress is not going to win the war by itself nor has anyone thought it could do so. It will, however . . . strike at the sources of enemy strength and prepare the way for ultimate decision by our . . . land, sea and air forces."

The Superfortress, pride of the AAF, did all this and more, but the road to victory had been a long and tedious one. History books will say little about the men who conceived, modified and produced World War II's most intricate and effective aerial weapon. Yet the midnight oil they burned in laboratories and factories in America was the pilot flame that ignited all of Japan in the conflagration that reduced that nation's economic and social life to ashes.

In 1939, when we still were thinking of military weapons in terms of defense, Major General Arnold as Chief of the Air Corps, with his top staff aeronautical engineers, drew up the general specifications for the longest-range heavy bomber ever conceived. When we were plunged into war two years later, the B-29 was redesigned as the most powerful aerial weapon ever devised for offense. With a central fire control system and electrically controlled remote turrets, 2,200-horsepower engines, refined radar navigation and bombing devices, the B-29 was destined to crush our enemies on their own soil.

*(Text cont., page 28)*





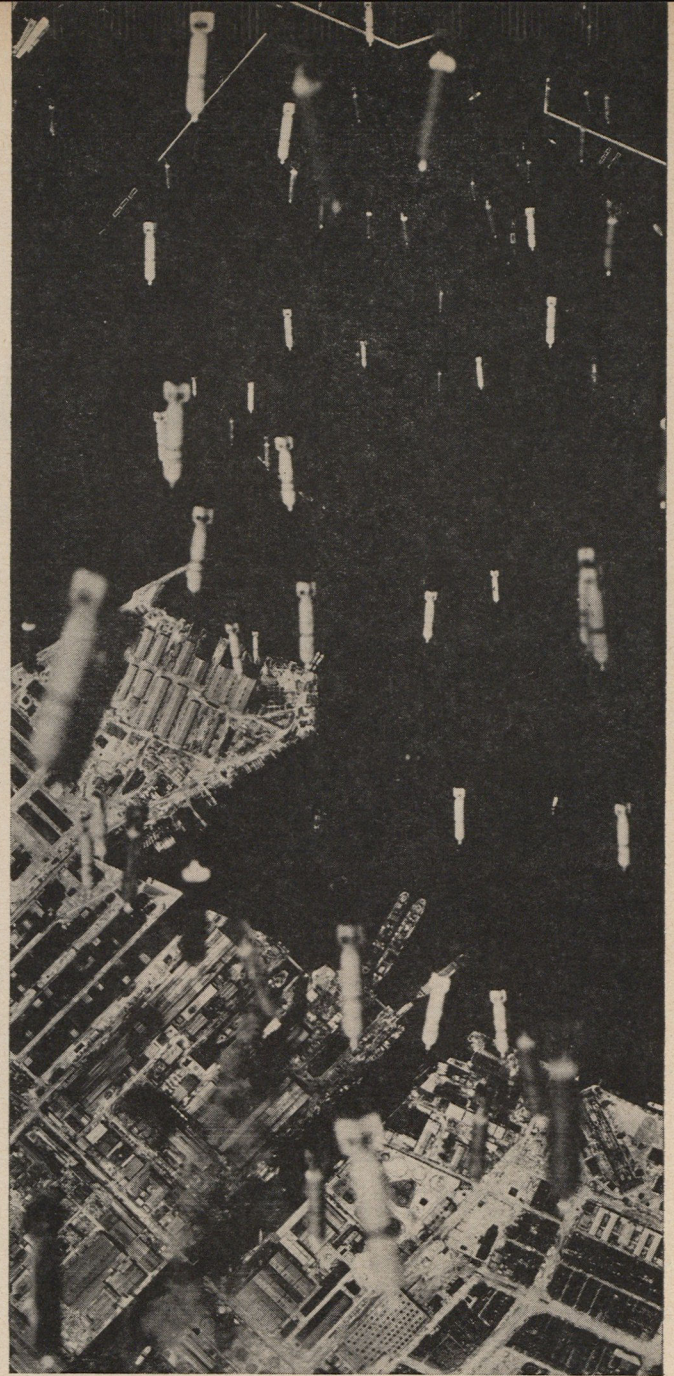
**Natives build** runways at Charra, India, for our Superfortresses.



**Two-ton bomb** falls on a Jap city from B-29 of 58th Bomb Wing.

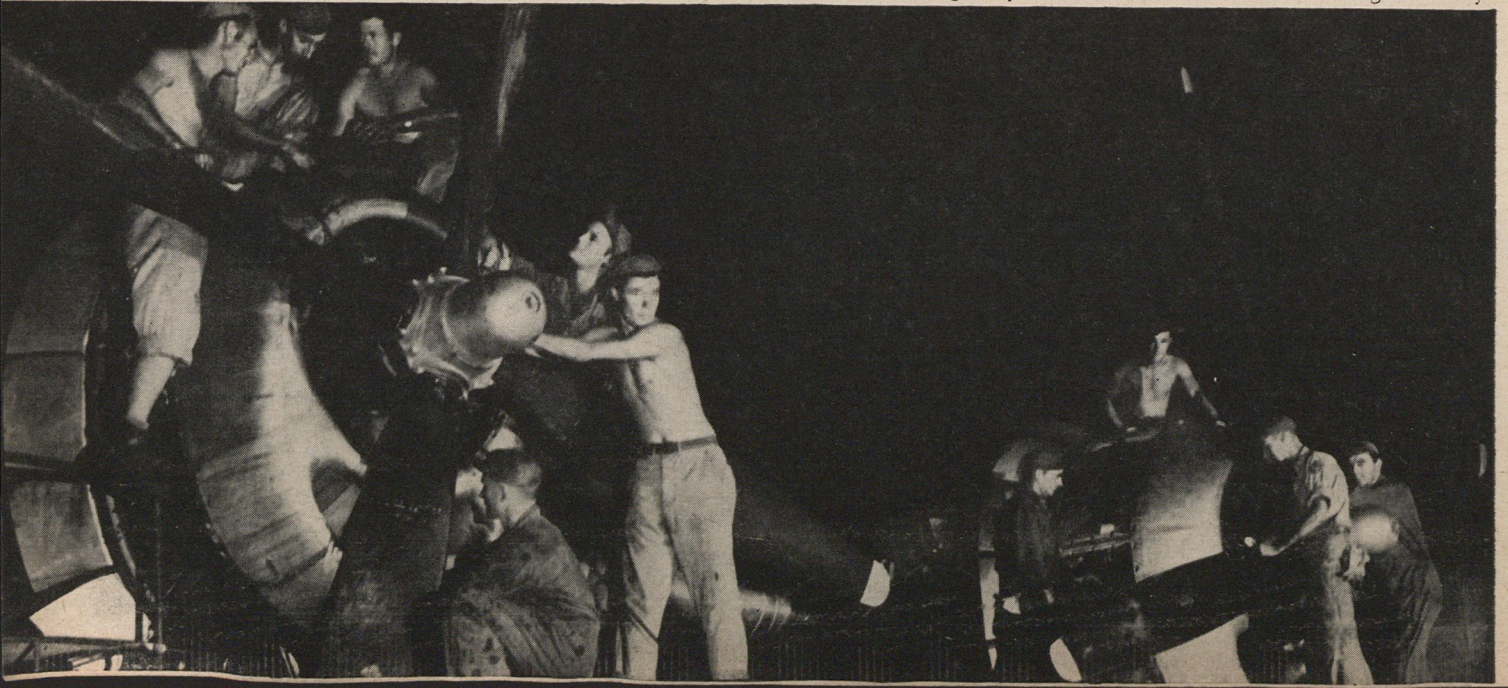


**Industrial city** of Toyama, Japan, 90% aflame during B-29 strike.



**Firebombs** from B-29s rain down on docks and warehouses at Osaka.

**Ground crew** on Saipan gives B-29 quick, thorough check-up between attacks during Tokyo "Blitz," when this crew worked night and day.



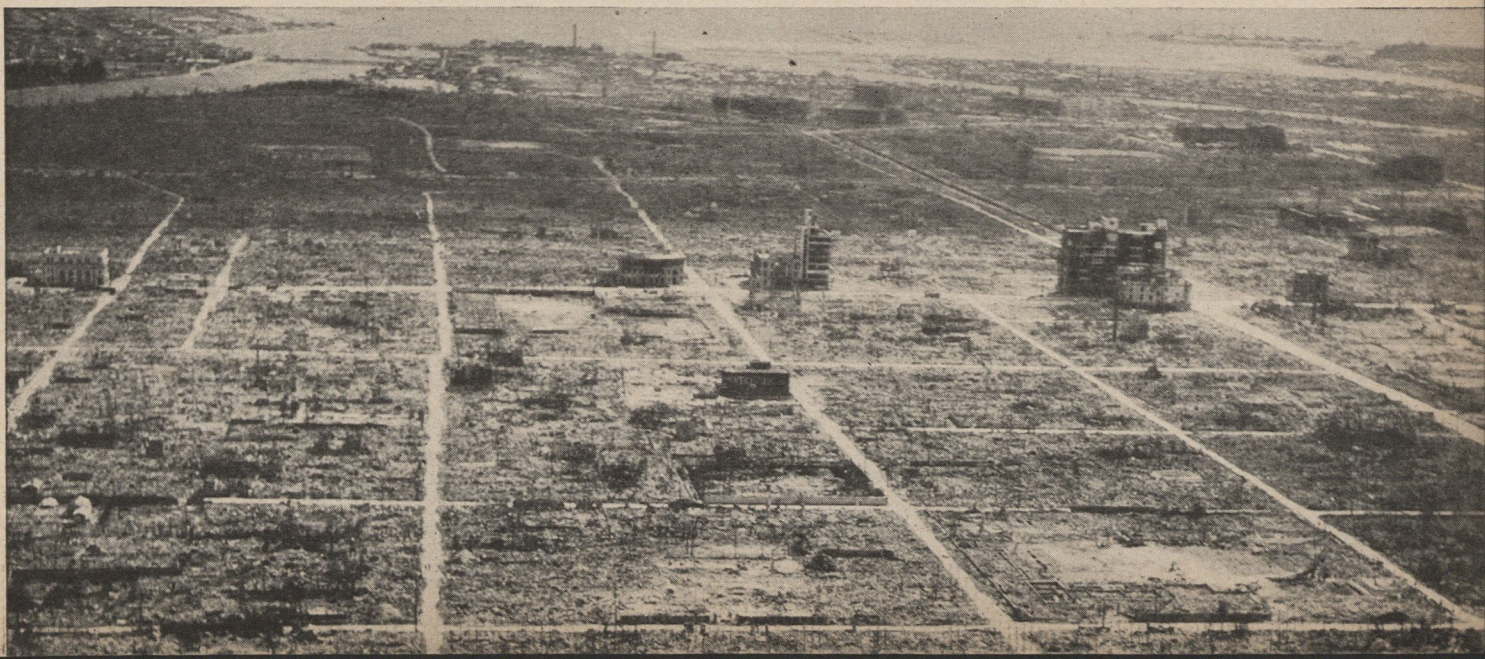




**Vast areas** of Tokyo's important industrial complex were devastated by the repeated attacks of the Superforts, called by the Japanese "the birds of hell." Above is what the Musashino Nakajima aircraft engine plant looked like after the B-29 strike of April 7, 1945.



**Devastated area** above was once the thriving Japanese industrial city of Hamamatsu. Only a few business buildings survived B-29 attacks. **Hiroshima**, or what was left of it (below), became known around the world when it was selected as the target for first atomic bomb.





It required two more years of bug-chasing, modification and flight testing before the first B-29 unit destined for combat—58th Very Heavy Bombardment Wing—was activated on June 1, 1943. Then, at the November, 1943, Cairo Conference, the United States promised to put the Superfort into action against the Japanese homeland and Manchuria from bases in beleaguered China.

While the greatest mobilization of industrial effort ever concentrated on one weapon was being carried out, ground and flight personnel were being trained in special technical schools, then moulded into integrated battle teams. In January, 1944, maintenance and repair groups were assembled and shipped to India. In April, the first Superfortress landed at its new base in India, followed by the rest of the 58th Wing. In Kansas and Nebraska another Wing, the 73rd, was activated.

In China, hundreds of thousands of coolies rushed the Chengtu airdrome system to completion, breaking rock by hand, packing runways with man-drawn rollers, moving earth in small baskets. Thousand-mile flights to China over the Himalayan Hump kept the crews on their toes as the Superforts hauled their own gasoline, bombs and supplies to advance bases.

On June 6, as thousands of planes and men swarmed over Normandy, the first Superforts took off from India bases on a shakedown mission, attacking marshalling yards in Bangkok, Thailand. Results were poor but the mission proved crews and planes were ready to hit Japan. From China, on June 15, 47 Superforts hit the Yawata Steel Works on Kyushu, dropping the first bombs on the Japanese homeland since the Doolittle raid more than two years earlier. On the same day, we began the invasion of Saipan. The Japanese must have seen that their traditional open-water defense was crumbling.

During the next five months, bombs from B-29s fell in Manchuria, Kyushu, Thailand, Burma, Korea, Formosa, Sumatra, and on Singapore in a record 3,800-mile attack. Superforts reconnaissance sorties, which totalled more than the number of bombing sorties, provided a complete photographic report on all Japanese military and industrial installations from Kyushu and Manchuria to Singapore.

The strain to carry out combat and reconnaissance sorties, requiring 12 ferry trips over the Hump to enable each plane to fly one mission to Japan, limited the effectiveness of the attacks. The average of only one raid every 10 days was an uneconomical use of Superfortresses. But the remaining bugs in the planes were rooted out during these months, and crews gained confidence in their new weapon as they waded through strong Jap fighter opposition. This battle-testing phase was invaluable in the lessons it passed on to the 21st Bomber Command's 73rd Wing, then being readied for attacks from Saipan bases.

In August, Maj. Gen. Curtis E. LeMay, a successful 8th Air Force leader, took over command of the B-29s in India and began learning the capabilities of the Superfortress while smoothing rough edges from performances of aircrews. The human error was too high, limiting the effectiveness of the weapon. The lessons he learned and the policies he adopted were reflected later in the vicious 600-, 700- and 800- plane raids which he directed as commanding general of the 21st Bomber Command from the Marianas.

The 58th Bombardment Wing in India and China was to have been the guinea pig in applying a new strategic concept, the use of Superforts as task forces of the air, flying themselves and their ground crews any place in the world for immediate operation from new bases. But the planes could not use ordinary runways; the quantity of

supplies and maintenance equipment needed to keep them operational was too great to be moved by air, and every group of bases required a specialized repair depot. The mobility of base facilities was desirable, but we could not yet rapidly deploy our aerial battlefleets as mobile task forces.

After shelving this globe-hopping principle, the 20th Air Force set its sights on Pacific island bases. Destination of the 73rd Bomb Wing was changed from India to the Marianas, ideal base for Superfort operations against Japan, with the important advantage of a direct supply lane by sea.

With the arrival of the 73rd Wing in Saipan, a new system of maintenance and operation was established. Instead of the conventional practice of locating only one group on an airdrome, an entire wing of four groups was concentrated on each large airbase. Thus, 192 aircraft, 12,000 men and all service organizations of an entire Wing were centralized around one headquarters. This greatly facilitated maintenance and operational control from air force to wing headquarters where all group and squadron personnel were immediately available. Two time-consuming channels were eliminated.

New operational problems, however, proved serious. "Tokyo Rose," first Superfort to fly over Tokyo on a photo-recon mission had confirmed meteorological information that winds as strong as 200 knots per hour would have to be battled—this in addition to fighters and ack-ack. Visual bombing would be the exception, rather than the rule, because of persistent cloud coverage over Japan.

On November 24, Thanksgiving Day in the States, 111 Saipan-based Superforts took off to hit the Mushashina Aircraft Factory near Tokyo in the opening phase of the campaign against the aircraft industry.

On subsequent missions tail winds carried bombers over their targets at 500 miles per hour, far too fast for accurate bombing. To turn back into the wind for another bomb run would have consumed so much gasoline that the planes would not have been able to fly the 1,500 miles back to base. Lack of experience with the fine points of radar navigation and radar bombing also caused many bombs to miss their intended target areas. The climb to 30,000 feet, followed by several hours' operation at this altitude, strained engines to the point that many planes had to turn back because of mechanical troubles. Of the 111 planes that took off on that Thanksgiving Day, 23 aborted before reaching Japan.

In the two months that the 73rd Wing alone operated from the Marianas against Japan, it averaged one mission every six days, only slightly better than the 58th was doing in China. On the first 14 missions, an average of 87 aircraft took off but only 14 percent hit the primary target and 15 percent hit the secondary target. Approximately one-third of the planes were forced to turn back before reaching Japan. The bombing effort was not satisfactory. Weather permitted visual bombing from high altitudes over the industrial Tokyo-Nagoya area on an average of only five days each month. Although enemy air attacks during this period reached their maximum intensity, 984 attacks being made against 64 B-29s over Tokyo on January 27, only half of the plane losses was attributable to enemy action.

Planes were running out of fuel on their return trips and cripples were being shot down by Japanese fighters from Iwo Jima. To neutralize these attacks the Superforts flew two softening missions, dropping more than 700 tons of bombs on the island, and Marianas-based fighters and bombers of the 7th Air Force attacked it steadily until the Marines fought their historic battle to wrest it from the Nips. To win this little island, the Marines lost 4,000 men,



but the sacrifice probably saved the lives of many of the crews of the 2,400 B-29s that later made emergency landings at Iwo on their return from Japan. In addition, the Japs were deprived of the only airbase from which their fighters could attack our formations enroute to and from the Japanese homeland, and our Superdumbos obtained a base from which they could comb the ocean all the way to Tokyo harbor in search of crewmen from ditched Superforts. More than half of the men who went down with their planes at sea were rescued by the Navy in cooperation with these B-29 search planes.

Iwo also provided a base for staging B-29 missions to the northern cities of Honshu, Hokkaido and Korea, and a base for fighters of the 7th Fighter Command to fly escort for their "big friends." These fighters, later incorporated into the 20th Air Force, also flew independent sweeps over Japan and ran up a score of 1,062 enemy aircraft destroyed or damaged at a loss of only 157 of their own planes.

In January and February, 1945, the 313th and 314th Bomb Wings arrived at Tinian and Guam, and General LeMay flew from Calcutta to Saipan to take over the growing 21st Bomber Command.

The pattern of attack from November 24 until March 9, when the Superforts flew their first low-altitude night incendiary attacks against urban areas, was the same for each of the 20 major missions flown against Japan. Sixteen of the strikes were directed against the aircraft industry, three against the urban areas of Tokyo, Nagoya and Kobe. Daylight strikes were scheduled with bombing altitudes first assigned at 30,000 feet, later lowered to 27,000 feet. The high gas consumption required to assemble the large formations and to climb to altitude limited the average bomb load to three tons. At the lower altitudes, Superforts were able to increase their bomb loads to an average of seven tons each before the end of the war.

Difficulties encountered in flying through hurricane winds and bombing through undercast were not the only problems. Japan's still potent fighter force frequently put up 200 to 300 fighter aircraft against our formations of 50 to 75 planes. Although our striking force by the end of February was more than 200 planes, only five missions had been flown during the month—a bombing effort of one-third the potential maximum.

At this point General LeMay evaluated results of the first three months of operations from the Marianas. Although 91 percent of all Japanese aircraft engines were being produced in three plants, making them vulnerable and juicy targets, our aircraft had not yet seriously cut their production. Of 11 high priority targets, none had been destroyed although production had been reduced or temporarily halted for a few weeks. In the three experimental small-scale incendiary attacks from high altitudes, fires were dispersed too widely to be effective. With three wings now available, totaling more than 350 planes, an average of only 130 planes were reaching Japan. A radical change was necessary.

General LeMay's decision was to haul the Superforts down to low altitudes in night raids on urban areas. All ammunition was taken out of the planes to give them more speed and greater bomb-carrying capacity. Instead of mass formations, the planes were to be sent singly over the target. It was a gamble with thousands of men's lives and \$200,000,000 worth of airplanes. None knew this better than General LeMay. He was sending his entire strength into the teeth of ack-ack over cities where its concentration was greatest. Some said losses would be staggering, but there were many more who believed it could be done.

On March 9, 334 Superforts took off from the Marianas

and 279 dropped their incendiaries—1,665 tons—on Tokyo. Fourteen planes were lost and 16 square miles of highly inflammable Tokyo, including many industrial targets, were leveled or gutted by fire. Success of this first fire raid set the stage for devastating all of Japan's major industrial centers and proved that the widely scattered war plants were vulnerable to incendiary attacks.

At the lower altitude, fewer bombers had mechanical trouble, night-fighter interception was negligible, ack-ack was heavy but relatively inaccurate, bomb loads were jumped from 3 to 7½ tons, and weather was so much better that bombardiers were able to drop their sticks visually after the lead formations had hit their targets by radar and lighted up the city with fires. The low altitude mission was not as tiring for the crews, and the effectiveness of their bombing was so satisfactory that their morale skyrocketed. Now they could hit the Japs with crippling instead of merely harassing blows.

After 3½ months of experimentation, the Superforts had found a quick way of destroying Japan. Again and again the principal cities were hit, sometimes by radar at night, sometimes by day, at altitudes from 8,000 feet to 20,000 feet depending upon target defenses. With the vastly improved weather conditions, bombardiers increased their accuracy more than 11 percent over what it had been at higher altitudes. By June 7, following a second intensive fire blitz, productive capacity of the five major industrial cities of Japan had been destroyed. The only large city left untouched throughout the war was Kyoto, historic center of Japanese culture and religion.

The March fire attacks, carried out as part of the overall strategy leading up to landings on Okinawa, temporarily disrupted communication and transportation in the homeland, preventing any rapid redeployment of troops. Then, by Navy request, the Superforts stepped up their schedule to mine Japanese coastal waters.

Their task was to bottle up the Japanese fleet in its home waters so it could not interfere with the large-scale amphibious landings by American forces. The 313th Wing, in the four days prior to the initial Okinawa landings at night, dropped more than 1,000 tons of mines at the entrances to Shimonoseki Straits virtually closing the Inland Sea to all large vessels for 10 days to two weeks. Harassing mines then were dropped in the Kure-Hiroshima harbor areas where the Jap navy was hiding out. Only possible exit was through the Bungo Straits, too deep for mining, and this was in range of our Navy planes. It was no wonder that the Okinawa landings were unopposed by what was left of the Jap fleet.

From April 17 to May 11, the B-29s, at the insistence of the Navy, were diverted from their strategic task to help support the Okinawa operation. Superfort battlefleets made 97 strikes against Kyushu and Shikoku airfields, and, according to General Carl Spaatz, top strategic air commander in the Pacific, "Whereas 500- and 600-plane attacks were flown against Okinawa and vicinity prior to the B-29 attacks on Kyushu airbases, thereafter the enemy was never able to rally more than 50 to 60 for a single attack."

Immediately prior to the suspension of the bombing of urban and industrial targets to carry out the Kyushu attacks, Superforts had begun to cripple seriously Japan's aircraft industry. The two largest engine plants were knocked out. Their production four months earlier had constituted 78 percent of the total output of army and navy aircraft engines. Immediately, airframe plants became top priority targets.

By this time, P-51s had joined the Superforts on their missions, flying escort from Iwo Jima. This protective cover



insured more accurate bombing. On April 27, the Mustangs flew their first independent fighter sweep over Japan. They were navigated to the target and back home again by a "big friend." Their target for the day significantly was Atsugi airdrome where the first American occupation forces were destined to land four months later. They destroyed and damaged 85 Japanese planes and shot up the installation so completely that it still was strewn with wreckage at the end of the war.

In May, the 58th Bombardment Wing had abandoned its bases in India and China to join the consolidated 20th Air Force in the Marianas. It was logical to transfer its units to Tinian where logistical problems already were solved and where an airbase system was ready for them.

The following month the 315th Wing of stripped-down, special radar Superforts moved into Guam to bring the 20th Air Force up to full strength with five wings, which totalled more than 1,000 planes and 83,000 men at the end of the war. The next 1,000 Superforts from the States were destined for Okinawa bases as the main striking force of General Doolittle's redeployed 8th Air Force.

After months of trial and error, and with substantial reinforcements, our big bombers were gathering momentum, and by mid-summer they were as thick as locusts over Japan, bombing day and night with virtually no aerial opposition, losing only four planes to enemy action in the last month of their strategic bombing campaign.

During the final months of the war, mining operations were accelerated to complete the blockade of the home islands. The Far East Air Forces and the Navy had cut off all shipping from territories south of Japan. Submarine and Navy task force sorties knocked out shipping along the east coast and along the fringes of the Sea of Japan. The B-29s then sealed off Korea and North China shipping lanes by mining all principal harbors, an operation that sank or destroyed 1,000,000 tons of shipping.

With their special radar bombing equipment that produced a scope picture 10 times better than that in earlier planes, the Superforts of the 315th Wing completely destroyed the nine principal oil refining and storage plants of Japan in 15 strikes, knocking out 6,055,000 barrels of storage tank capacity. One synthetic oil plant, at Ube, was not merely demolished but it actually was sunk as bombs broke dikes protecting the reclaimed land on which the plant had been built.

This, and all other 315th Wing targets, covered areas less than .6 of a square mile each. Attacks were made at night in single file formation with tail guns as the only armament, yet the wing lost only one plane to the enemy in all its combat missions. By removing the turrets, speed had been increased and bomb loads had been boosted to nine tons. On one mission these planes set a record by dropping 11.4 tons of bombs apiece on the target.

When Japan's largest cities had been destroyed, incendiary attacks were turned to secondary industrial centers. Precision bombing attacks were stepped up with many formations of 50 to 100 B-29s hitting widely separated targets almost every day. It was this plan of striking many different targets in all parts of Honshu simultaneously that completely baffled the remaining enemy fighter force. The Japs didn't have enough planes to intercept more than one or two of our attacking formations, so they quit trying.

By the end of July, opposition was so meager that General LeMay began announcing his targets in advance, warning the Japanese people to evacuate their cities. On July 27, 60,000 pamphlets were dropped on 11 cities announcing their impending doom. Six of the eleven then were

attacked the following day. The pamphlets alone, according to Japanese military officials, caused conditions close to panic in some of the forewarned cities, scaring thousands away from their jobs and into the hills.

After hitting the secondary cities with incendiaries, the total score of the war for the B-29s added up to complete destruction of the industrial productive capacity of 58 cities and partial destruction in six others. A total of 178 square miles of urban areas was burned out.

These attacks, combined with the precision bombing strikes, had destroyed the 23 major factories of Japan's aircraft industry, the six main army and navy arsenals, two plants producing tetra-ethyl lead, two major steel plants and the petroleum industry. In addition, 540 other important factories engaged in production of war materials had been wiped out or severely damaged. And to these figures, should be added the thousands of small tool machine shops and assembly plants, the home-industry of the nation, that were levelled.

Material destruction in Japan was almost beyond belief. In many cities there is only wreckage as far as one can see in any direction. Scattered throughout the rubble are small clusters of lathes, drill presses, punches, drop-hammers and other tool machines—remnants of the home industry on which Japan's economy was developed.

It had taken the Superforts 37½ weeks to drop 157,500 tons of bombs on the enemy homeland, but at the end of the war, when for the first time the Superforts were able to fly maximum efforts, the same tonnage was scheduled to have cascaded on Japan in the next 11 weeks, each B-29 carrying at least 7 tons of bombs. These bombs, however, would have been the old-fashioned type. Atomic bombs too would have hit the enemy, if he had not surrendered after the first two wiped out Hiroshima and most of Nagasaki.

More than factories and cities was hit by the bombings. The morale of the people slumped so severely that editorials in the Nippon Times after the surrender attributed much of the responsibility for defeat to the lack of proper spiritual support by the people. Thousands of war plant workers had moved out of the cities to rural areas where they were safe from bombing and then refused to return to their jobs. Fear of many farming people was so great that they rushed to shelter every time an American plane flew overhead. Some Japanese leaders claimed that farm produce was falling off because of the time lost while farmers were seeking shelter.

The B-29 gained a special niche among the gods of Japan. Every AAF man in the Empire, be he a clerk or a Grasshopper pilot, now commands the lowest bows of the Nipponese for in their minds each is a B-29 man. If a GI points to the sky, the Japs will sweep the ground while mumbling in reverence, "B-29, B-29; hai, hai."

The completeness of Japan's economic destruction was well summed up at an informal gathering of a group of the nation's leading industrialists. Their analysis was: "It would have been impossible to continue the war much longer; we probably could not have held out long enough to defend our home islands. The B-29s had sealed the fate of Japan as early as April and we felt that air raids would finish the war without invasion. We were badly beaten. The atomic bomb and Soviet entry into the war only speeded up the end."

Lieutenant General Tazoe, chief of staff of the Japanese Army Air Force, summed up the defeat more succinctly. Said he, "Our air forces were defeated in the air by your 5th and 13th Air Forces. The B-29s dealt the death blow to Japan proper." ☆



# DAY BY DAY

Major events in the battle against the forces of Japan from Pearl Harbor to VJ-Day

## 1941

- DEC. 7. Japanese carrier planes attack Pearl Harbor, strike Hickam and Wheeler Fields, Hawaii. U. S. losses: 10 ships, including 5 battleships, sunk or put out of commission; 8 ships, including 3 battleships, damaged; 97 Army planes, including 23 bombers; 80 Navy planes; 2,343 Army and Navy personnel killed, 1,272 wounded, 960 missing, extensive damage to installations.
- DEC. 7-8. In carrier and land-based strikes, Jap planes raid Clark, Nichols and Iba Fields in the Philippines, destroying three-fourths of an approximate 300 U. S. planes in the islands.
- DEC. 8. United States declares war on Japan. Japs invade Thailand.
- DEC. 9. In the first U. S. bombing mission of the war, B-17s of the 19th Bombardment Group attack enemy ships off the east coast of Vigan, P. I. Several hits are scored with one ship believed sunk. Bombs from B-17 commanded by Capt. Colin P. Kelly hit 29,000-ton Japanese battleship of the Haruna class.
- DEC. 10. Japanese occupy Guam.
- DEC. 18. Japanese occupy Hongkong.



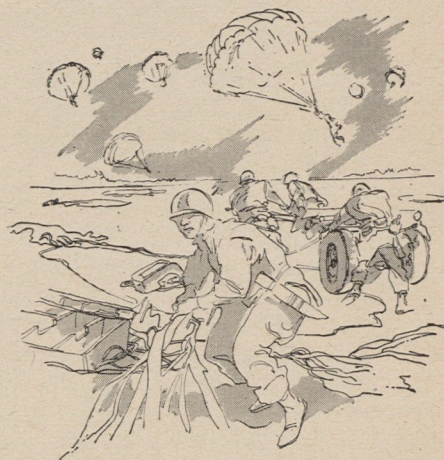
- DEC. 20. American Volunteer Group in China breaks up Jap bombing raid on Kunming, destroying at least four bombers without loss.
- DEC. 22. In the first U. S. bombing mission from Australia, B-17s attack ships in Lingayen Gulf and off Davao, Philippines. On the return trip, they evacuate as many Americans as the planes will carry.
- DEC. 23. Japanese occupy Wake Island.
- DEC. 24. 4th Air Force sinks U-boat off California.

## 1942

- JAN. 2. Manila falls.
- JAN. 14. Tarakan, one of the last Dutch garrisons in Borneo, is overcome.
- JAN. 15. Alaskan Air Force Headquarters activated at Elmendorf Field, Alaska.
- JAN. 20. Japs raid Rabaul heavily.
- JAN. 22-23. U. S. naval units, joined by B-17s and other Allied bombers, sink 8 to 12 Jap ships in the Battle of Macassar Strait. Japs occupy Rabaul.
- JAN. 24. RAAF attacks shipping and supplies at Rabaul, beginning a long Allied air campaign against that Jap stronghold.

- JAN. 31. First U. S. air units sent out from States since beginning of war arrive in Australia.
- FEB. 3. One Jap bomber and one fighter downed in the first P-40 operation in NEI.
- FEB. 5. Hawaiian Air Force redesignated 7th Air Force; Alaskan Air Force redesignated 11th Air Force; Caribbean Air Force redesignated 6th Air Force.
- FEB. 9. Gasmata, New Britain, and Macassar, Celebes, occupied by Japs. In China, AVGs report 101st aerial victory.
- FEB. 12. B-17s from Java and Australia start using tail guns. At Patterson Field, Ohio, 10th Air Force is activated.
- FEB. 15. Singapore falls.
- FEB. 17. British battleship Prince of Wales and battle cruiser Repulse sunk by Jap air action.
- FEB. 19. In first Jap raid on Australia, Darwin is heavily damaged.
- MARCH 1-31. Japs occupy Batavia, Java; Rangoon, Burma; Lae and Salamaua, New Guinea. General MacArthur arrives in Australia on B-17. U. S. fighters make first inception of enemy planes over Australian territory.
- APRIL 8. 10th Air Force begins flying supplies over the Himalayas to Yunnan Province, China.
- APRIL 9. Bataan falls.
- APRIL 13-14. Three Australia-based B-17s and 10 B-25s attack Jap installations and shipping off Philippines.
- APRIL 18. Lt. Col. James H. Doolittle leads 16 B-25s from the U. S. carrier Hornet in a daring but costly attack on Tokyo, Nagoya, Kobe and Yokohama.
- APRIL 25. Five B-17s of 10th Air Force bomb Andaman Islands in Bay of Bengal.
- APRIL 28. AVG reports shooting down 22 Jap planes over Lashio terminus of Burma Road.
- MAY 1. Jap occupation of Burma complete. Burma Road, last land link with China, severed; Japs begin invasion of southwestern China via Burma Road.
- MAY 4-8. In Battle of Coral Sea, 11 Jap vessels are sunk and U. S. loses its carrier Lexington. Allied land-based planes participate with naval air units.
- MAY 5. Jap invasion of southwestern China stopped on banks of Salween River by AVG bombing and strafing attacks which destroyed Jap armored spearhead.
- MAY 6. Corregidor surrenders. Japs occupy Hollandia, New Guinea.
- JUNE 3. Japs bomb Dutch Harbor, Alaska, and landings at Attu, Agattu and Kiska follow.
- JUNE 3-7. 7th Air Force B-17s and torpedo-carrying B-26s join naval air forces in repulsing a Jap invasion fleet in Battle of Midway; Japs lose 20 ships; U. S. losses: one destroyer and the carrier Yorktown.
- JUNE 11. 11th Air Force bombers make first attack on Kiska, principal Jap base in the Aleutians.
- JUNE 21. First counter blow by 7th Air Force struck by B-17s against Wake Island, only Jap target accessible from Oahu.
- JUNE 27. First American bombers (six B-25s) reach China.
- JULY 4. China Air Task Force activated at Peishihai. AVG becomes 23rd Fighter Group.
- JULY 3-8. First American raids on Hankow, Canton and French Indo-China by China Air Task Force.
- JULY 6. Japs land at Guadalcanal.
- JULY 12. ATC activates Pacific wing.
- JULY 22. Japs occupy Buna and Gona, head for Kokoda.
- JULY 30. B-17s make first land-based raid on Guadalcanal from New Caledonia bases.
- AUG. 3. In their first combat action, P-38s of 11th Air Force shoot down two Jap flying boats.

- AUG. 4. Maj. Gen. George C. Kenney assumes command of Allied Air Forces, Southwest Pacific Area.
- AUG. 6. Fifteen B-17s strike Vunakana, Rabaul, in preparation for Solomons landing; 75 Jap planes destroyed on ground and 11 in air.
- AUG. 7. U. S. Marines recapture Tulagi and Lunga, Guadalcanal, preceded by 56 strikes by B-17s.
- AUG. 23-25. Jap attack on eastern Solomons turned back in large-scale surface and air battles.
- AUG. 27-SEPT. 7. Japanese repulsed at Milne Bay. U. S. units of Allied Air Forces in Australia become 5th Air Force.
- SEPT. 12. Parafrags are used for first time in 5th Air Force attack on Buna airbase; 17 of 22 Jap planes destroyed on ground.
- SEPT. 14. First XB-29 completes initial test flight over Seattle, Wash.
- SEPT. 17. Japs penetrate to within 20 miles of Port Moresby.
- SEPT. 20. CATF shoots down 22 Jap planes over Canton without loss.
- OCT. 17. ATC activates Alaskan Wing.
- OCT. 25. CATF drops first Allied bombs on Hongkong.
- OCT. 25-26. In naval battle of Santa Cruz, Jap land-sea attack on Guadalcanal is turned back.
- OCT. 26. Japs make first major raids on Assam bases of India-China air transport route destroying many transports and fighters on the ground.



- NOV. 8. U. S. airborne troops land near Buna.
- NOV. 12-15. In naval battle of Guadalcanal, Japs lose one battleship, five cruisers.
- NOV. 22. Jap-held rail center at Mandalay, Burma, attacked by largest formation of U. S. bombers from India airbases to date.
- NOV. 26. In round-trip of more than 2,700 miles—16½ hours—9 B-24s of 10th Air Force attack Bangkok, Thailand, in longest raid of war to date.
- DEC. 1. ATC takes over aerial supply line from Assam to China. Allied Air Forces smash Jap convoy attempting to reinforce Buna.
- DEC. 18. Japs occupy Alexishafen, Finschhafen, Madang and Wewak.
- DEC. 24. Twenty-six B-24s of 7th Air Force attack Wake Island in the longest offensive mission to date—4,300 nautical miles round-trip with Midway as the only stop.
- DEC. 28. P-38s make New Guinea debut.
- DEC. 30. Allies cut enemy position in two at Buna.



1943

JAN. 13. 13th Air Force activated in the Solomons.

FEB. 9. U. S. occupation of Guadalcanal completed.

MARCH 1-4. In Battle of Bismarck Sea, 137 planes of 5th Air Force and RAAF destroy Jap convoy carrying supplies and nearly a division of troops from Rabaul to Lae, shoot down 102 aircraft with loss of two P-38s and one B-17; minimum altitude attack used.

MARCH 10. 14th Air Force activated at Kunming to supersede China Air Task Force.

APRIL 1-4. 5th Air Force shipping strike at Kavieng costs Japs two warships sunk, three warships damaged and three merchant vessels damaged; heavy cruiser hit by skip-bombing B-17 and beached.

APRIL 12. Port Moresby attacked by 100 Jap planes.

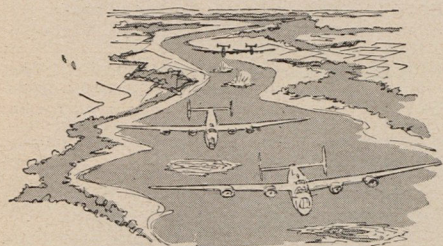
APRIL 13. Milne Bay attacked by 75 Jap planes in one of last major offensive strikes by air at his perimeter objectives.

APRIL 23. 7th Air Force B-24s staging from Funafuti in Ellice Islands, strike Tarawa for first time, scoring direct hits on fuel tanks and barracks areas.

MAY 1. B-24s, B-25s, P-38s and P-40s of 11th Air Force attack Kiska and Attu. Forward echelon of 14th Air Force moves into east China along Hengyang-Kweilin line bringing American planes within range of all major Jap occupied bases from Hankow to French Indo-China and making China Sea shipping vulnerable to air attacks.

MAY 11. U. S. forces land on Attu.

MAY 12. 14th Air Force B-24s begin mining Yangtze River and harbor of Canton, Hong Kong, Haiphong, Hankow, Shanghai and Takao on Formosa.



JUNE 2. With aid of 14th Air Force, Chinese forces check Jap advance into Yangtze Valley and dislodge Japs from part of Hunan.

JUNE 14. Allied airplanes shoot down 94 of 120 Jap planes attempting attack on Guadalcanal. Allied losses: six planes.

JUNE 21. Japs raid Darwin, losing 22 of 48 planes to Allied fighters.

JUNE 22. Over Lae, Allied planes shoot down 23 of 36 Jap fighters.

JUNE 24. Macassar, Celebes, heavily bombed by Allied planes.

JULY 19. From bases on Attu, eight B-24s of the 11th Air Force bomb Paramushiro and Kuriles.

JULY 22. Longest non-stop bombing mission in Southwest Pacific to date flown by six B-24s of 5th Air Force—2,400 miles round-trip to Soerabaja.

JULY 25-AUG. 1. 23rd Fighter Group of 14th Air Force beats off Jap day and night air blitz on east China fields, destroying 75 enemy planes.

AUG. 17-18. More than 200 enemy aircraft destroyed by 5th Air Force in heavy Allied air attacks on Wewak.

SEPT. 4. During Allied landing east of Lae, AAF shoots down 21 enemy planes.

SEPT. 5. Paratroopers land on Nadzab, later to become major 5th Air Force base for operations against Wewak, Hollandia and Rabaul.

SEPT. 11. 11th Air Force B-24s and B-25s from Aleutian bases attack Paramushiro and Shimushu. Salamaua captured by Allied forces.

SEPT. 16. Lae captured by Allies.

SEPT. 18-19. 7th Air Force and Navy bombers attack Tarawa, Makin, Apamama and Nauru islands.

SEPT. 25. 14th Air Force begins skip-bombing Japanese shipping in South China Sea and Formosa Straits.

OCT. 2. Allies capture Finschhafen and close Vitiaz Straits.

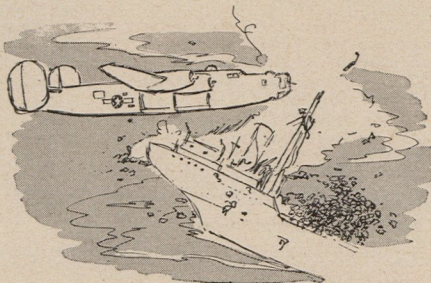
OCT. 12. In a heavy 5th Air Force strike on Rabaul, 3 Jap destroyers, 46 cargo vessels,

70 harbor craft and 126 aircraft are destroyed by low-level strafe-bombing sweep and high-level B-24 strike.

OCT. 28. 14th Air Force B-24s operating as long range fighters on India-China Hump patrol shoot down 8 Jap fighters.

NOV. 1. Allies land at Empress Augusta Bay. Chinese-American Composite Wing goes into action with 14th Air Force, bombing Amoy and Swatow on China coast.

NOV. 2. Seventy-five 5th Air Force B-25s attack enemy shipping in Simpson Harbor, Rabaul, sinking 3 destroyers and 8 merchant ships and destroying 85 enemy aircraft on the ground and in the air.



NOV. 5. 5th Air Force attack on Rabaul destroys 26 Jap aircraft, 6 heavy cruisers and 2 light cruisers.

NOV. 25. First American air attack on Formosa made by B-25s and P-38s of 14th Air Force. At Shinchiku airdrome, 42 enemy planes destroyed without loss.

NOV. 26. Allied forces land on Cape Gloucester.

NOV. 27. Black Friday on the Hump. Five China-bound transports shot down by Jap fighters.

NOV. 25-DEC. 6. Combined 14th, 10th and RAF B-24 attacks on Rangoon area aimed at neutralizing port and rail facilities as diversionary support for General Stilwell's Chinese-American task force invasion of North Burma from Ledo. Combination of 14th Air Force and Chinese armies defeat Japs in Battle of Changteh inflicting 20,000 casualties.

DEC. 17. 7th Air Force moves into Gilberts to aid in neutralizing Wotje, Mille, Maloelap and Jaluit.

DEC. 22-23. Last Jap attempts to raid China Hump terminals beaten off with heavy losses.

DEC. 31. 14th Air Force announces sinking of 125,000 tons of Jap shipping in low-level attacks since September campaign started.

1944

JAN. 2. Allied forces land at Saidor on the north coast of New Guinea.

JAN. 7-13. Bombers of 5th Air Force drop 665 tons of bombs on Madang, Alexishafen and Bogadjim area of New Guinea.

JAN. 31. U. S. forces land in Marshalls; Majuro atoll occupied without opposition; this is the first prewar Jap territory to be taken by U. S. troops. ATC sets Hump record flying 20,000 tons of supplies to China in 30-day period.

FEB. 1. Allies land on Kwajalein. Reduction of Jap merchant shipping to date is estimated at 40 percent.

FEB. 3-4. Allied air strikes on Wewak destroy more than 80 enemy planes in air and on ground.

FEB. 8. Organized resistance ceases on Kwajalein, opening way for assault on Marianas.

FEB. 15. Green Island occupied, strategically ending Solomons campaign.

FEB. 16-17. In a surprise blow at Truk, U. S. carrier and battleship forces destroy 129 enemy planes and 42 ships, forcing Jap planes to pull back from Rabaul for future defense of Truk.

FEB. 19-21. Eniwetok invaded by Allied forces.

FEB. 21-22. Carrier force bombs enemy installations on Saipan, Tinian, Rote and Guam in preparation for invasion to establish B-29 bases; 134 Jap planes destroyed.

FEB. 29. Admiralty Islands invaded, after pounding by 5th Air Force, to provide a base for flank protection of New Guinea landings.

MARCH 11. Wake Island attacked by 22 heavy bombers of 7th Air Force dropping approximately 50 tons of bombs.

MARCH 11-15. Wewak airdromes attacked by 300 heavy and medium bombers dropping 571 tons of bombs; 59 enemy aircraft destroyed

and 24 probably destroyed; Wewak airdromes are neutralized for any large-scale future use. B-24s made first land-based air attacks on Truk from New Guinea and Kwajalein.

MARCH 15. Japs invade India through Manipur Province penetrating to within 20 miles of Assam-Bengal railway and threatening to isolate General Stilwell's forces in North Burma.

MARCH 19. Jap Hollandia-Wewak convoy attacked by 5th Air Force with virtually all ships destroyed.

MARCH 29-30. U. S. carrier planes destroy 160 Jap planes, lose 25, in attack on Palau, Yap, Ulithi and Woleai. B-24s of 7th and 13th Air Forces hit Truk on alternate days until it is neutralized.

MARCH 29-APRIL 3. 5th Air Force heavy and medium bombers with strong fighter cover destroy approximately 300 enemy planes and airdrome facilities at Hollandia.

APRIL 2. First B-29 of 20th Bomber Command arrives in India.

APRIL 17. Japs open major offensive aimed at throwing 14th Air Force out of East China and opening land route from Manchuria to Singapore. First phase is crossing of Yellow River and drive toward Hankow to close Peking-Hankow railroad gap.

APRIL 18. Saipan, Tinian and Aguijan Islands in Marianas bombed in daylight by B-24s and PB4Ys of 7th Air Force and Navy, staging from Eniwetok to Admiralties and return—a 4,300-mile shuttle mission.

APRIL 22. Allies land on Aitape and Hollandia in first joint effort by Southwest Pacific forces under General MacArthur and Central Pacific forces under Admiral Nimitz.

APRIL 24. Hollandia captured.

APRIL 26. Allies enter Alexishafen.

APRIL 30-MAY 1. Carrier planes striking Truk destroy 125 enemy aircraft.

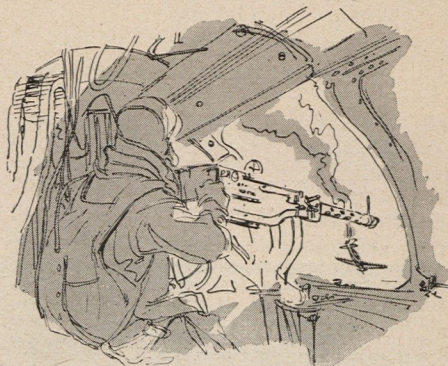
MAY 1. Specially equipped B-24s of the 14th Air Force begin radar night attacks in South China Sea. Chinese troops cross Salween River in drive to re-open Burma road.

MAY 12. B-24s of 14th Air Force sink 40,000 tons of Jap shipping, including an 18,000-ton floating whale oil factory off Cap St. Jacques near Saigon.

MAY 15. B-24s of 14th Air Force hit shipping and oil storage tanks in first Allied bombing of Saigon.

MAY 27. Landings on Biak Island with heavy air cover. Japs begin second phase of east China offensive jumping off from Yochow and driving south to capture 14th Air Force advance bases and close gap in Hankow-Canton railroad.

JUNE 2-5. In 13 attacks on Biak and Owi by Allied bombers, 59 enemy planes destroyed and 15 probably destroyed.



JUNE 5. B-29s hit Bangkok marshalling yards in first combat mission from India.

JUNE 8. AAF aircraft repulse Jap effort to reinforce Biak, sinking one Jap destroyer, leaving another in sinking condition and firing two more.

JUNE 11. Carrier planes hit Saipan, Tinian, Rota, Pagan and Guam, destroying 150 enemy aircraft.

JUNE 15. In first B-29 combat mission from China bases and first attack by land-based American planes on the main Jap Islands, 47 Superfortresses bomb Yawata, steel center on northern Kyushu, in night attack. Far East Air Forces activated, Lt. Gen. George C. Kenney commanding.

JUNE 16. 5th Air Force attack at Jefman-Samate, New Guinea, destroys 60 Jap planes.



JUNE 18. In attack on our sea forces covering Saipan operation, Jap carrier striking force loses 402 planes. Our losses: 17 planes and superficial damage to 2 carriers and a battleship. Action later known as First Battle of the Philippine Sea.

JUNE 19-20. Aircraft from Task Force 58 attack Jap carrier striking force; Jap losses: 5 ships sunk, 3 ships possibly sunk, 10 or 11 ships damaged, 26 Jap planes shot down. Our losses: 93 planes.

JUNE 23. A-26 makes operational debut in Southwest Pacific in shipping sweep at Manokwari.

JUNE 29. 14th Air Force field at Hengyang falls to Japs and siege of Hengyang city begins. 14th Air Force fighters and bombers fly round-the-clock attacks on Jap bases, supply lines and advanced columns.



JULY 1. Noemfoor Island occupied by combined paratroop-amphibious operation. Japs begin third phase of East China offensive driving north from Canton toward junction with forces moving south along Canton-Hankow railroad. Total of 500,000 Jap troops involved in campaign from Yellow River to Indo-China border.

JULY 8. Organized resistance ends on Saipan.

JULY 13. Iwo Jima bombed for first time by land-based aircraft of 7th Air Force.

JULY 15. Reports show Jap operational aircraft strength in Philippines has increased from 50 to 350 in three months. Chinese credit 14th Air Force with killing 18,000 Jap troops and 3,000 cavalry and pack horses during first six weeks of east China campaign.

JULY 18. 14th Air Force planes in east China grounded for lack of gas. Japs renew siege operations around Hengyang and rush supplies to front while American planes are grounded.

JULY 19-20. Tojo cabinet falls; General Kuniaki Koiso commissioned by Emperor to form new administration.

JULY 20. Guam invaded by Allies.

JULY 23. Landings on Tinian near Saipan, supported by 7th Air Force B-25s.

JULY 27. First heavy blow at Halmaheras struck by 62 B-24s and 48 B-25s of 5th Air Force with P-38 cover; 45 enemy planes destroyed on ground.

JULY 31. Organized resistance ceases on Tinian.

AUG. 3-4. Carrier and surface units hit Bonins-Volcanos, destroying at least 10 large Jap ships.

AUG. 8. Hengyang falls after 49-day siege and Japs sweep on toward next airbase at Lingling. Effective Chinese resistance ends with fall of Hengyang.

AUG. 9. Organized resistance on Guam ceases.

AUG. 10. 7th Air Force accelerates campaign against Iwo Jima and Bonins.

AUG. 16. Myitkyina falls to Chinese-American Task Force after 72-day siege.

AUG. 20. First B-29 daylight attack on Japan from China bases.

SEPT. 14. Allied landings on Peleliu in Palau.

SEPT. 15. Allies seize Morotai, 300 miles from the Philippines.

SEPT. 30-OCT. 18. B-24s of 13th and 5th Air Forces make series of five heavy daylight attacks on Balikpapan, Borneo, oil center; fighters escort bombers on last three.

OCT. 10. First B-29 arrives on Saipan.

OCT. 11-15. Combined Navy carrier, B-29 and 14th Air Force attacks on Formosa and South China Sea ports complete air blockade of Jap sea lanes to its southern empire. Carrier planes destroy 416 enemy aircraft over Formosa while losing 66. B-29s wipe out aircraft factory at Okayama on Formosa. Bombers of 14th Air Force heavily damage remnants of Jap shipping seeking refuge from carrier attacks in Hong Kong harbor.

OCT. 20. Allied forces land on Leyte.

OCT. 22-27. Second Battle of the Philippine Sea; enemy losses: 3 battleships, 4 carriers, 6 heavy cruisers, 2 or 3 light cruisers, several destroyers. U. S. losses: 1 light carrier, 2 escort carriers, 2 destroyers, 1 destroyer escort.

NOV. 8. Liuchow, last major 14th base in east China, falls to Japs. Fighter squadrons of 14th move to bases behind Jap lines and begin intensive guerrilla attack on Jap rear.

NOV. 10. 13th Air Force moves to Morotai to give flank protection to route to Philippines.

NOV. 24. First B-29 attack on Japan from newly established base on Saipan; Tokyo bombed.

NOV. 30. After devastating attacks in Philippines by 5th and 13th Air Forces throughout the month, Jap air activity in Leyte area dwindles to "nuisance" level.

DEC. 7. Fighter-bombers of 5th Air Force and Marine Air Groups smash enemy convoy of 13 ships attempting to reinforce Leyte. Simultaneously, Allied convoy lands at Ormoc behind enemy forces.

DEC. 8. 14th Air Force guerrilla fighter squadrons make strikes on Nanking and Hong Kong on Jap anniversary of Pearl Harbor. A destroyer, five transports and 24 planes destroyed.

DEC. 11. Another convoy heading for Leyte destroyed by land-based aircraft.

DEC. 14. Land-based strikes by 13th and 5th Air Forces on Negros Island in the Philippines destroy over 100 Jap planes.

DEC. 14-16. Carrier strikes on Luzon destroy 235 enemy aircraft.

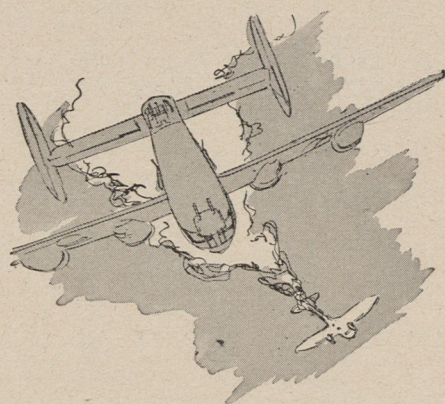
DEC. 15. Mindoro Island invaded by Allied forces; fighter fields in operation on D plus 2.

DEC. 18. Combined B-29 and 14th Air Force daylight attack on Hankow neutralizes most important Jap base in China and marks beginning of end of Jap airpower in China.

DEC. 26-27. Jap naval task force repulsed off Mindoro by B-25s, P-40s, P-38s and P-47s.

## 1945

JAN. 1-31. American and RAAF planes hit enemy bases on 2,000-mile arc. Striking first from Palau and Morotai and later from the Philippines, bombers and fighters soften up Clark Field, Fort Stotsenburg, Cavite Naval Base, and Baguio, disrupting Jap communications, supplies, equipment and personnel.



JAN. 3-4. Heavy carrier task force attacks Formosa and Okinawa, destroying 111 enemy planes and damaging 228, sinking 27 ships and damaging 68.

JAN. 6-7. Carrier based planes and B-29s from China hit Formosa while A-20s, B-24s, B-25s and P-38s heavily bomb and strafe network of airstrips between Clark Field and Angeles air-drome. These attacks support convoy of Allied troops heading for Lingayen Gulf. Jap suicide planes attack our ships.

JAN. 9. Allies land at Lingayen Gulf, Luzon; only two Jap airplanes rise to challenge the landing and one of them, a suicide plane, is shot down.

JAN. 11. Four Snooper B-24s, in first attack from Pacific bases on Formosa, strike Heite airfield.

JAN. 12. Carrier planes strike Indo-China coast, destroying 92 Jap planes and 127,000 tons of shipping.

JAN. 17-20. 14th Air Force guerrilla fighters sweep Shanghai airfields destroying 120 enemy aircraft while losing two pilots.

JAN. 22. In the first daylight attack on Formosa by Philippine-based planes, one group of B-24s escorted by 53 P-38s strikes Heite air-drome, causing fires and destroying enemy aircraft on the ground.

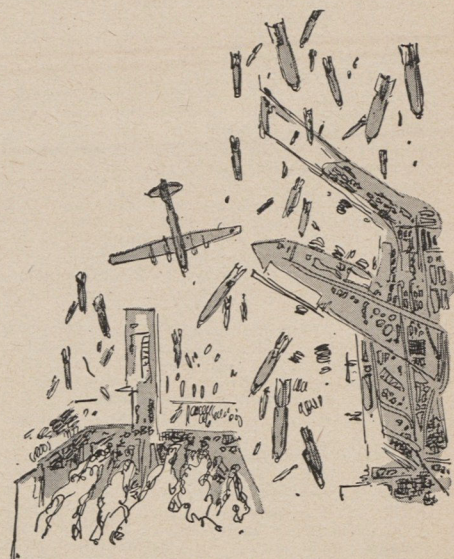
JAN. 23. Corregidor heavily bombed preparatory to airborne landings.

JAN. 25. First convoy arrives in China over Lado road from India marking end of three-year land blockade.

JAN. 28. Allied ground forces take Clark Field and Angeles air-drome; more than 500 destroyed or damaged enemy planes are found on the ground in Clark area.

JAN. 30. 14th Air Force fighters destroy 168 enemy aircraft in series of sweeps over Hankow. Last B-24 mission unescorted over target and unchallenged by Jap fighters. ATC sets new Hump record flying 44,000 tons of supplies to China.

FEB. 1. B-29s from India destroy world's largest drydock at Singapore in 3,873-mile round-trip.



FEB. 3. U. S. troops enter Grace Park on northern outskirts of Manila. Allied paratroopers land on Tagayutay Ridge northwest of Lake Taal and start drive north toward Manila.

FEB. 5-6. 13th Air Force heavy bombers resume attacks on Borneo.

FEB. 12-13. Cavite Naval Base and Nichols Field taken.

FEB. 15. U. S. units land at Mariveles, southern tip of Bataan.

FEB. 16-17. U. S. parachute troops and amphibious forces land on Corregidor following an aerial campaign which began Jan. 23. In two days, C-47s of the 317th Troop Carrier Group drop 1,999 paratroopers and 1,292 bundles of supplies on target area of little more than one square mile. First naval task force attack on Tokyo destroys 509 enemy planes and probably destroys or damages 150 others, as well as destroying several vessels and ground installations. Climaxing 68 consecutive days of bombing by Allied planes on Iwo Jima, naval task force starts bombarding the island.

FEB. 19. Marines land on Iwo Jima.

FEB. 21. Philippine-based B-25s begin flying China Sea shipping sweeps relieving 14th Air Force planes for attacks on central and East China Jap bases.

FEB. 25. In greatest attack on Tokyo to date, 200 B-29s bomb Jap capital. Organized resistance ceases in Manila.

FEB. 25-26. Tokyo raided by 600 carrier planes.

FEB. 27. Organized resistance ceases on Corregidor.

FEB. 28. A-20s and P-38s support unopposed landing near Puerto Princesa, Palawan; two days of heavy bombing preceded landing.



MARCH 1. Aerial blockade along French Indo-China coast cuts Jap shipping 50 percent in six weeks.

MARCH 6. B-29s carry out major daylight strike against Hainan Island. Two groups, covered by group of P-38s, hit Samah airdrome.

MARCH 9. Two hundred seventy-nine B-29s drop 1,655 tons of bombs on Tokyo, burning out 15.8 square miles of city in first of great incendiary raids, leaving fires visible 150 miles. Following long aerial campaign by the 13th Air Force, unopposed landing was made by Allied forces on Zamboanga Peninsula, Mindanao. Japs attack French Indo-China.

MARCH 11. Over two square miles of Nagoya ablaze from 1,790 tons of incendiaries dropped by 285 B-29s.

MARCH 13. Osaka, Japan's second largest city, hit by 274 Superfortresses, 8.1 square miles of city in flames.

MARCH 15. 14th Air Force fighters make 1,550-mile sweep to wipe out Jap air strength at Tourane, French Indo-China.

MARCH 16. Kobe hit by 2,328 tons of incendiaries dropped by 306 B-29s; 2.9 square miles of the city in ashes. Resistance ceases on Iwo Jima, nearly all of the original garrison of 20,000 having been annihilated.

MARCH 18-21. Carrier planes attack Kyushu and raid Jap fleet units in the Inland Sea. First fire blitz ends with 290 B-29s striking Nagoya with 1,838 tons of incendiaries, burning out 3 square miles.

MARCH 20. British 14th Army captures Mandalay.

MARCH 27. B-29s lay first mines in Jap Inland Sea to bottle up Jap fleet during occupation of Okinawa, marking important new phase of aerial blockade.

APRIL 1. In Pacific war's greatest amphibious operation, 100,000 Americans land on Okinawa.

APRIL 1-2. Chinese-American Wing and 14th Air Force fighters hit Shanghai fields, crippling Jap bomber force concentrated for attacks on Okinawa invasion fleet.

APRIL 2. U. S. troops invade Bicol Peninsula, Luzon, supported by 45 B-24s, 28 A-20s and 46 fighters.

APRIL 3. Philippine-based B-24s and P-38s strike shore installations and shipping in Hong Kong area. Allied units land at Masbate Island, completing occupation or control of every major Sibuyan Sea Island.

APRIL 5. Premier Koiso and Cabinet resign.

APRIL 6. Allied operations in Okinawa resisted by 400 to 600 enemy planes; offensive of JAF in first few weeks of this campaign is the greatest in its history.

APRIL 7. For first time, B-29s have fighter escort; 80 P-51s based on Iwo Jima join 300 Superforts in attacks on aircraft factories at Tokyo and Nagoya; 21 Jap fighters shot down and two P-51s lost; aircraft engine plant at Nagoya destroyed.

APRIL 12. In 3,800-mile round-trip, longest to date, B-29s bomb Koriyama 100 miles north of Tokyo. Complete control of the Visayas in the Philippines is insured with landing and occupation of Bohol Island.

APRIL 17-MAY 11. B-29s begin series of strikes against Kyushu Kamikaze airfields in support of Allied operations at Okinawa, help cut Jap aerial strikes from 500 to 50 planes.

APRIL 27. 13th Air Force and RAAF heavy bombers strike Soerabaja, Java.

APRIL 29. Operating for first time in bombing and strafing mission over Japan, P-51s based on Iwo Jima attack Atsugi airfield in Tokyo area, destroying or damaging 84 Jap planes.

APRIL-MAY. Combination of Chinese-American Wing planes and Chinese armies defeats Japs in battle of Chihkiang. Jap attempt to take last American air base in east-central China fails with cost of 20,000 casualties.

MAY 1. Australian units land on southwest Tarakan after area is softened up by heavy and medium bombers and fighters.

MAY 3. Baguio captured. Allied forces enter Rangoon; Japs retreat toward Thailand.

MAY 5. Targets in Amoy area bombed in force by B-24s of 5th and 13th Air Forces which hit Kaochi airdrome and nearby oil storage tanks.

MAY 6. By-passed Wewak captured.

MAY 14. Second B-29 fire blitz launched—3.15 square miles of Nagoya burned out.

MAY 16-17. In one of the largest ground support strikes of Pacific war, approximately 200 P-47s, P-38s and P-51s hurl fire bombs on Jap troops encircled in Ipo Dam area;

about 350 tons of napalm bombs dropped in 410 sorties in two days; Ipo Dam captured three days ahead of schedule. Incendiaries from B-29s fire 3.81 square miles of Nagoya; half of Mitsubishi aircraft plant—largest in world—destroyed.

MAY 23. Tokyo area hit by 520 B-29s, dropping 3,700 tons of bombs.

MAY 25. Tokyo again struck by 564 B-29s; 22.1 square miles of city area destroyed in two attacks.

MAY 28. Jap casualties in Philippine campaign to date: 378,000. Japs evacuate former 14th Air Force base at Nanming breaking enemy land line of communication through China.

MAY 29. 450 B-29s destroy 6.9 square miles of Yokohama.

JUNE 1. Over three square miles of Osaka burned out by B-29s.

JUNE 2. Recapitulation discloses 2,117,000 tons of enemy snipping sunk during the first five months of 1945 by SWPA Allied Air Forces. Over four square miles of Kobe burned out by 3,000 tons of incendiaries.

JUNE 2-3. Hozan, largest Jap supply center of Formosa, bombed by 45 B-24s with 117 tons of demolition bombs.

JUNE 3. For the first time, 13th Air Force B-24s strike Batavia, Java, bombing seaplane base; entire round-trip from Palawan takes more than 18 hours. Over two square miles of Osaka burned out as second B-29 fire blitz ends.

JUNE 15. 14th Air Force total of Jap shipping sunk and damaged reaches 2,250,000 tons.

JUNE 17. After heavy raids by B-24s, B-25s, Beaufighters and P-38s, landings are made at Labuan, Muara and Brunei Peninsula, Borneo. B-29s begin hitting secondary industrial cities with night incendiary attacks.

JUNE 21. Eighty-two-day battle for Okinawa ends with collapse of organized Jap resistance; enemy dead exceed 100,000.

JUNE 30. Balikpapan bombed 18th consecutive day by 5th and 13th Air Forces and RAAF preparatory to landing. Japs evacuate 14th Air Force base.

JULY 1. Jap air force in China no longer a military threat; total box score of 14th Air Force—2,300 Jap planes destroyed at a loss of 464 American planes. Supported by Liberators of 13th, 5th and Royal Australian Air Forces, Australian troops land at Balikpapan.

JULY 3-4. More than 475 B-29s strike Tokushima, Takamatsu and Kochi on Shikoku and Himeji on Honshu Island. Airdromes in Tokyo Bay area rocketed and strafed by 132 Mustangs of 7th Fighter Command.

JULY 5-7. AAF and RAAF bombers lend heavy support to difficult Australian advance in Balikpapan and Brunei Bay sectors.

JULY 8-10. Sendai, Sakai, Wakamatsu and Gifu attacked by 497 B-29s; 63 stripped-down special radar B-29s hit Usube River oil refinery at Yokkaichi; 30 B-29s lay mines in Shimonoseki Strait, Niigati harbor and Nanao Bay; 100 Mustangs sweep airdromes in Osaka, Nagoya and Tokyo areas.

JULY 12-13. Fire and demolition bombs dropped by radar by 506 B-29s in raids on Kawasaki petroleum center and urban section of Utsunomiya, Ichinomiya, Tsuruga and Uwajima. B-24s, A-26s and P-51s strike Formosa.

JULY 14-15. In first bombardment of Jap home island in 80 years, naval surface vessels shell Kamaishi on Honshu and Muroran on Hokkaido. Radar B-29s destroy Nippon Oil Co. at Kudamatsu.

JULY 16-17. On night missions, 471 B-29s carry out incendiary attacks against Numazu, Kuwana and Hiratsuka on Honshu and Oita on Kyushu. More than 140 5th Air Force heavies and mediums hit Shanghai area.

JULY 19-20. Visually and by radar, 547 Superfortresses drop record 4,000 tons of incendiary and demolition bombs on industrial sections on Fukui, Hitachi, Choshi and Okazaki on Honshu.

JULY 18. 5th and 7th Air Forces heavies and mediums from Okinawa pound Shanghai area.

JULY 21-23. Numerous targets in Osaka area attacked by 105 Mustangs. Ube synthetic oil plant destroyed by 77 radar B-29s.

JULY 24. Large force of Okinawa-based bombers and fighters strikes Shanghai installations. Four large aircraft factories, Osaka arsenal and textile mill in Osaka-Nagoya sector hit by 599 B-29s, bombing visually and by radar. Shipping sweeps between Japan and Korea begun by 5th and 7th Air Forces.

JULY 25. Oil center of Kawasaki hit by 76 radar B-29s.

JULY 26. U. S., Great Britain and China issue Potsdam unconditional surrender ultimatum

to Japan. More than 350 B-29s drop fire bombs on Omuta, Matsuyama and Tokuyama. At Guam, Maj. Gen. Curtis LeMay names next 11 Jap cities to become victims of B-29.

JULY 27-28. Tokyo area attacked by 146 Iwo-based P-51s. Okinawa-based planes carry out widespread sweeps over Kyushu. Chinese troops enter Kweilin.

JULY 29. In unopposed night missions, 562 B-29s start general conflagrations in Uwajima, Ogaki, Utsi-Yamada, Ichinomiya, Aomori, Tsu and in Shimotsu oil refinery at Wakayama.

JULY 30. Kobe district attacked by 130 P-51s.

JULY 31. Kyushu heavily hit by fighters and bombers.

AUG. 1. 10th Air Force Headquarters moves to China and takes over half of 14th Air Force tactical units.

AUG. 1-2. In largest Superfort attack to date, 766 B-29s drop incendiaries on Nagasaki, To-yama, Mito and Hachioji and high explosives on Kawasaki petroleum center. Southern Honshu hit by 129 P-51s.

AUG. 3. Eighty-five P-51s of 20th Air Force rocket and strafe airfields and industrial targets in greater Tokyo area.

AUG. 4. Okinawa-based planes concentrate fire and demolition bombs on Tsurumizu and Miakomojo, Kyushu, while 20th Air Force Mustangs swarm over targets north of Kyushu.

AUG. 6. First atomic bomb dropped on Hiroshima. P-51s of 20th Air Force return to targets north of Tokyo. Incendiaries dropped by 604 B-29s on Jap industrial areas and on Ube coal liquefaction plant.



AUG. 7. 5th and 7th Air Forces planes blast Kyushu targets and enemy convoy off Fusan, Korea.

AUG. 8. In night raids, 412 B-29s hit Nakajima aircraft plant in Tokyo. Shipping between Korea and Japan reduced practically to zero; 1,000,000 tons of shipping sunk or damaged by B-29 mining campaign.

AUG. 9. Soviet Union declares war on Japan. Nagasaki hit by second atomic bomb. Okinawa-based aircraft soften up tactical targets on Kyushu and Shikoku, destroy or damage 34 locomotives and 121 railroad cars.

AUG. 10. Soviet forces advance 100 miles in western Manchuria. Oil refinery at Amagasaki and Tokyo arsenal bombed by 165 B-29s escorted by 102 P-51s.

AUG. 11. Governments of United States, Great Britain, China and Soviet Union acknowledge officially receipt of a Jap offer to accept terms of Potsdam provided the declaration did not compromise "any demand" which prejudices the prerogatives of Emperor Hirohito as sovereign ruler.

AUG. 12. Secretary of State James F. Byrnes announces that Big Four have agreed to Jap surrender offer subject to condition that Emperor carry out orders of Supreme Allied Commander.

AUG. 14. In largest and last series of bombings, 833 B-29s blast industrial and urban targets. B-32s attack shipping along western coast of Kyushu and in Inland Sea, landing at base three hours after cease fire order. Japan Surrenders.

AUG. 28. Aerial occupation of Japan starts with advance recon force landing at Atsugi airdrome near Tokyo.

AUG-SEPT. B-29s and C-47s drop medical supplies and paratroop rescue teams to all POW camps in Japan, Korea and China; 10th Air Force transports Chinese armies to reoccupy Nanking, Shanghai, Canton and Hankow. ☆



News and Views around the World

# CROSS COUNTRY





## Exit

Under its peacetime domestic separation program, supervised by Continental Air Forces headquarters at Bolling Field, D. C., the AAF is discharging personnel at the rate of 10,000 a day, twice the number anticipated at the beginning of the program.

The fighter control room at Bolling, once geared for defense of the Washington area, has shed its tactical maps and plotting boards in favor of up-to-the-minute charts revealing the flow of men from their Z-I stations to separation bases, then home.



*"Off we go, into the..."*

This separations-control room, utilizing some of the communications methods developed under wartime conditions, maintains instant liaison with air force commands by telephone and radio.

Personnel returning from overseas continue to be processed at Army Service Forces centers. However, the AAF on September 17 undertook to separate its own personnel stationed in the U. S. and, by November 1, had effected the discharges of 69,709 officers and 212,428 enlisted men, a total of 282,137. The comparative rapidity of AAF discharges has enabled the projected program to be moved ahead, with permission of the War Department. By mid-October men with 60 points and two years' service were being separated—a goal originally set for November 1. A later ruling has made it possible for 45-point enlisted men with two years' service to be released on application. Pilots, navigators and bombardiers with 44 points and two

years' service, who are stationed in the U. S., may be declared surplus and released unless they have elected to remain in the service until June 30, 1947, or for emergency plus six months.

Nerve center of the entire program, the control room at Bolling resembles the Wall Street stock exchange in that liaison officers "buy and sell" discharge quotas. These officers balance the quotas awaiting separation at designated bases with the number that can be handled by the various bases. A backlog of three times the daily separation rate is maintained to keep the processing line moving smoothly. A prospective

civilian may have to wait a day or two before getting into this line, but once in it he receives his gold eagle patch within a day and a half.

The 35 separation bases operated throughout the country by CAF under the direction of Brig. Gen. Charles F. Born, Chief of Separations, have devised their own SOPs by trial and error and by a mutual exchange of ideas. Low-point ground crew and inductees green to Army ways have been put through intensive on-the-job training to replace high-point administrative specialists.

While it is impossible to discharge men and women the moment they become eligible, the AAF separation program is attempting with success, to effect release, the same

month that individuals attain eligibility.

The separation bases include Westover Field, Mass.; Mitchel Field, N. Y.; Rome Army Air Base, N. Y.; Drew Field, Fla.; Maxwell Field, Ala.; Baer Field, Ind.; Chanute Field, Ill.; Truxaville Field, Wis.; Scott Field, Ill.; Barksdale Field, La.; Lincoln Army Air Base, Neb.; Davis Monthan Field, Ariz.; Portland Army Air Base, Ore.; Richmond Army Air Base, Va.; Sioux Falls Army Air Base, S. D.; March Field, Calif.; Gowen Field, Idaho; Ellington Field, Texas; Randolph Field, Texas; San Antonio Air Center, Texas; Amarillo Army Air Base, Texas; Shepard Field, Texas; Lowry Field, Colo.; Roswell Army Air Base, N. M.; Newark Army Air Base, N. J.; Patterson Field, Ohio; San Bernardino Army Air Base, Calif.; Santa Ana Army Air Base, Calif.; McClellan Field, Calif.; Seymour Johnson Field, Goldsboro, N. C.; Greensboro Army Air Base, N. C.; Grenier Field, N. H., and Andrews Field, Md.

## Ribbon Shower

Eligibility for wearing the American Theater Ribbon recently was extended to all military personnel who have served honorably on active duty in the continental United States for an accumulative period of one year, including permanent and temporary duty, during World War II. The terminal date of the eligibility period will be announced later.

## Goodbye, Big 8th

The big airbases with which the 8th Air Force punctuated the British landscape, have just about disappeared. Residents of East England, whose daily lives were regulated by the roar of fighter and bomber formations, continually shuttling across the channel, now are scarcely aware of the dozen or so planes which pass overhead daily. The personnel have vanished, too, for of the more than 300,000 men and women who served under the banner of the 8th from August, 1942 to April, 1945, only 30,000 remained in late October—and even they had their bags packed.

The proud name, too, is gone, and the force that now operates in the UK is known as the 8th Fighter Command, headed by Maj. Gen. Westside Larsen, who was CG of the 3rd Air Force from September, 1943, until May, 1945, when he came to Europe.

The men still stationed in England are mostly a closing-out force, and their mission will soon be accomplished, for every week the bull's-eye banner of the Royal Air Force goes up over more and more bases as caretaker troops return them to the British. Some units, however, like the 96th Bomb Group at Snetterton Heath, have been tabbed for duties with the occupation forces and remain fully stocked with men, planes and equipment. Business, too, is pretty nearly the same with the 94th Bomb Group at Bury St. Edmunds and the 110th Bomb Group at Thorpe Abbots.

But at other installations the runways are deserted and the hardstands are empty. A holding party of about 50 men stands guard duty at the 95th Bomb Group's home at Horham, waiting for the RAF to take over. The 385th near Great Ashfield is a ghost base. Civilians roam roads that were once taboo, leading to the 388th at Knettishall. Cyclists use the runways of the 452nd at Deapham Green, the 486th near Sudbury, the 487th at Lavenham and the 490th near Eye, while cows graze contentedly at the 493rd (Debach) the 34th (Mendlesham) the 357th (Leiston) and the 55th (Wormingsford).

Cameras have replaced bombs at the 306th Bomb Group near Thurleigh, where three squadrons fly daily missions photographing western Europe from the air. Alconbury, where 8th Air Force "Mickey" operators trained during the war, has been taken over by the First Air Division, accompanied by an air service group and a weather reconnaissance squadron, and shiny Mustangs still line the perimeter at Duxford, home of the 78th Fighter Group.

The Yanks are still "up at the Abbey" to



the natives of High Wycombe. The big, rambling base—successively headquarters of the 8th Bomber Command and the 8th Air Force, now functions as the 8th Fighter Command Headquarters and is busy “closing the books” on all personnel and equipment formerly assigned to the 8th Air Force.

## Flying Association

The Veterans Flying Association of America, formed in London last April by several members of the 8th Air Force to enable military pilots to continue flying at low cost after the war, has been granted a charter in Michigan, and a temporary national headquarters has been established at 333 West Mason Street, Jackson, Mich.

All men and women who served honorably in the armed services during World War II are eligible for membership, and a program is being set up to teach non-flyers to become pilots. One of the primary purposes of the organization is “to spread the advantages of cooperative action in the field of private flying equally among all of us,” according to Kent Sagendorph, president of the association. Aviation writer and editor, Mr. Sagendorph served with the 8th Air Force as a major.

Regional officials of the association include Al Cohn, 2025 West Euclid, Detroit 6, Mich.; Robert L. Preis, 705 5th Avenue S. E., Cedar Rapids, Iowa; Walter E. Shelton, Greenville, Miss.; Edward I. Titlow, Jr., 746 42nd Avenue, San Francisco, Calif.; Martin Karant, Radio Station WKPT, Kingsport, Tenn., and Thomas Grosvenor, 1318 Salem Street, Malden, Mass.

## P-80 on the Road

A jet-propelled P-80 was recently forced to land in a West Virginia bean patch, after running out of fuel. The pilot had brought the plane down without damage to the craft, but the terrain prevented him from taking off again for a return flight to Wright Field. Since the plane was needed in a pressing test program, dismantling the craft for overland shipment was not considered practical, and it was decided to fly the plane out by transferring it to the nearest suitable take-off place.

Accordingly, workmen loaded the Shooting Star onto a Navy barge and floated it down the Ohio river to a level stretch of highway. After a Wright Field pilot, Maj. R. E. Schlech, climbed into the cockpit the plane was towed over the entire length of the level road to familiarize him with the hazards. There were only four feet of leeway on either side of the landing wheels, and telephone wires crossed the highway making it necessary for the plane to swoop up quickly between the lines to get away free. To warn the pilot when he had to get airborne, a white cloth was hung over the last of the crossing lines.

Major Schlech was certain that he could keep the plane from running off the narrow “strip.” Using 75-degree flaps, he throttled the I-40 engines to the proper mixture, and was able to get the P-80 off the ground

# QUESTIONS

## on Policy and Procedure

**Q.** If the beneficiary of a National Service Life Insurance policy is a mother and no second beneficiary has been named, who receives the payments upon her death?

**A.** Payments will be made to beneficiaries as follows: (1) Widow, if living; (2) if no widow, to child or children (including adopted children) in equal shares; (3) if no widow or child, to the other parent; (4) if no widow, child or parents, to brothers and sisters (including those of the half-blood), in equal shares.

**Q.** May officers wear civilian clothes while on terminal leave?

**A.** Military personnel on terminal leave or retirement furlough may at their option wear civilian clothing during such period. (Par 1a, AR 600-40, C 3, 18 April 1945). If uniform is worn, the complete uniform prescribed or authorized for the occasion should be worn.

**Q.** Is it true that the family allowance continues to be paid six months after a soldier is discharged?

**A.** Eligibility to a family allowance ceases as of the end of the month in which the soldier is discharged. Any checks received for a period after that month must be returned to the Office of Dependency Benefits, Newark 2, N. J.

**Q.** Are officers and enlisted men who enroll in the Officers' Reserve Corps or the Enlisted Reserve Corps entitled to mustering-out pay?

**A.** Yes, if otherwise qualified (Sec IV, WD Cir 304, 1945).

**Q.** May household goods be shipped home prior to actual discharge?

**A.** Yes. Until further notice, in order to expedite demobilization, shipment of household goods which would be authorized at Government expense upon relief or discharge from active duty may be made before issuance of orders for such relief or discharge (Sec I, WD Cir 304, 1945).

**Q.** Is a Wac officer entitled to terminal leave which accrued to her credit while an officer in the WAAC?

**A.** Yes. An officer of the Women's Army

Corps who entered upon active duty as of 1 September 1943 and whose service has been continuous since her original appointment as an officer in the Women's Army Auxiliary Corps is entitled to leave credits accruing but not availed of during her services as an officer in the WAAC (AR 605-115, par 3b (4) (b)).

**Q.** May enlisted men travel in a car (TPA) even though they do not own or drive the car?

**A.** There is no reason why enlisted men cannot travel in a car (TPA) and be entitled to a money allowance at the rate of three cents per mile, even though they may not own or drive the car, if traveling under competent orders which entitle them to transportation or transportation and subsistence as distinguished from mileage. See pars 29 and 30, AR 35-4810. However, in the case of separatees, the provisions of par 48b (2), RR 1-2, must be met before individual travel orders may be issued.

**Q.** If a soldier serves over half of a six-month period overseas, is he entitled to wear an overseas stripe for that period?

**A.** No. The full six months must be served overseas (WD Cir 268, 1944, as amended).

**Q.** Is an unmarried veteran, who has a dependent mother and who goes to school under the GI Bill of Rights, entitled to the \$25 a month subsistence allowance in addition to the \$50 a month regular allowance?

**A.** Yes. The Veterans Administration has ruled that dependent parents as well as wives and children will be considered dependents so far as the subsistence allowance is concerned.

**Q.** May a loan be obtained under the GI Bill of Rights to pay operating expenses on a farm owned by a veteran until the first crop comes in?

**A.** No. However, a farmer comes under the self-employment provision, and is entitled to be paid the difference between what he earns from the farm and \$100 a month up to a maximum of 52 weeks.



PREPARED BY THE OFFICE OF THE AIR INSPECTOR



# NEW BOOKS



## WAR

**ATOMIC ENERGY FOR MILITARY PURPOSES.** Henry D. Smyth. The official report on the development of the atomic bomb under the auspices of the U. S. Government, 1940-1945. PRINCETON UNIVERSITY PRESS, PRINCETON, 1945.

## HISTORICAL

**ARMAMENT AND HISTORY.** J. F. C. Fuller. (Maj. Gen., British Army, Ret.) An authoritative study of the influence of armament on history from the dawn of classical warfare to World War II. SCRIBNER'S SONS, N. Y., 1945.

**WINGS ACROSS THE WORLD: THE STORY OF THE AIR TRANSPORT COMMAND.** Hugh B. Cave. A record of the world's most stupendous airline—its routes, bases, planes and exploits of the men. DODD, MEAD & CO., N. Y., 1945.

**WOMEN IN AVIATION.** Betty Peckham. Description of work done by women pilots, on the assembly line, in aircraft manufacture, and for commercial airlines. NELSON, N. Y., 1945.

## POSTWAR

**INTERNATIONAL AIRWAYS.** Alberta Worthington. Limited to discussion of the commercial aspects of international aviation and freedom of the air. H. W. WILSON CO., N. Y., 1945.

**PEACETIME CONSCRIPTION.** Julia E. Johnson. Documented arguments *pro* and *con* of a vital postwar problem: the proposal that the U. S. adopt a system of universal peacetime military training. H. W. WILSON CO., N. Y., 1945.

**THE STANDARD GUIDE TO PRIVATE PLANES.** Lester Ott. Descriptions of all personal-type aircraft and their engine specifications with a digest of federal flying regulations. AERONAUTICS PUBLISHING ASSOCIATES, N. Y., 1945.

## TECHNICAL

**THE ART OF CALCULATION.** Henry Sticker. Teaches in an easy way the basic method of arithmetical calculation universally used by experts. ESSENTIAL BOOKS, N. Y., 1945.

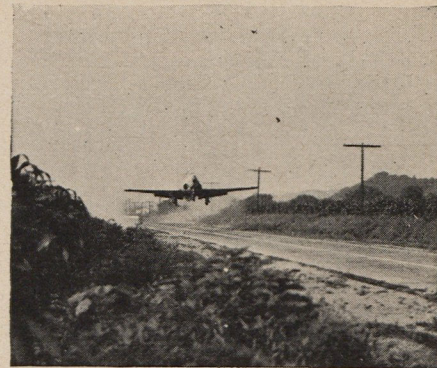
**AUDELS QUESTIONS AND ANSWERS FOR ELECTRICIANS EXAMINATIONS FOR ALL GRADES COVERING THE NATIONAL ELECTRICAL CODE, QUESTIONS AND ANSWERS FOR LICENSE TESTS, OHM'S LAW WITH APPLIED EXAMPLES.** Edwin P. Anderson. THEODORE AUDEL & CO., N. Y., 1945.

These books are available to AAF personnel through the AAF Field Technical Library Service, which provides for technical libraries at all major installations. For a complete list of books so available, see TECHNICAL PUBLICATIONS FOR ARMY AIR FORCES TECHNICAL LIBRARIES, Book List No. 2, March 1945, and supplements thereto. These lists are compiled by AAF Headquarters Library. Personal copies of these books may be obtained from the publishers or retail bookstores.

## CROSS COUNTRY



*Jet-propelled road hog.*



between the overhead wires, thus saving hundreds of man-hours—and proving that the fastest fighter in the world has such excellent ground control characteristics that it can take off from an ordinary road.

## When Greek Meets Greek

To speed the repatriation of the thousands of Greek nationals who formed a part of the Nazis slave-labor corps, the 40th Bomb Wing's Flying Fortresses have established two regular air routes for non-stop passenger flights between Munich and Athens, thus making certain that the great majority of Greeks in German territory are returned to their homes and families before the severity of winter sets in.

At Funk Kaserne, near Munich, the displaced persons who wish to go home are gathered together and quartered in barracks which formerly housed Wehrmacht soldiers. Approximately twenty-five passengers, including babies, children and old people, are loaded into each B-17, and their meagre possessions are permitted to accompany

them regardless of weight. Taking off from the Munich Riem airdrome, the planes follow either a Munich-Brenner Pass-Foggia-Athens route, or follow a southern course via Marseilles, and approximately 15 hours later, land at Eleusis Airfield in Athens. Here, representatives of the Greek government meet the planes, and transport the repatriates to the Displaced Persons (D.P.) Station at the 8th Gymnasium in Athens, a large modern school building. Medical examinations are then given, records checked, food ration cards distributed, billets assigned and 2,000 drachmas handed to each refugee. The UNRRA then assists in the rehabilitation of the Greeks as restored citizens of their homeland.

The 40th Bomb Wing, commanded by Col. Anthony Mustoe, Bellevue, Penn., operates the 92nd Bomb Group, commanded by Lt. Col. Albert L. Cox, Washington, D. C., and the 384th Bomb Group, commanded by Lt. Col. Robert W. Fish, San Antonio, Texas. The 40th is stationed at Istres, near Marseilles, France.



*Rush hour on the Munich to Athens express.*



## Station List

The Army Air Forces has submitted to the War Department its list of desired stations for the interim AAF organization, pending Congressional action to determine the size of the postwar AAF. The list, prepared by a board of senior commanders and staff officers after more than two months' intensive study, does not include flying fields for Organized Reserve or National Guard air units, or those of the Army Airways Communications System.

The recommended list of stations, by type, follows:

Combat Units: Clovis Army Air Field, Clovis, N. M.; Fort Worth Army Air Field, Fort Worth, Texas; Grenier Field, Manchester, N. H.; MacDill Field, Tampa, Fla.; Merced Army Air Field, Merced, Calif.; Pocatello Army Air Field, Pocatello, Idaho; Rapid City Army Air Field, Rapid City, S. D.; Roswell Army Air Field, Roswell, N. M.; Selfridge Field, Mt. Clemens, Mich.; Smoky Hill Army Air Field, Salina, Kan.; Walla Walla Army Air Field, Walla Walla, Wash.; Casper Army Air Field, Casper, Wyo.; Dow Field, Bangor, Me.; Kearney Army Air Field, Kearney, Neb.; Seymour-Johnson Field, Goldsboro, N. C.; Dover Army Air Field, Dover, Del.; March Field, Calif.; McChord Field, Tacoma, Wash.; Portland Army Air Base, Portland, Ore.; Westover Field, Chicopee Falls, Mass.; Biggs Field, El Paso, Texas; Las Vegas Army Air Field, Las Vegas, Nev.; Brooks Field, San Antonio, Texas, and Shaw Field, Sumter, S. C.

Air Transport and Troop Carrier Units: Bergstrom Field, Austin, Texas; Pope Field, Ft. Bragg, N. C.; Sedalia Army Air Field, Knobnoster, Mo.; Fairfield-Suisun Army Air Field, Fairfield, Calif.; Ft. Dix Army Air Base, Wrightstown, N. J.; Great Falls Army Air Field, Great Falls, Mont.; Morrison Field, West Palm Beach, Fla., and Topeka Army Air Field, Topeka, Kan.

Convalescent Hospitals: Ft. George Wright, Spokane, Wash.; Miami District Convalescent Hospital, Miami Beach, Fla.; Pawling Convalescent Hospital, Pawling, N. Y., and San Antonio District Convalescent Hospital, San Antonio, Texas.

Flying Training: Columbus Army Air Field, Columbus, Miss.; Goodfellow Field, San Angelo, Texas; Moody Field, Valdosta, Ga.; Randolph Field, San Antonio, Texas; Perrin Field, Sherman, Texas; Enid Army Air Field, Enid, Okla.; Turner Field, Albany, Ga.; Barksdale Field, Shreveport, La.; Luke Field, Phoenix, Ariz.; Williams Field, Chandler, Ariz.; Langley Field, Hampton, Va., and Mather Field, Sacramento, Calif.

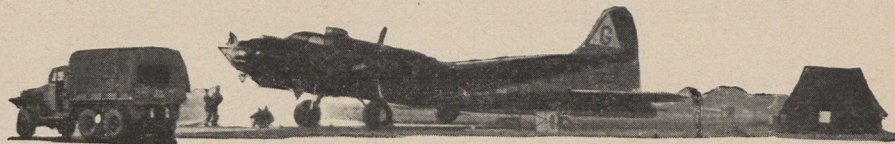
Technical Schools: Scott Field, Belleville, Ill.; Boca Raton Army Air Field, Boca Raton, Fla.; Buckley Field, Denver, Col.; Chanute Field, Rantoul, Ill.; Keesler Field, Biloxi, Miss., and Lowry Field, Denver, Col.

Tactical School: Maxwell Field, Montgomery, Ala.; Gunter Field, Montgomery, Ala., and Craig Field, Selma, Ala.

AAF Center: Eglin Field, Valparaiso, Fla., and Army Air Center, Orlando, Fla.

# PLANE BONERS

Analyzed by Veteran Pilots



TACOMA, WASH.—Taking off for an hour of transition flying, pilot in a B-25H climbed to 7,000 feet and decided to try a chandelle. After a dive of about 250 mph indicated he banked and pulled up sharply. After returning to normal flight he noticed the left landing light was broken. Descending to traffic altitude he circled the field once, landed and taxied back to the line. It was discovered then that the upper surfaces of both wings were wrinkled from wing root to wing tip.

*Comment: The B-25H has control boosters, but the pilot did not take this into consideration when he used strong and abrupt movements on the controls in pulling up at a high speed. Smooth, coordinated movement of controls are more necessary as speed and loading increase, and boosters make a distinct difference in the technique of handling controls.*

CORSICA—A B-17F loaded up in Italy with spare airplane parts, five bags of mail, cots, bed rolls, 800 cans of beer and assorted PX rations and the personal baggage of the 15 men aboard. Taking off for a base in Corsica the pilot remarked jokingly that the airplane was loaded heavily and that he didn't know how he was going to get into the air. Take-off and flight to Corsica were uneventful. The approach for landing was normal until the bomber was about 25 feet above the runway. Then the tail dropped suddenly. The pilot tried to correct by advancing all four throttles but the B-17 simply climbed about 100 feet at a 60-degree angle, stalled, fell off on the right wing, crashed and burned.

*Comment: From information supplied by survivors who loaded the ship it was found that the center of gravity was 13 inches aft of the safe range. The moral is obvious: the crew was unpardonably careless in loading the airplane. It might have turned out better even so if the pilot had not poured on the coal when the tail suddenly dropped while only 25 feet above the runway. In view of his knowledge of tail-heavy load conditions—knowledge that should have been corroborated by trim in the air—he should reasonably have expected tail-heavy trouble in landing. It would have been better if he had let the plane drop in tail low.*

AMARILLO, TEXAS—Forced down by the loss of an engine on a 5,000-foot alternate runway, a B-29 ran out of runway

despite the pilot's efforts to slow the airplane by blowing out the tires. The Superfort had landed approximately one-third down the runway and the pilot had put the brakes on as soon as the nosewheel was rolling, holding the brakes to blow the tires. The airplane still didn't stop until it was 100 feet off the runway in soft sod.

*Comment: The advisability of blowing tires to shorten ground run is questionable. A sliding tire or metal surface does not have the breaking effect of a wheel with inflated tires which have been fully braked but not allowed to slide. Runways don't stretch. Utmost caution should be used in short field landings.*

VAN NUYS, CALIF.—Pilot in a P-61 retracted landing gear at the time wheels broke from the ground. The night fighter settled on its belly and skidded to a stop at the side of the runway. Pilot claimed that the left engine coughed and lost power just as the airplane took off, causing it to settle.

*Comment: Evidence disputes this pilot's claim. The distance from the end of the runway to the first prop mark in the runway was considerably shorter than the normal take-off run for a P-61. An engine inspection failed to uncover any cause for failure. The absence of any yaw when the left engine was supposed to have coughed and lost power makes it likely that the first contact with the runway by the prop gave the pilot the impression that the left engine lost power. Although the P-61 is a fighter airplane, it is as heavy as a medium bomber and takes off more slowly than a fighter.*

McCOOK, NEB.—A B-29 pilot who had just completed two hours and 30 minutes of instrument flight, including a hooded take-off, flew his Superfort into the ground three miles south of a Nebraska airfield because the windows and windshield became clouded. The crew was lucky. Three received minor injuries; the other seven escaped unhurt. The airplane was completely wrecked.

*Comment: This pilot had logged no first pilot instrument time in the six months preceding this accident and had received only four hours of qualified dual instrument time in that period. This alone was reason enough for the accident, which can be attributed to poor instrument technique.*

PREPARED BY THE OFFICE OF FLYING SAFETY



Materiel Center: Wright and Patterson Fields, Dayton, Ohio.

Maintenance and Supply Depots: Kelly Field, San Antonio, Texas; Olmsted Field, Middletown, Pa.; McClellan Field, Sacramento, Calif.; Spokane Army Air Field, Spokane, Wash.; Tinker Field, Oklahoma City, Okla., and Robins Field, Macon, Ga.

Satellite Depots: Brookley Field, Mobile, Ala.; Hill Field, Ogden, Utah, and Rome Army Air Field, Rome, N. Y.

Specialized Warehouse Installations: Buffalo Specialized Depot, Buffalo, N. Y.; Dayton Specialized Depot, Dayton, Ohio; Gadsden Specialized Depot, Gadsden, Ala.; Maywood Specialized Depot, Maywood, Calif.; Memphis Specialized Depot, Memphis, Tenn.; Miami Army Air Field, Miami, Fla.; Shelby Specialized Depot, Shelby, Ohio, and Topeka Specialized Depot, Topeka, Kan.

Special Air Corps Installations: Lockbourne Army Air Base, Columbus, Ohio, and Muroc Army Air Field, Muroc, Calif.

General Ranges and Testing Areas: Alamogordo Army Air Field, Alamogordo, N. M.; Avon Park Army Air Field, Avon Park, Fla.; Myrtle Beach Army Air Field, Myrtle Beach, S. C.; Tonopah Army Air Field, Tonopah, Nev.; Tyndall Field, Panama City, Fla., and Wendover Field, Utah.

### Why Not Stay In?

Let's give the old gripe of getting out a new twist and consider the proposition of staying in the AAF as the first and most important step toward a postwar career.

Let's consider it as a strictly business proposition, entirely aside from the job you would be doing as a member of the force to keep the peace and victory. You will want to know the money it pays, the chances for advancement, security and personal improvement, and living conditions.

It is true that some uncertainties of what the future holds for members of the Regular Establishment depend on Congressional action, but to those who contemplate enlisting or re-enlisting now, under existing

laws and regulations, the AAF has a lot to offer, either as a permanent career or as a stepping stone or training period for a later civilian career.

What about money? You know what the current pay is, from private to master sergeant. The Army pay increase instituted during the war is not just temporary but a part of permanent law. In addition to pay, there are the permanent advantages of 30 days furlough a year at full pay, full pay while sick or convalescing, savings resulting from purchasing privileges at commissaries and Army exchanges, etc.

And you won't lose the temporary grade you now hold in the AUS, but you will be given a warrant in that grade if you enlist before 1 February 1946. Enlistments may be made for periods of three years, two years or 18 months, at the option of the individual, and even for one year plus your re-enlistment furlough time by those who have already served six months in the AUS. There are other immediate benefits such as re-enlistment allowance, mustering-out pay and furlough travel allowance. An individual enlisting for three years may initially choose certain overseas theaters, his present organization or a specific station.

If you desire to make the AAF your permanent career, you may retire upon completion of 20 years' active service at a rate of pay equal to 2½ percent, for each year served, of the average annual enlisted pay (including longevity pay) received for the six months immediately preceding retirement. The right to serve the traditional 30 years for retirement at 75 percent pay is not affected by this new benefit. Thus, if you want security in an AAF career, it is there. On the other hand, you can enlist for at least one tour of duty without minimizing or jeopardizing the educational, loan or readjustment allowance benefits under the GI Bill of Rights provided you enlist within the year ending 6 October 1946. Congressional action is now pending which may extend the provisions of the bill to 10 years.

Technical training, the stock-in-trade of

all air force personnel, is continuing and regular air force personnel will have priority for such training. The training you now receive in the AAF is comparable to the very best training you can purchase from civilian institutions. One three-year period of enlistment will give you the experience and technical knowledge for a better and higher paying civilian job. Should you elect to remain in the AAF, continuing your training will open the door to a definite series of promotions.

Should you aspire to become an officer, appointments are available to the Military Academy, based upon the demonstrated abilities of the men who compete for them. In addition, discussion is underway to provide an air force officers school.

Off duty educational programs, both of the self-teaching correspondence school type or through the post school system, are abundantly available. Thousands of men, even under wartime conditions, have earned high school diplomas and others have obtained college degrees under this program.

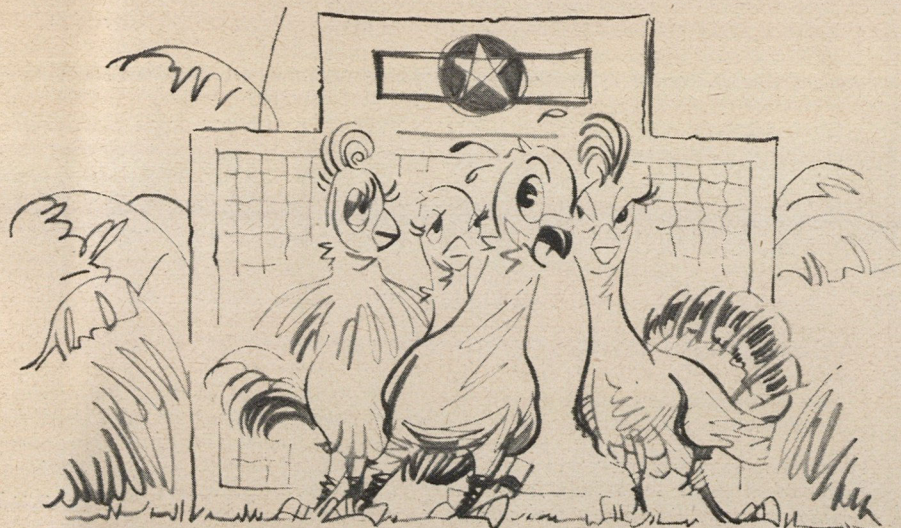
The foregoing is what the AAF has to offer you RIGHT NOW. What is planned for the future, if approved, will multiply these opportunities and advantages. Air force training is taking a definite place in civilian enterprise. It is no idle promise that if you choose to return to civil life after a few years, you will be better equipped professionally and intellectually to undertake a career in your chosen civilian pursuit by virtue of your air force training.

For the career soldier, a comprehensive program of formal education is being developed. This will provide for the educating of outstanding enlisted technicians in civilian colleges, manufacturer's schools and research laboratories. It will also serve to give enlisted personnel the opportunity of attaining commissioned status. Opportunities will be given to rated and non-rated personnel alike.

Improved living conditions represent another way in which the postwar air force plans to keep step with American progress—permanent bases with suitable quarters for married personnel, modern barracks, recreation and shopping facilities. Most of you, who are familiar only with wartime temporary bases of slapped-up wooden buildings on some desert or prairie wasteland, may say that's a dream. It isn't. The AAF's permanent bases were like that before the war, and they will be like that again, with added improvements. In selecting future airbase sites, such factors as metropolitan areas, resort sections, recreational and educational centers will be taken into account.

As for overseas bases, many of those too will be built up to permanent base standards. And for men serving at overseas bases, transportation to their stations will be furnished free for families wherever possible, for the first three grades.

If you are not settled in your postwar future, you could do much worse than stay in the AAF, either for a permanent military career or as a stepping stone to a better civilian career. Think it over and have a chat with the recruiting officer in your AAF unit. ☆



AIR FORCE MAGAZINE

"Peace time Army life—YEEEEOW!"

LENT

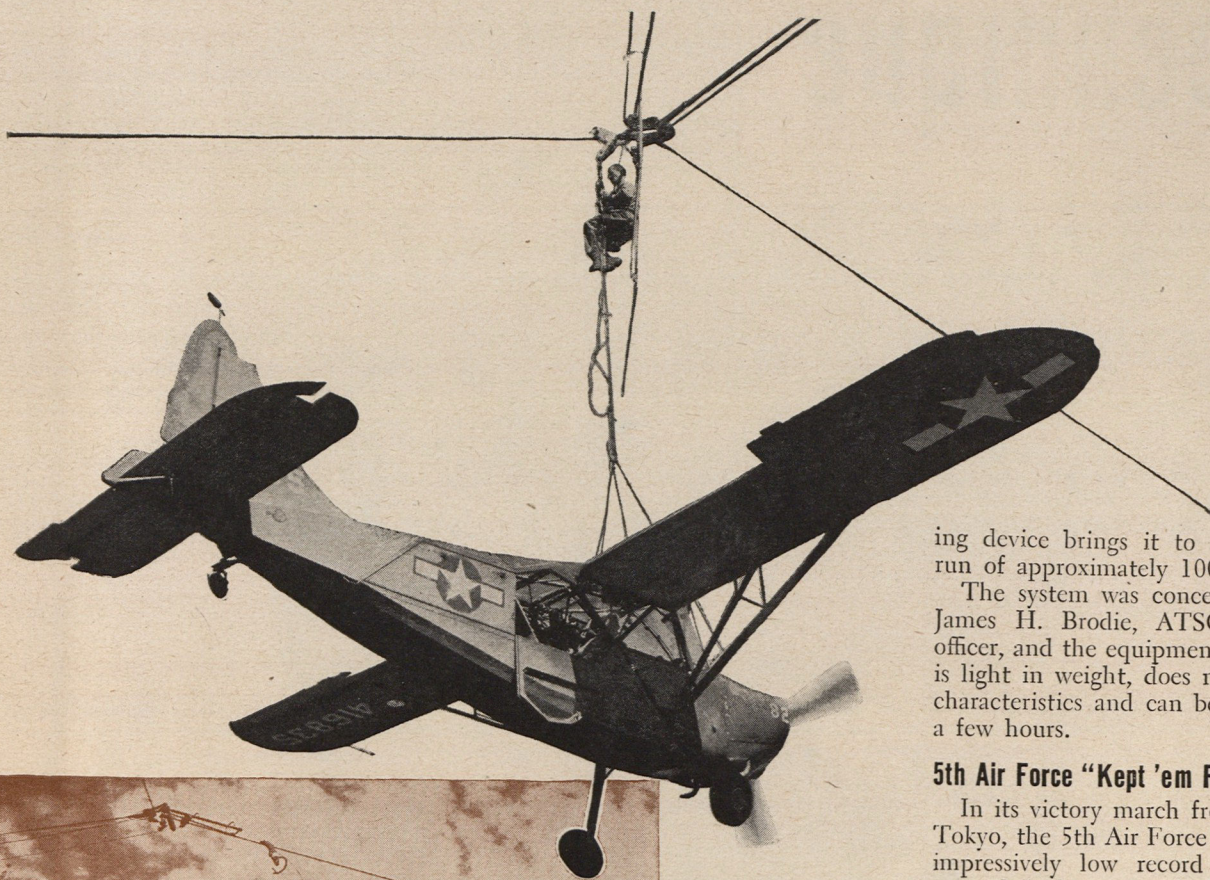


# technique

Development, Maintenance and Supply of Aircraft and Equipment







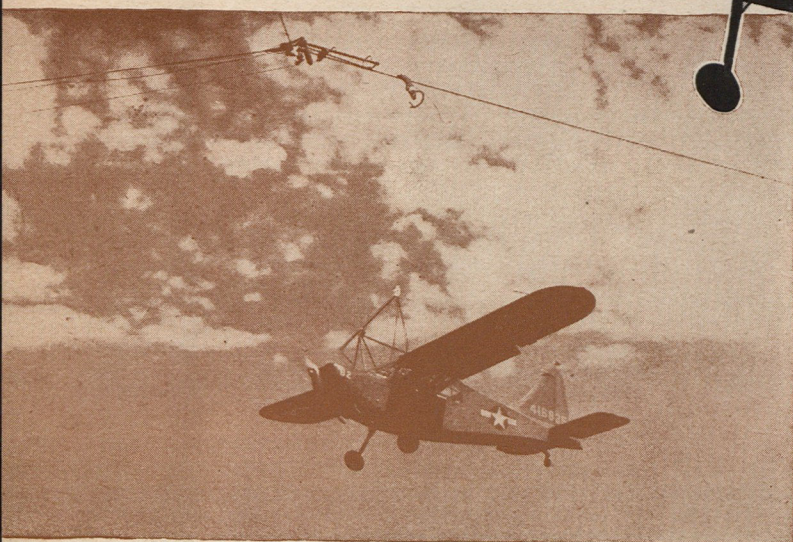
ing device brings it to a stop after a run of approximately 100 yards.

The system was conceived by Capt. James H. Brodie, ATSC engineering officer, and the equipment on the plane is light in weight, does not alter flying characteristics and can be rigged up in a few hours.

### 5th Air Force "Kept 'em Flying"

In its victory march from Darwin to Tokyo, the 5th Air Force established an impressively low record for airplanes grounded because of lack of parts (AGP). All during its long campaign northward through New Guinea and the Netherlands East Indies, climaxed by the blasting of the Japs out of the Philippines and attacks on the enemy's home islands prior to the occupation of Japan, the 5th had the overall low average of only three percent of its planes inactive because of difficulties in supply.

According to Lt. Col. Joseph P. Harkins, chief of the Air Corps Supply Section, 5th Air Force Service Command, a large measure of credit for solving the 5th's problems in spare parts logistics is owed to the special AGP courier service inaugurated by Col. Joseph C. A. Denniston, 5th ASC commander, for the sole purpose of facilitating tech supply operations. Whenever an airplane was grounded for lack of parts, a complete report was made available to all other bases within the framework of the 5th Air Force, indicating the items needed. This reporting method kept all service units informed of the day-to-day requirements of the other units, and any part in the stockrooms of each of the 35 airbase and service squadrons was made available to every other squadron whose need might be more imperative. The courier airplanes picked up AGP reports and AGP parts each day and ac-



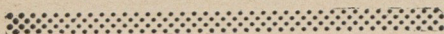
At left, L-5 takes off from cable runway and lands (above) by hook arrangement on top of craft which contacts wire "air-strip." The plane is then detached and lowered to ground.

### Runways in the Air

By stringing taut wires from masts 65 feet high, the AAF can operate light planes from "trolley line runways" over scrub brush fields, soggy swampland, hillsides, coastlines or other places where the terrain is not suitable for the construction of a landing strip. Take-offs and landings are accomplished without touching the ground, and the cableway can be stowed in two C-47s for airborne shipment, can be dropped by parachute, or can be moved in on a couple of 2½ ton Army trucks. In moderately difficult country, using only hand tools, the 500-foot cable and the supporting masts can be set up and put in operation within 24 hours.

To take off, the plane is hoisted by winch and hooked onto the cable, while a holding line attached to the tail of the plane and secured in the ground, maintains the craft in a stationary position while the pilot revs the engine up to take-off rpm. At a signal from the pilot, the holding line is released and the plane accelerates along the trolley wire until it gains flying speed, at which time the pilot releases the plane from the cable, clears the bridle wires and assumes a normal climb. To land, the flyer must maneuver his plane until the hook atop it engages a nylon loop suspended from the trolley. When contact is made, the plane rolls along the wire until a brak-





completed delivery to every installation in the far-flung chain.

In operation, the AGP system combined routine organizational duties with typical G.I. scrounging. In one instance, as reported by Col. Harkins, a P-51 squadron was scheduled for take-off on a fire-bomb mission from Lingayen at 0600 hours. On the previous afternoon, however, a line chief had determined that the planes would not be ready for the mission unless the worn brake seals were replaced. Lingayen supply notified M/Sgt. Claude Wilkes, at 5th ASC headquarters by telephone that there wasn't a serviceable brake seal in the Lingayen area, and Sgt. Wilkes promptly sent the AGP men into action. S/Sgt. Edward Eckdahl notified all bases of the urgent need, and as return calls filtered in from distant airdromes on Luzon, it appeared that Laoag, Subic Bay, Floridablanca and Manila could be counted on for only one each. This left one brake seal outstanding, but Cpl. Ralph Heineman went to a P-51 which had crashed nearby at Clark Air Center, and removed a serviceable brake seal within two hours. Five different locations were therefore to be drawn from, and Cpl. Gilbert Draper arranged for air transportation to pick up and deliver the parts. At 2000 hours the five brake seals were ready to be installed, and crew chiefs worked through the night taking the wheels apart so that the seals could be inserted. The repairs and ground testing were finished at 0530—a full half hour before take-off time—and the full squadron was airborne on schedule.

### "Pyro-Trooper" Suit

Jumping out of planes into the heart of the northwest timber country with special airborne fire-fighting equipment, a detachment of "pyro-troopers"—on loan to the U. S. Forest Service from the AAF—can bring almost any conflagration under control, quickly and surely. To accomplish this, the Personal Equipment Laboratory at Wright Field was asked to improve and perfect a new type of suit, a spot-landing parachute and a protective face mask and helmet.

(Continued on P. 44)



## tech topics . . . about aircraft and equipment

**The Aero-Medical Laboratory** at Wright Field has developed a gyro-theodolite which measures limitations of fields of view from aircraft at eye level. It offsets disadvantages of bulk and immobility in the surveyor's theodolite previously used and permits measuring functional visual angles associated with movements of the pilot's head, eyes and body.

**Eight .50 caliber** guns have been installed in the P-47N, giving the airplane one-fourth again its normal firepower. . . . Recent tests with a turret having two 20-mm cannon as its firepower showed the guns could fire at 400 rounds per minute.

**An experimental "Vee-Tail"** installation is being tried on three P-63s. The "Vee-Tail" eliminates the vertical rudder and slants the elevators and horizontal stabilizers at sharp angles so they serve both as elevators and directional controls. . . . The idea also has been tried on a Beechcraft trainer. Another new aerodynamic experiment is the test of a circular arc airfoil section which is believed to be an ideal wing design for supersonic speeds.

**Dropping landing fields** by air is the latest twist to airborne operations. A unique system whereby light planes can land and take off from a tautly stretched wire between two towers, easily knocked-down and transportable by air, has been devised. And now a cluster of four 40-foot parachutes have been designed to drop the "landing field" from a cargo airplane.

**Auxiliary wing tanks** which have been used for carrying everything from gasoline to life rafts for injured personnel now are



being fitted with cameras. Modified tanks provide facilities for carrying a K-24 camera. Experiments are being tried with this installation on a P-51 airplane.

**Post-war utility** of the Flying Fortress as an airliner is being determined with a B-17 which has been converted into a transport. All armament, oxygen and other auxiliary equipment has been removed. Navigation and radio equipment have been relocated on the flight deck. Passenger seats have been installed in rear compartment, bomb bay and nose, with additional windows to provide visibility for passengers. . . . Two models of the

P-51 have been turned into two-seater aircraft for advanced pursuit training. The extra cockpit is aft of the conventional one, but under the same bubble-type canopy.

**Cowboy boots** may be smart fashion for a new emergency rescue parachute jump shoe. An experimental boot, similar to that used by the U. S. Forestry Service, is



being tested for that purpose. It looks like the one the boys wear in Texas and its main advantage is the extension of the shoe lace to the toe, which gives more ankle and arch support. . . . Another new item of personal equipment is a clothing envelope for flight nurses. It is designed as an accessory to the Flyer's Clothing Bag and protects clothing while hanging in barracks.

**Overseas reports** have indicated that control of runway lighting systems from the control tower is necessary even for temporary installations, and as a result the manual portable runway lighting control device. The automatic runway lighter weighs about 1,000 pounds, compared with the 600-pound weight of the manually-operated control.

**The helicopter**, which because of its hovering characteristics has been considered an ideal aircraft for making rescue pick-ups, now is on the other end of the rope. Engineers are working out an air-to-air pick-up method that permits a conventional aircraft to snatch a helicopter in flight and tow it like a glider. . . . Using this system, a helicopter can be towed for several hundred miles, then cut loose to hover over a group of stranded airmen and perform its rescue mission. The evacuation completed, the tow-plane hooks on again, hauls the helicopter back to its base.

**Escape through** the rear hatch on the B-32 previously was difficult because of auxiliary equipment. To improve egress conditions the camera and its mount which were located near the hatch have been made jettisonable. By simply pushing a button the parts fall away leaving the hatch open for crewmen to bail out.

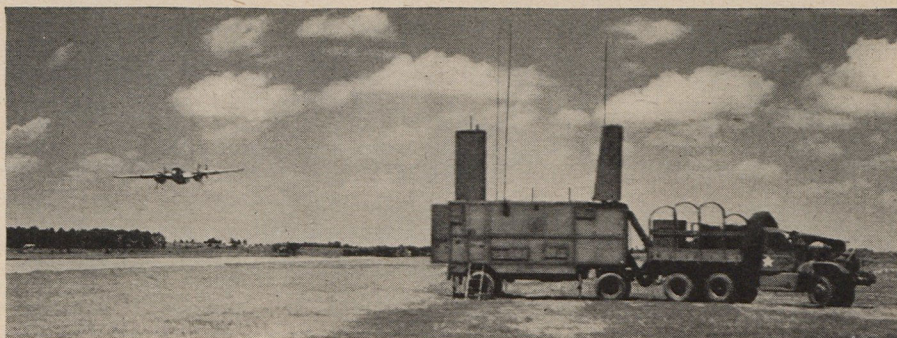


The standard forestry suit was modified with quick-opening zippers and additional padding, while a cover-all garment made of fire-resistant canvas permits a trooper to crash through thick underbrush without getting a scratch. To enable a man to land at the most desirable spot, slot openings in the parachute canopy which open and close in response to tugs on the shroud lines, can slow or speed descent and effect directional control. Also, an auxiliary belt with a quick-release mechanism makes it possible for a jumper to lower himself to the ground when his chute lodges in a tree.

A lightweight "catcher's mask" protects the man's face, while a specially designed helmet made of a tough plastic-impregnated material covers his head and the nape of his neck.

### Radar Landing Approach

As an outgrowth of the instrument approach systems and glide path "beam" methods of guiding a plane down to a safe landing under conditions of zero visibility, a radar unit called Ground Control of Approach (GCA) is now providing a continuous indication of the position of planes within a radius of 30 miles. It also is giving pilots accurate range and azimuth data at all times and is able to place a plane within 50 feet over the center of the end of the runway. The system permits direction of several planes at the same time.



**Radar-operated** Ground Control of Approach system is housed in trailer unit shown above. Interior view, below, shows operators directing incoming plane onto correct flight path.



GCA is a completely mobile unit equipped with a combination of two specialized radars—an X-band precision system and an S-band search arrangement plus a multi-channel radio communications system. The search system locates incoming planes by means of radar echoes reflected onto a horizontal semi-transparent mirror which also reflects map information in order to establish the plane's position both in the air and with relation to the surrounding terrain. The traffic director gets one or more planes into a traffic pattern and turns them over individually to the plane selector, who tracks the plane on the precision system and directs it onto the ideal flight path. Two trackers—an azimuth tracker and an elevation tracker—manually operate cursors, or transparent rules mounted over the face of the maps, and keep them constantly over the center of the echo to trace

## what's wrong with this picture?

"Off the beam" describes these radio mechs, who are letting at least seven interferences jam their hook-up—antenna one says you can't find 'em all! The circuit is completed on page 47, but don't tune in on the answers until you've monitored a few more hot leads. The "ham" actors—who want it made crystal clear that their erratic static is strictly dramatic—are Pvt. George Babcock, M/Sgt. William Thoma, T/Sgt. Harvey Kieft and Cpl. Ralph Morgan, all of the 4000th BU, Wright Field.





any deviation from the prescribed landing path. Every movement of the cursors is recorded in error meters in front of the approach controller. The latter studies the meters and gives precise directions to the pilot in order to keep him on the correct approach.

Along with verbal instructions, the pilot is advised of every azimuth deviation by an audible radio signal which is automatically controlled by the azimuth cursor and transmitted to the pilot through the communications channel. The sound is coded so that the pilot knows whether he's on course, off to the right or off to the left. Degree of deviation is indicated by a change of pitch.

### **XB-36—Biggest Bomber**

Dwarfing the B-19 — previously known as the largest airplane in the world—the new XB-36 is about to take to the air. The 65-ton giant can develop more horsepower than two B-29s. It has more turrets than any other bomber ever built, and its guns can spew a ton and a half of lead and steel per minute.

The 150-inch diameter fuselage is circular in cross-section and is 163 feet long from nose to tail. The rudder towers 46 feet, 7 inches above the ground, and the horizontal tail surfaces are only nine square feet less in area than the entire wing of a C-47. The pressurized compartments, linked by a tunnel in the Superfortress manner, accommodate the crew of 17, which includes relief personnel required on long-range flights. Comfortable bunks provide rest

during off-duty hours, and a small galley is used to prepare hot meals when aloft.

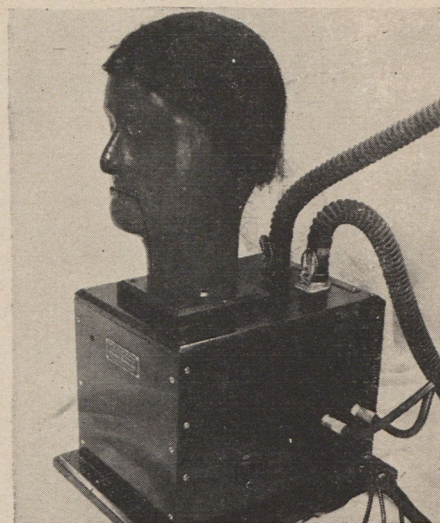
Power for the plane comes from six P&W radial, air-cooled pusher engines, each capable of producing in excess of 3,000 hp. The wing is an NACA airfoil section with a sweptback feature that insures aerodynamic cleanness and low drag characteristics. Ducts in the leading edge supply air to the engines, and mammoth flaps—each almost the size of an A-26 wing—reduce landing speeds and take-off distances.

The big bomber rests on a tricycle landing gear consisting of two single main wheels and a nose wheel, all retractable. The wheels are 110 inches in diameter—the largest ever constructed. One tire, which weighs 1,500 pounds, would support a fully loaded B-29.

Flying six miles above the earth will be routine, and non-stop flights from Tokyo to New York will be matter-of-course.

### **Aero-Meds "Human" Heads**

Horace the Head looks like a mummy's noggin, but he breathes, runs a temperature and can even smoke a cigarette. He's the model of a man's head which Aero-Medical Laboratory experts are using in a series of tests to determine performance characteristics of new types of headgear worn by our airmen. Horace can be put into a cold chamber and have his face frosted up beyond anything a man could endure in order to find out what happens to an oxygen mask when it's actually being worn under such conditions. He can go up to 70,000 feet in a pressure chamber to try out breathing devices, and he can calmly have his exhalations measured after a pressure cabin has been deliberately exploded for decompression



**Artificial head** designed by Aero-Med Lab for tests of headgear and flying equipment can "breathe" through lung in the cabinet.

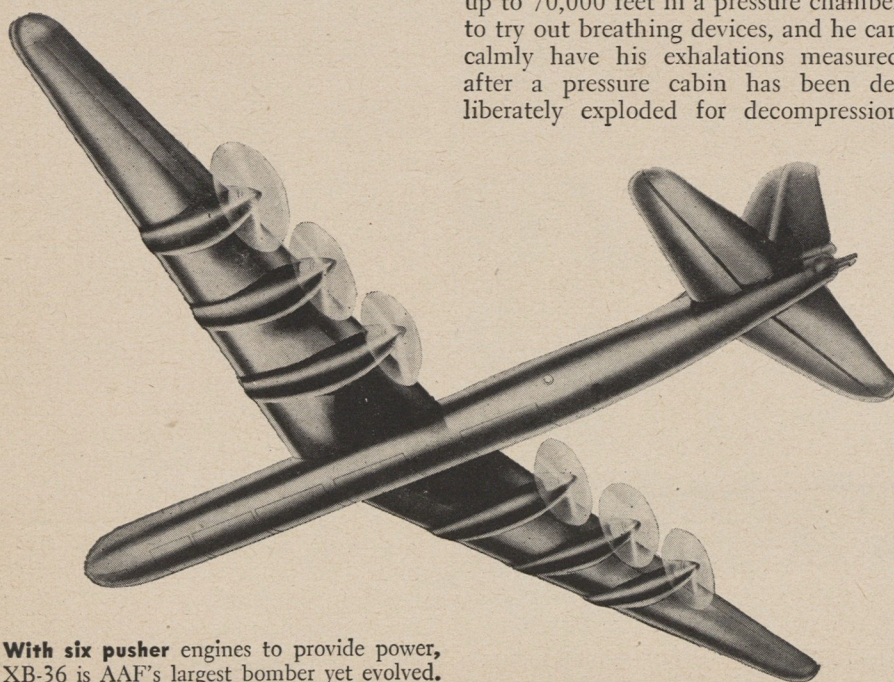
data.

Horace is built up around a semi-rigid inner shell covered with sponge rubber and a thin latex skin. His veins are tiny electric wires similar to those used in electrically heated casualty bags, and breathing is accomplished by a bellows located in a separate cabinet. An automatic "lung" operated by a series of cams can make him gasp or pant, inhale tobacco smoke or blow out a match.

### **Malaria Controlled by Air**

To make the occupation of Pacific islands and tropical regions more healthful for our garrison troops, the control of mosquito-borne diseases is being effected by DDT insecticide sprayed over Anopheles-breeding areas from planes. A single B-25 or C-47, fitted with a nozzle arrangement in the belly of the fuselage and carrying a load of DDT dissolved in kerosene or Diesel Oil No. 2, can cover a 2,000 acre area in less than 12 minutes flying time — eliminating months of back-breaking drainage projects and constant oiling and dusting operations.

C-47s are considered ideal for this work because of their known stability, load carrying capacity and maneuverability at low altitudes. The tank installation consists of three 335-gallon lightweight tanks which permit a total of 1,000 gallons of insecticide in a single load. Two of the tanks are installed side by side, 12 inches from the floor, in the aft portion of the cabin, and the other tank six inches from the floor immediately behind them. Wooden cradles support the tanks in position and the entire installation is tied to the floor.



With six pusher engines to provide power, XB-36 is AAF's largest bomber yet evolved.



## Liquid Oxygen for Breathing

Because liquid oxygen containers are less bulky than the heavy containers now used to store breathing oxygen in an airplane, the AAF is running a series of tests to determine their practicability for breathing purposes at high altitudes. Since a 150-gallon container of liquid oxygen weighs 3,000 pounds and can produce the same amount of oxygen as 70 high-pressure oxygen cylinders scaling at 10,500 pounds, the logistics of oxygen transport would seem to be materially affected.

To date, a mobile generator which will produce oxygen in a liquid state has already been developed, and a servicing unit for vaporizing the liquid oxygen, together with special charging equipment, is on the way. In addition, a liquid oxygen walk-around bottle has been perfected, weighing only six pounds and capable of supplying a man with enough breathing oxygen for approximately eight hours, depending on the altitude and the degree of activity.

## Parachute Tester Tower

Now that the AAF has perfected high-speed aircraft, the problems of bailing out at such accelerated rates of travel will be carefully studied at Wright Field with the assistance of a large centrifuge mounted atop a 120-foot high pylon. Without endangering personnel, the new parachute test device whirls a chute and a man-sized dummy at the end of a 200-foot boom until fighter-plane speeds are attained. Then an automatic device cuts loose the chute and pulls its ripcord in the same action that would result if an actual pilot were to throw open the bubble canopy, hurl himself out into the airstream while traveling at a comparable speed and open his parachute.

The test rig is driven by a 3,000 hp electric motor which is located in a concrete control house and is operated from a master instrument panel. The tower makes possible "ground testing" of any size parachute from one foot to 80-feet in diameter. Dummy weights from 100 to 4,000 pounds can be dropped at high speeds—a valuable study for future airborne operations.



Mounted atop 120-foot high pylon, a parachute with a man-size dummy is whirled in tests to determine high-speed bailout data.

The test tower is a development of the Pioneer Parachute Company, and it is expected to be in operation at ATSC headquarters sometime next spring.

## NAD Reclamation Section

Since its activation in April of 1943, the reclamation section of the North Atlantic Division, ATC, stationed at the Presque Isle, Maine Army Air Field, has a score of 96 reclamations to its credit. The unit is composed of 13 enlisted men and one officer and they stand ready at all times and in all weather to reclaim damaged aircraft re-



Salvage operations in remote areas during cold weather were routine with members of ATC Reclamation Section, N. Atlantic Div.

sulting from crashes throughout an area stretching from Maine to Greenland.

Up to the end of the war, savings in salvage and reclamation totaled more than \$5,000,000. Rugged terrain and

weather conditions were encountered in most instances and the unit has had recourse to amphibious tanks, snowmobiles, motor toboggans, boats, mule teams and other means of transportation. The outfit owns a 22-foot freight canoe equipped with a 17-hp motor for navigating the many rivers and lakes of the north. Each man is supplied with skis, snowshoes and arctic issue.

## Better, Faster Fifties

At the war's end, an improved version of the AAF's .50 caliber machine gun, which could fire almost twice as many rounds per minute as the standard gun and which incorporated superior belt lifting and better feed and cooling mechanisms, was ready to replace the M-2 guns in fighters and bombers as rapidly as the conversion could be accomplished. The new machine gun (M-3) fires up to 1,200 rounds per minute, and its projectiles slam into the target with an impact force of approximately 4,500,000 pounds—enough concentrated fire to cut through the heaviest of armor.

To obtain such firepower for the new gun, engineers eliminated hydraulic fluid from the standard M-2's buffer system, increased the size of the belt feed slide, reduced the weight of all moving parts to a minimum, added a gas-operated muzzle and provided a Stellite steel barrel liner to afford longer life at higher temperatures.

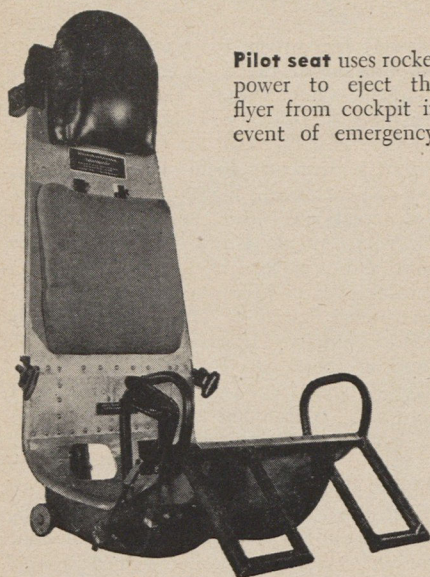
## Gunnery System Tester

A turret tester which can simulate the roll, pitch and yaw of an airplane on a combat mission is being used by ATSC engineers to study existing remote-control gunnery turrets and to perfect new ones. The device consists of a moving platform on which a turret is mounted, and two 20-foot high towers supporting a screen and a target projector system which travels on a circular track to give variation in the azimuth and elevation of the target.

## Pilot Ejection Seat

The ATSC's Aircraft Laboratory engineers are at work on an aircraft seat which will utilize rocket power to eject the pilot from the cockpit when bailing out becomes necessary in high-speed planes. The final design has not yet been established, but in all probability the main seat framework will consist of a "bucket" of pressed steel and aluminum, with hooks to make it possible for the pilot to harness himself in, parachute and all, and stirrups and hand-grips to hold him in the seat during





**Pilot seat** uses rocket power to eject the flyer from cockpit in event of emergency.

ejection. If it becomes necessary to hit the silk, fiber blocks and steel wheels, bolted to the back of the main seat frame, will guide the seat straight up and out of the airplane, once the rocket charge is fired.

To eject himself, the pilot raises the arming lever to remove the firing pin from the trigger plunger, and squeezes the firing lever on the right hand grip. This causes the firing pin to strike a primer, igniting the main charge and shooting the seat up and out of the cockpit.

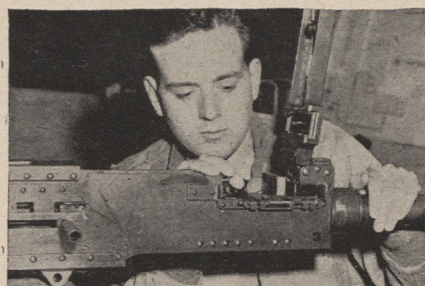
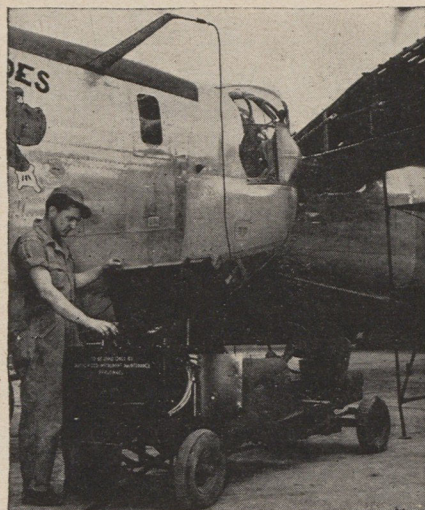
#### What's Wrong with the Picture on Page 44

1. Starting at left, the man is holding the cable in such a way as to pull wires loose from the connecting strands.
2. The M/Sgt. is using the wrong kind of insulating material. In tropic areas, fungi thrive on tape. Waxed cord should be used as the binder.
3. What is that strange object on the concrete behind him? Can it be that the boys plan to use an electric soldering iron with a gasoline torch?
4. See that spool of antenna wire? It's hanging from an APN-1 antenna—which was not designed as a convenient hook.
5. The Sgt. clinging to the P-61's boom is violating safety rules as well as causing injury to the plane.
6. The man at the right is standing on a costly piece of radio equipment, and his weight can easily ruin its delicate wirings.
7. In drilling that hole, he's bound to puncture the Black Widow's skin. Always put a wooden block between the strip and the skin when doing drill work of this nature.



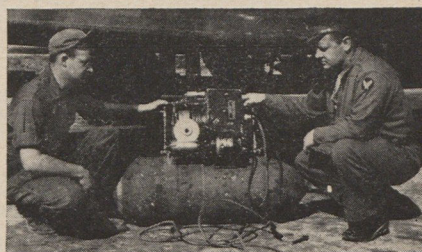
#### with mechs around the world

**At an airbase in India,** the skills of instrument maintenance personnel were fully "mobilized" when M/Sgt. Clarence V. Haines, Memphis, Tenn., constructed this miniature automobile out of scrapped parts and mounted portable electrical and instrument test sets on it. The speedy little carrier averted many a crisis by appearing promptly where needed most.



**A former B-17 radioman-gunner,** S/Sgt. Joseph A. Morris, Miami, Fla., recently received the commendation of Brig. Gen. J. H. Houghton, CG of the Second Base Air Depot, Blackpool, England, for designing a gauge which enables armament technicians to ascertain quickly if ammo belts will function properly in the .50 caliber machine guns mounted in pursuit planes. Made out of chrome molybdenum, the gauge is inserted in the feedway and instantly determines whether or not the belts will be "riding" high enough to remain in the gun during the centrifugal pull exerted during aerobatics.

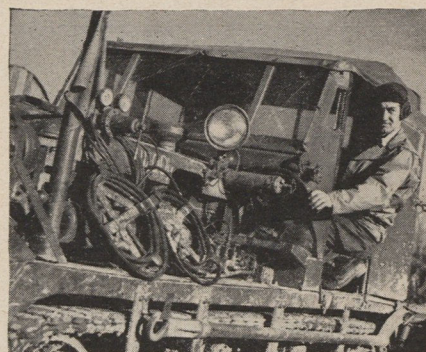
**Cranking 500-pound bombs** into a B-24 bomb bay by hand was tough, slow work. To save such time-consuming labor at their airbase in Italy, Capt. Clifford Moan, Denver, Colo., and Cpl. Grady W. Allman, Asheville, N. C., devised an all-electric bomb hoist which would lift a quarter-ton bomb to the top station of the bomb bay in 40 seconds. Power was supplied by the plane's electrical system



or by a C-10 auxiliary power unit, and parts for the hoist included two regulation manual hoists, four relays, a two-horsepower motor and suitable switches, cables and plugs.



**A mobile maintenance unit** which permits swifter sheet metal repairs to damaged aircraft has been built by mechs at Pueblo Army Air Base, Pueblo, Colorado. Powered by a one-cylinder gasoline motor, the tricycle features an air compressor for pneumatic riveting and a generator for drill motors, in addition to two air storage tanks. The unit is belt-driven by a pulley mounted on the right-hand wheels.



**With eight special attachments** ranging from a derrick to a battery charger, plus the installation of radio equipment, Sgt. Leo F. Alton, Little Sioux, Iowa, has made his G.I. cle-trac into an all-purpose mobile maintenance shop. At his 12th Air Force B-25 base in the Mediterranean theater, Sgt. Alton had many opportunities to put his innovations to the test, what with rush radio calls being received from stuck-in-the-mud Mitchells. For his ingenuity he was awarded the Legion of Merit.



## RENDEZVOUS

(Continued from Page 2)

# SHOOTING THE BREEZE



GOT ANY GOOD STORIES? SEND 'EM IN!

**France.** A young jeep driver for an AAF public relations office went swinging into the mail room one day, his jacket open and his hands in his pockets. "I've got points that jingle, jangle, jingle," he was singing loudly, "and I know they will carry me right home. I've got points. . . ." He turned it off abruptly when he came face to face with a brigadier general.

"Button up that jacket," snapped the BG, and the young man hurried to comply.

"What section are you in?" the general demanded, and he hardly gave the flustered EM a chance to reply before asking:

"What's your rating?"

"I'm a private, sir," replied the jeep driver.

"What? A private?"

"Yes, sir."

"Well . . . Button up that jacket," the general muttered and walked away.

**Massachusetts.** The good-natured rivalry between Harvard and the Massachusetts Institute of Technology seems to have extended even into the ether, if we are to believe a story brought back to us from the home of the bean and the cod. All during the war, M.I.T. operated its Radiation Laboratories, a super-secret research house which developed many of the AAF's radar devices, while half a mile away Harvard's Radio Research Laboratory was deeply engaged in developing radar countermeasures. The two staffs would go about their researching in amiable fashion until those occasions when the Radiation Laboratory's radars would be transmitting at the same time that the Harvard scientists would have their RCM electronic jammers turned on—and on the same frequencies. These coincidences usually would send an M.I.T. official screaming to the Harvard staff, "For God's sake, turn off your jammers. We have an important demonstration going on to prove how good our sets are, and you are lousing up the show!"

**Ohio.** The plane circled Patterson Field with its pilot and co-pilot standing by on VHF radio for landing instructions. The conversation with tower went like this:

"Patterson tower, this is Army 6751, over."

"Army 6751, this is Patterson tower, over."

"Patterson tower from 751. About five miles northeast. Request landing instructions, over."

"Roger, 751. Landing runway into southwest. Wind 10 miles per hour from 220 degrees. Call on base leg. What is highest rank on board?"

"Tower from 751, highest rank on board is two stars, over."

"Roger, 751, is that two one-star generals or one two-star, over?"

**France.** The pilots of a tactical outfit, somewhat cynical and loaded with points, had followed with mounting fury the sundry pronouncements concerning how quickly they were going to be redeployed to the States and discharged. One particularly glowing edict out of Washington was the last straw. That afternoon all the P-47s in the outfit flew over the adjacent countryside in a neat formation that spelled out: "N-U-T-S."

**Marianas.** A ranking British officer visited a weather station on a recent inspection trip with several top American air commanders. "Well, what do you think of Weather?" the Britisher was asked on completion of the tour. "Bloody damp, I'd say," the visitor replied.



**Germany.** The heavy bomber had scored direct hits on a synthetic oil plant when it was blasted by intense flak which knocked out two engines, the radio transmitters and the fluxgate compass. While the crippled plane struggled along at 115 miles an hour, steadily losing altitude, the navigator was working his DR knowledge overtime. He turned to a gunner nearby to ask him to be on the lookout for landmarks when the cloud base broke, but to the navigator's amazement the gunner appeared to be asleep.

"Hey, Joe, wake up. How in hell could you sleep at a time like this?"

The gunner looked up, blinking. "Oh, I wasn't sleeping, sir, I was praying." ☆

tionale) by carrying the greatest payload to an altitude in excess of 2,000 meters at Fairfield, Ohio. Major Haynes and crew had aboard 31,162 pounds, taking off and landing with this load on the then sod air-drome at Patterson Field. Captain Old was the co-pilot on this flight.

International load and speed record (F.A.I.), August 1-2, 1939—From Patterson Field, a payload of 2,000 kilograms was carried over a 5,000 kilometers course at an average speed of 166.32 mph in the XB-15. Major Haynes and Captain Old took off about 10:00 a. m. August 1, and flew a course from Dayton, Ohio, to Rockford, Ill., continuously until dawn August 2, landing at Patterson.

Flight to the Galapagos Islands, May 9, 1940—This photographic survey flight was ordered personally by General Arnold, who was present at Albroom Field, Canal Zone, for the take-off, in order that a comprehensive analysis of the possibility of establishing airbases on the Galapagos Islands for the protection of the Panama Canal might be made. Since this was the first flight over the islands, which belong to Ecuador, the War Department arranged for two officers from Ecuador to be on board the plane. Due to the great distance involved in this necessarily non-stop round trip flight (2,839 miles), take-off was made at midnight, thereby insuring a maximum amount of daylight hours for taking the many photographs which were required. Major Haynes' navigator on this flight was Captain Curtis LeMay and the co-pilot was Lt. Hiette S. Williams.

Brig. Gen. C. V. Haynes,  
1st Air Force,  
Mitchel Field, N. Y.

### Indigestion

Dear Editor:

On Armistice Day I was assigned to distribute leaflets over a rodeo at Indio, Calif., in a P-63.

I made my passes at approximately three hundred feet, and dropped the leaflets about five seconds after passing over my target, by shoving them out of the left window. The ship functioned normally during the mission, but when I applied climbing power the engine started to run rough. All power and mixture settings were of no avail, and about two minutes later the engine cut out completely. By reducing the throttle setting to about 25 inches I was able to get the engine running again, but it was very rough.

I got the ship back to the field, ran it up and checked the mags. The engine lost about 150 RPM on the right mag and slightly less on the left. I wrote the ship out and told the crew chief what happened.

A few minutes later the crew chief told me that he had found the remains of a lot of chewed up leaflets in the carburetor. It seems that they were sucked into the air ram as I let them go out of the window.

Lt. Benjamin B. Peck,  
March Field, Calif. ☆



# AIRPOWER—Through Japanese Eyes

*"Of land, sea and air forces, air by a wide margin contributed most to the defeat of Japan."*

REAR ADMIRAL TAKATA, deputy chief of military affairs, Navy Ministry.

*"Our air forces were defeated in the air by your 5th and 13th Air Forces. The B-29s dealt the death blow to Japan proper."*

LT. GEN. TAZOE, chief of staff, JAAF.

*"We industrialists felt that air raids were going to finish the war, believing Japan could not last until an invasion. Air attack sealed the fate of Japan."*

RYOZO ASANO, president, Nippon Steel Tube Co.

*"The mast-high attack by American planes on our large convoy in the Bismarck Sea was the biggest shock of the war to Japanese naval strategy."*

REAR ADMIRAL TAKATA.

*"One of the biggest factors leading to the surrender was the bombing of the industrial cities of Japan. Our loss in the air lost us the war."*

GENERAL KAWABE, commanding general, JAAF.

*"It was not only the bombing of factories that defeated us; it was also the blockade which isolated us from raw materials and food."*

TAKASHI KOMATSU, managing director, Nippon Steel Tube Co.

*"In addition to the physical damage accompanied by bombing, there was a serious decline in efficiency due to difficult living conditions and decline in morale and effectiveness of the workers."*

LT. GEN. ENDO, former head of the aircraft section, Ministry of Munitions.



# LOOK UP TO YOUR FUTURE

EM Lounge, Mitchel Field

NCO Quarters,  
Barksdale Field

On the job

In selecting your postwar career,  
consider what the peacetime  
Army Air Forces has to offer—  
**SECURITY, EDUCATION,  
ADVANCEMENT, TRAVEL,  
ATTRACTIVE LIVING,  
EARLY RETIREMENT**

See Page 40