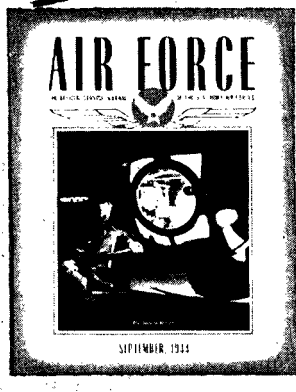
AIR FORCE

THE OFFICIAL SERVICE JOURNAL OF THE U. S. ARMY AIR FORCES ☆ OCTOBER 1944


AIR FORCE
SEPTEMBER, 1944

Rendezvous

Who Is He?

Dear Editor:

. . . I would like to have some information concerning the cover of the August issue of AIR FORCE. Who is the soldier, or paratrooper to be exact? I think he is a relation of mine. . . .

Pvt. Clayton Evans, Honolulu

Dear Editor:

. . . The picture on the cover is that of my brother, 1st Sgt. H. E. Cooper before he went into the invasion. . . .

L. R. Cooper, Hollywood, Calif.

Dear Editor:

. . . The mother of Pfc. William B. Anderson would like to have an original print of the photograph and any information available. Pfc. Anderson is reported missing in action since June 6 and he was with the paratroopers that invaded Normandy. The family and friends feel sure that the picture is that of young Anderson. . . .

Mrs. Jas. W. Griffin, Defuniak Spgs., Fla.

Dear Editor:

. . . I believe he is my brother. He is at present missing in action since D day in France. . . .

Pvt. A. Pushharawicz, Tucson, Ariz.

Dear Editor:

. . . The cover of your August issue features an airborne soldier who, I believe, is my brother. He is Special Service Officer, 1st Lt. John F. Devereux, somewhere in Italy. . . .

Helen M. Devereux, Monroe, La.

Dear Editor:

. . . He bears a striking resemblance to Pvt. George T. Trotman, of Rapid City, S. D., a close friend of my family's. Pvt. Trotman as we know from the official casualty list was killed in action on D day in Normandy. . . . .

Marilynne M. Robertson, Meridian, Miss.

Unfortunately, we don't know the name of the paratrooper. The picture was taken during the last few minutes before invasion and in the excitement no captions were recorded. If anyone in his outfit can identify this soldier, we'll be glad to print his name. Ed.

Law of Averages?

Dear Editor:

. . . A lot of fellows in this flying racket talk about playing out the string, or bucking the law of averages. They feel that luck runs out, and that's why you see a 'Fifty and Bust Club' in every squadron in the air force. Well, I hope I'm not sounding old-timerish or philosophical about it, but I look at it this way. Every mission in itself

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AIR FORCE

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ASSIGNMENT • • HOME

What happens to a man when he comes back from overseas is of the utmost importance to him—and to the Army Air Forces. Already air force men are returning at the rate of several thousand a month. More will follow as replacements are sent to relieve veterans, or as combat units are shifted from one theater to another. To get the true facts and to spike some wild rumors, AIR FORCE submitted a series of questions to Maj. Gen. Hubert R. Harmon, Commanding General of the new Personnel Distribution Command (AFPDC). Most of the questions came from men still overseas. Here they are with General Harmon's answers.

Just what is the AAFPDC? It is the giant employment agency of the AAF. Through this Command pass all unassigned personnel of the AAF. Just as the business of the Air Service Command is one of supply, and the job of the Training Command to prepare crews for combat, so the main purpose of AAFPDC is the handling, as individuals, of all personnel going overseas as well as those returned from combat areas. The five main functions of AAFPDC are: 1) Redistribution of returned Air Force personnel, combat and non-combat (flying and ground). 2) All Air Force Convalescent Hospitals. 3) Overseas Replacement Depots. 4) Demobilization. 5) Recruiting of men for the post war, permanent Air Force.

Does this new Command decide when I come home? AAFPDC has nothing to do with the length of time a man serves overseas before he is returned to the United States. That is a theater prerogative and requirements vary widely.

When do I become a part of the AAFPDC? If you are in the zone of the interior and have been scheduled for overseas duty, you become a part of the AAFPDC as soon as you arrive at an Overseas Replacement Depot. If you are in a combat area, as soon as you reach a port of debarkation in the U.S.A., unless you have been injured and are enroute to an Army general hospital or a regional hospital. In that case you become a part of the AAFPDC when you have been sent from the general or regional hospital to an AAF Convalescent hospital. AAF has liaison offices at all General and Regional hospitals who look after the interests of all AAF personnel.

Does this include battle casualties? Yes. AAFPDC includes casualties as well as casuals. These casualties are taken care of in the manner outlined in the preceding paragraph.

What happens to me when I reach the port of debarkation? If you are a casual returned for redistribution, you are picked up by a liaison officer of the AAFPDC, quickly briefed, and given orders directing you to a Redistribution Station with a 21-day delay enroute. If you are a casualty, you are sent to an Army general hospital and thence to an AAF Convalescent Hospital.

Can I go home as soon as I arrive in the U. S.? Yes, unless you are a casualty. If you have been returned for redistribution, you will be sent to a reception station nearest the point where you wish to spend your leave.

How much time will I have at home? Each man gets a 21 day delay enroute while traveling from the Port of Debarkation to the Redistribution Station, plus a certain allowance for travel time.

Do I have to spend my 21 days at home? No. A man can spend his 21 days any place in the U. S. provided his decision is made overseas, so that his debarkation point may be anticipated and he may be placed in the proper group for forwarding to the U. S.

Where do I go after my 21 days? You report to the Redistribution Station named in your orders, which is usually the one nearest the place where you took your delay enroute.

How long will I be at the Redistribution Station? From one to two weeks. Actually the work required takes only a few days, but it is deliberately spread out to give a returnee further rest and an opportunity to orient himself.

Are only flying personnel handled in this manner? Every effort is being made to handle both flying personnel and ground crews in present redistribution facilities. However, should unexpected peak loads occur, it may be necessary temporarily to improvise emergency facilities for redistribution of ground crews.

Can I take my wife with me to the Redistribution Station? Yes, to the limit of the capacity of the facilities. Married couples will be billeted and messed together in the same manner as if they were staying at a private hotel. Activities are arranged for the wives as well as for the husbands. Arrangements must be made in advance through Post liaison officers.

How expensive will it be to have my wife with me? The cost is the same as the government would charge to billet you, which means that it is as inexpensive as possible.

May I bring my child or children? No. Unfortunately there is not enough room at the Redistribution Stations. The amount of work required to house and feed children is too great.

What happens to me at the Redistribution Station? You will be examined, processed, evaluated, and then given your new assignment.

What sort of medical examination do I get? As complete and thorough as possible. It is done by Medical Corps and Dental Corps officers who are not only the best possible experts but who for the most part are also returnees from combat and know your problems.

Can I change my classification and get a different type of military assignment? In some instances you can, but the majority of cases will remain in the same MOS (military occupation specialty).

Why, under ordinary circumstances, can't I change my MOS? If there is a demand for men of your training and ability, and you are still physically qualified to continue in that type of work, you will remain in your MOS. For example, there is still a demand in the AAF for radio operators. Despite your having served overseas as a radio operator for 24 months you will not ordinarily be permitted to become an administrative clerk. The war

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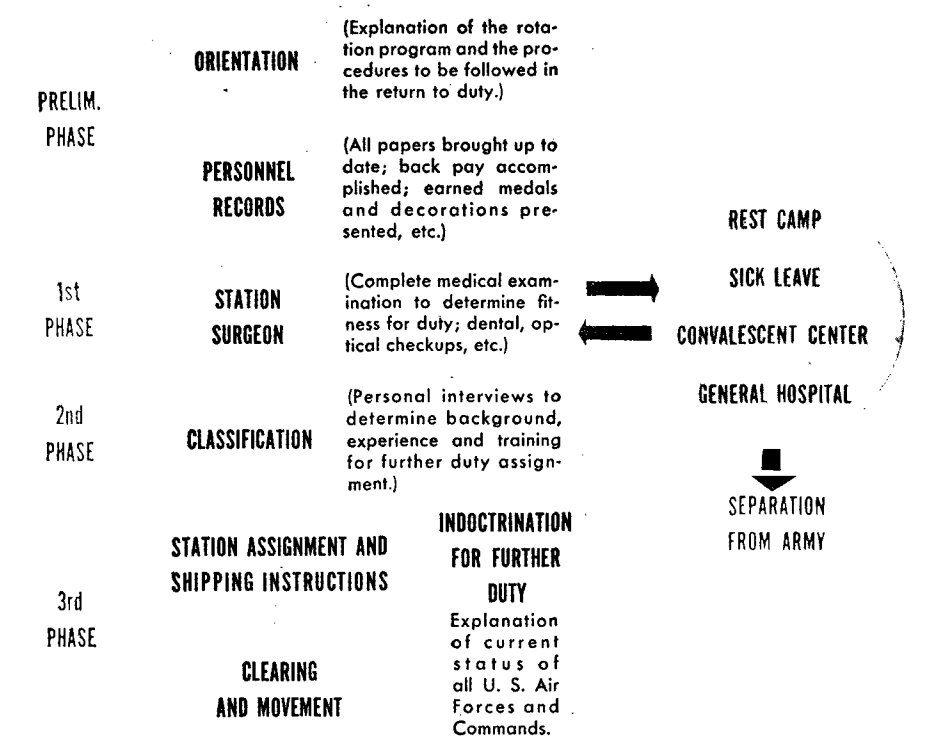
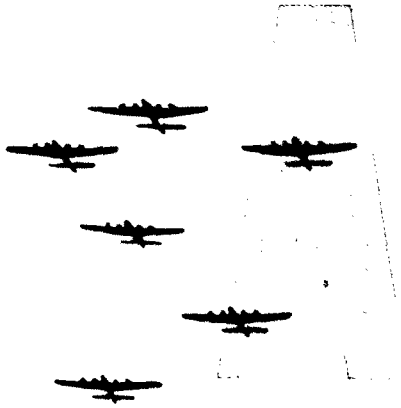
PROCEDURE AT A REDISTRIBUTION STATION





Our airmen had the skies virtually to themselves as the Battle of Europe roared toward Germany

IR MASTERY OVER EUROPE

BY CABLE FROM AIR FORCE CORRESPONDENTS IN THE ETO

By mid-September, it was obvious that the German air force could not contend in France. When Allied soldiers clambered from the hedgerows of Normandy and Brittany to launch major breakthroughs, they moved virtually at will as far as enemy air attack was concerned. The Germans had to withdraw their slender store of fighter planes from Alencon and Angers, centers of the Nazi forward air force since D-day, and from then on opposition was extremely slight. The Luftwaffe could not harass effectively Allied ground troops and armored columns, could not fight the U. S. 9th Air Force or British 2nd Tactical Air Force supporting the land armies, could not provide helpful cover for Von Kluge's 7th Army as it struggled to get out of the Falaise pocket, could not prevent Allied planes from ceaselessly bombing and strafing German transport columns, barges and railways, could not offer resistance to heavy bomber formations ranging the length and breadth of Germany, and could not provide the High Command with adequate reconnaissance and intelligence.

In the south of France the Luftwaffe was not even brought to action. Our landings were made without any aerial resistance whatever. When they needed it most, the Germans found their air force rendered impotent by concurrent losses at the front—totaling more than 3,600 aircraft in the first 70 days of the European campaign—and blows against their manufacturing and service centers in the Reich.

Intense attacks on the Nazi aircraft industry were continued by USSTAF bombers throughout August. At the same time there took place a systematic assault of perhaps even greater importance—destruction of German oil.

The oil offensive, like that against aircraft plants, had begun months back. Heavy damage had already been visited on German refineries, synthetic petroleum plants and oil storage dumps, but in August this assault by the 8th and 15th Air Forces reached a crescendo. While the 8th was burning out oil tanks and severely damaging buildings in such centers as Hamburg and Zeitz, the 15th was attacking plants at Ploesti, Dubova in Czechoslovakia and others in Germany. Reconnaissance showed complete inactivity in the Ploesti area even before the Balkan disintegration and capture of the city.

The attack on August 24 by these two air forces was an example of their terrific striking power. This was a day on which some 1,300 bombers of the 8th Air Force and 600 from the 15th were out, plus over 1,000 escorting fighters.

Visual pinpoint bombing was almost universal. The Forts and Liberators brought heavy damage to oil production centers at Merseburg in Prussia and Brux in the Sudetenland, two of the largest synthetic producers, as well as to many other refineries and dumps throughout Axis Europe. Photo-reconnaissance afterward showed very severe gutting or tar treatment plants, boiler rooms, tanks, injector systems and other facilities, with many fires still raging. During August, the 8th Air Force alone bombed 26 oil plants in Europe and made 35 attacks on oil storage dumps.

This entire oil offensive, coupled with demolition of hundreds of tank cars in transit by fighters and fighter-bombers, was a serious setback to German hopes of continued resistance.

While the Allied ground offensive was gathering momentum in the first weeks of August, aircraft of both the strategic and tactical air forces were harassing the Nazis at every possible point. The 9th Air Force, in immediate support of the land armies, was launching Marauder and Havoc attacks on highway and rail bridges, railway centers and junctions, heavy gun batteries and similar targets. Fighters and fighter-bombers were flaying troop concentrations, tanks, artillery emplacements and every conceivable form of military transport. In the week prior to August 14, 9th fighter-bombers flew more than 7,500 sorties over the battle area.

Meanwhile, to the north, 8th Air Force fighters were doing a lively business. They had taken time out from escort duties to strafe and bomb the Germans who were attempting to move reinforcements and equipment southward through Brussels toward Metz and other key centers. From August 7 to 13, except for one day, Thunderbolts, Mustangs and Lightnings directed an intense, large scale effort against this rail and highway traffic destined for the battlefields in France.

The results were impressive. During that single period they hit and disabled 884 locomotives, destroyed 1,631 railway cars and damaged nearly 6,000, destroyed 598 trucks and damaged 446, destroyed 461 oil cars and damaged 320, and destroyed 94 ammunition cars, plus other vehicles.

So enthusiastic were they over the damage done by their bombs and armor piercing incendiaries that they extended the work to include canal barges, gun positions, ammunition dumps, radio towers, airfields, rail tunnels, factories and marshalling yards. When they had finished that week of activity, there was hardly a German wheel moving in Belgium and surrounding areas. The month's total damage wrought by 8th fighter groups was staggering. Locomotives disabled numbered more than 2,200. More than 14,000 railroad cars had been destroyed or damaged, as had some 2,000 trucks and highway vehicles.

This effort had not been inexpensive. Casualties in low-level or ground attack are generally far heavier than in air combat, and this assault had met with fierce antiaircraft interference. But it had been a spectacular achievement.

Down on the Riviera the full weight of the Mediterranean Allied Air Forces—some 14,000 combat airmen—was being directed for five solid days against the proposed landing area between Marseilles and Nice. Heavies bombed

roads and bridges and military installations on the coast and up the Rhone valley. Mediums, fighters and fighter-bombers struck at radio and radar stations, gun emplacements and a wide variety of other targets. Transport aircraft crews and glidermen were ready to carry spearhead units of paratroopers and airborne infantry. On August 14 General Eisenhower issued his Order of the Day and calamity came to the Germans from every quarter. A new invasion of France began with enormous success on the Mediterranean Coast and the Allied armies in the Normandy-Brittany area burst northward and eastward with the plunging, uncontrollable vigor of giant broncos.

The General's order had asked "every airman to make it his direct responsibility that the enemy is blasted unceasingly by day and by night and is denied safety either in fight or flight."

That request describes ensuing operations. Heavy bombers of USSTAF—which earlier had made notable attacks on such targets as the experimental station at Peenemunde, the important industrial complex at Brunswick, the Arado and Adam Opel armament works and many other areas, in addition to the oil and aircraft offensive—probed deeper and deeper into the heart of the enemy's war machine.

Targets bombed in varied assaults by B-17s and B-24s from mid-August included the I. G. Farben chemical plant at Ludwigshaven and electrical equipment factories at Mannheim, ammunition storage buildings at Zwischenahn, the Seibel aircraft works at Halle and the Junkers factory at Dessau, the chemical works at Ober Radach, bridges across the Meuse and the armament works at Weimar. The latter attack on August 24 not only destroyed or damaged 10 workshops but also blasted Gestapo offices and garages. Within four straight days ending August 28, the 8th Air Force itself hit 10 important German cities. Throughout

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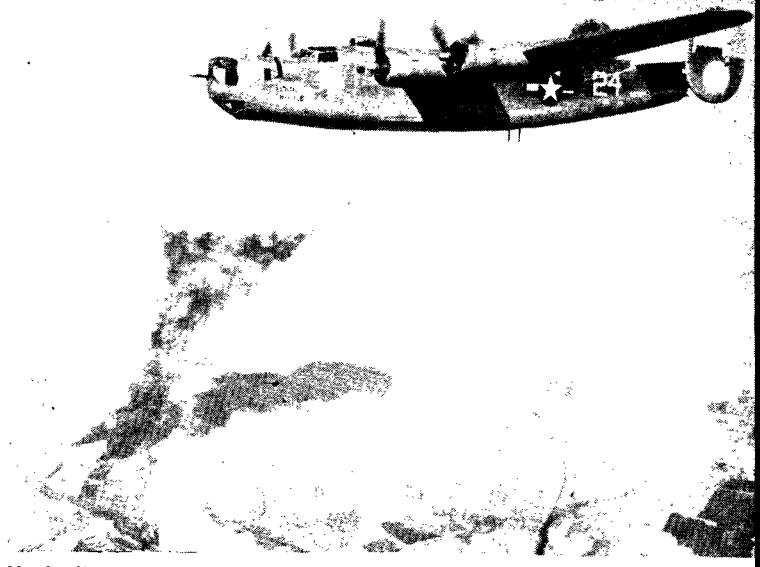
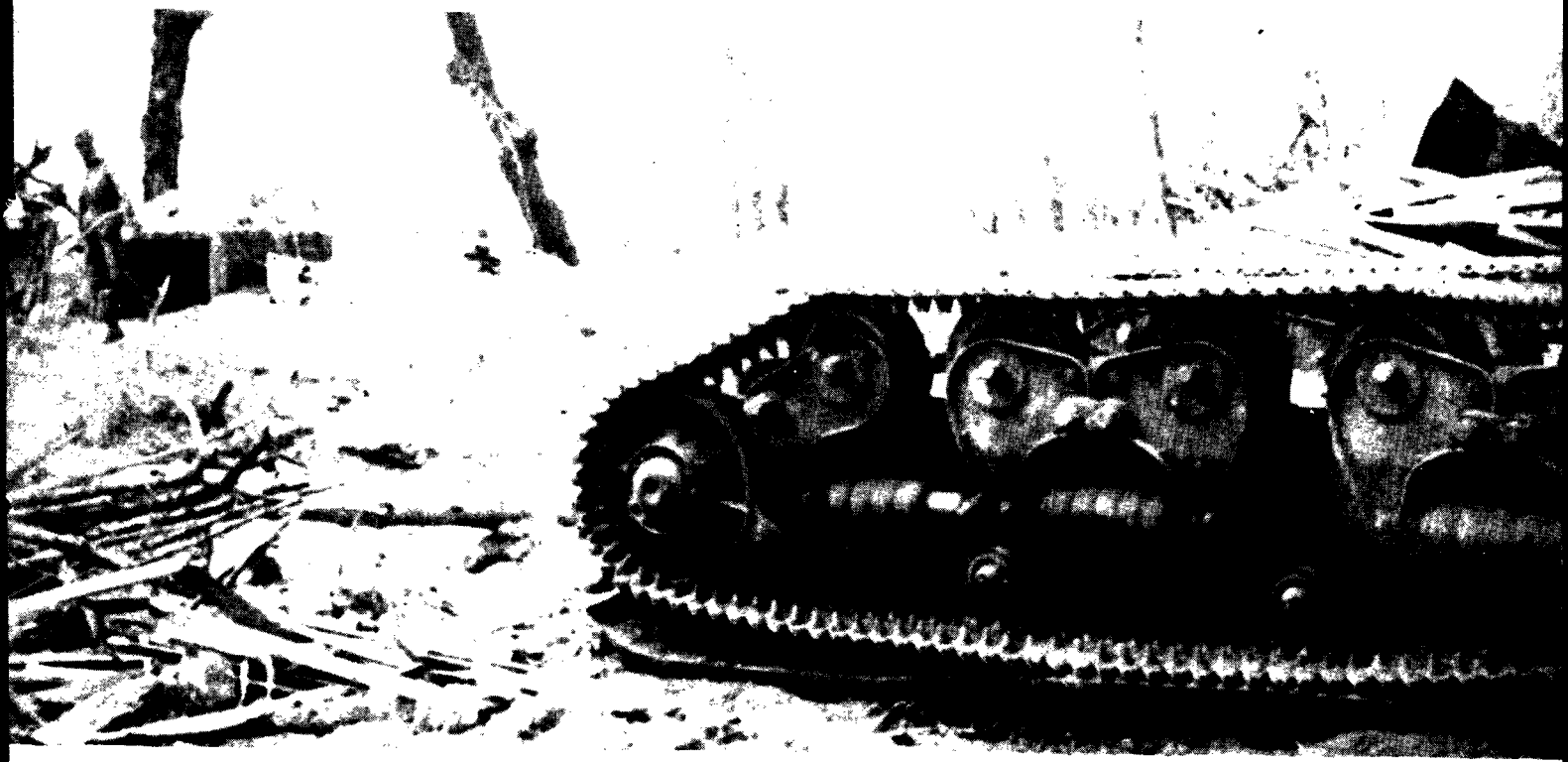


Nazi oil goes up in smoke as Liberators of the Mediterranean Allied Air Forces smash Hungarian oil refinery at Budapest.



Rubble and lots of it was all that remained of this German strong point after a concentrated visit by 9th Air Force fighter-bombers.

Vital supplies are parachuted to waiting Maquis, as an 8th Air Force B-17 reaches its drop zone over the French countryside.

FIGHTER CONTROL...

nerve center of battle

by S/Sgt. Mark Murphy
AIR FORCE *Overseas Staff*

BY WIRELESS—

THE war in Western Europe moves so fast that probably the only place in this sector where the situation of the moment is known is in the fighter control tents of the 9th Tactical Air Command, 9th Air Force.

These are the nerve centers of aerial activity. Here all the communications of modern war bring the stages of battle before your eyes.

In a fighter control center not far from the Belgian border, this day in early September, men cling to telephones that are connected to land lines, FM and VHF circuits. These networks synchronize Allied movements in the air and on the ground. Here the blow-by-blow directions are given to 9th Air Force planes blasting the Germans out of the way of our advancing armies. Here Royal Air Force, U. S. Navy, French Forces of the Interior and Army anti-aircraft liaison officers work with AAF officers and enlisted men at the many maps and boards in the tent.

The maps here are ahead of those used by the various Army groups, even the ones at Supreme Allied Headquarters. Some distance to the north and east and south our tank columns are pushing through Belgium, and as they shove forward, P-51s, P-47s, and P-38s work with them. In other areas which the columns won't get to until tomorrow or next week, or maybe won't even have to touch, the fighter-bombers are plastering troop concentrations, knocking out guns, harassing retreating armor and trucks, blasting bridges, jabbing at the enemy and keeping him off balance for the knockdown punch the lads on the ground are set to give.

All of this air war, this tactical support of ground troops, is being handled by some quiet officers sitting at tiers of desks, hanging on telephones, scribbling notes on pieces of paper, and etching maps and status boards that show how the war stands that moment with the ground forces and with the 9th Air Force.

The task of directing this enormous effort from the disposition of airbases in France and England to the final pointing out of one truck for one airplane to hit, is a complicated one. Fighter control may be down at the bottom of the page on the command organization chart, but it constitutes the heart of air support operations today. In this particular situation, fighter control's chief job is to watch the planes as they fly, put them on target, take them off while they are in flight and send them to a more important mission, and bring them home again.

Take a recent Sunday, for instance. It was one of those bright days, which are becoming more rare as autumn and winter advance, and all groups were out. Our armies were on the move and liaison officers were continually changing the bombline on the maps. By nightfall the line would run off the boards. A sergeant was watching disconsolately. "Every damn two days I have to make a new map," he said.

The place gave an impression of quiet activity. People have to keep quiet because often the radio telephones are very faint. The first squadrons had been up some time and the chief controller, a first lieutenant sweating out his captaincy, called down to a major, "Joe said he found some enemy stuff just west of Mons." "Is he sure?" the major asked. "That's this side of the bombline."

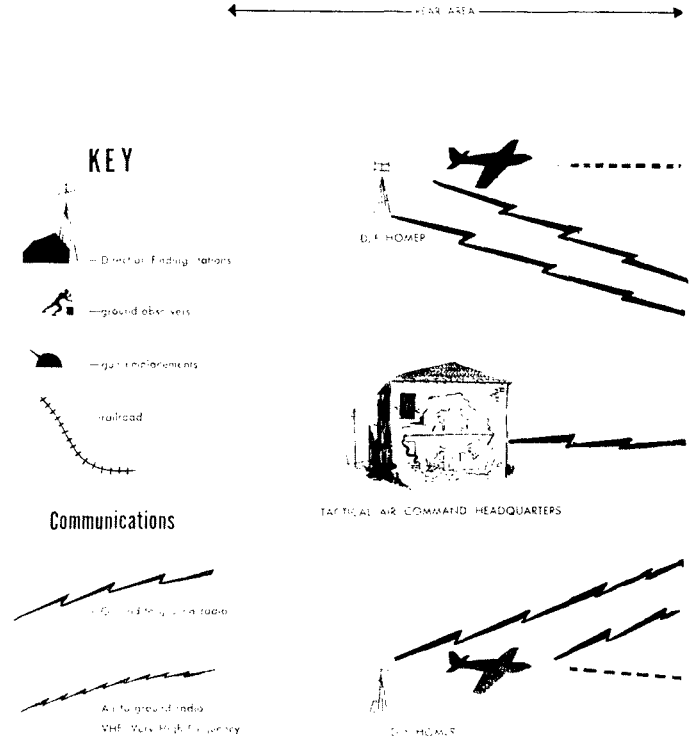
"I told him to be positive and he went down and looked at them and then attacked," the lieutenant said.

"Damn it, make sure! Our troops are all over that area. Somebody's liable to get hurt that way."

"I sent *Mark* over to take another look and he also is checking," the lieutenant said. "Tell them to be positive," said the major.

"Make positive identification," the chief controller called down to a controller at a tier of telephones and radio gadgets below him to get in touch with *Mark*, the radio code name of fighter group.

"Tell him to make positive identification before doing anything."



Here's how controllers direct the planes that are blasting a path into Germany

Fifteen minutes later *Mark* had taken his look and reported enough enemy trucks and horse-drawn equipment for an army.

"He says he went down and looked, and that the stuff has crosses on it," the controller said.

Squadrons hung over the ground procession at Mons until new squadrons came in and briefed them. Every few minutes, word went out from fighter control that identification must be positive. Later the Army liaison officer reported that the stuff was enemy, although in a few places it was only a few hundreds of yards from our own armor which was on the move.

Lt. Jack Russell, one of the chief controllers, looked at the status board of the groups and squadrons and casually diverted some of their missions. The schedule on which they were flying had been made in the office of Maj. Gen. E. R. Quesada, commanding the 9th Tactical Air Command.

"While on duty as controllers, a lot of captains and lieutenants here," Lt. Russell said, "have more real authority than many colonels."

Over the VHF phone one could hear a faint voice, that of a squadron leader, "Get your can up here," it was saying. "For once damn it, get your can up here where you belong!"

He didn't repeat the message so it was assumed that a pilot had brought his plane up to its proper place in the formation.

As the day went on, some of the controllers told me about the activities of the wing and the squadron which runs fighter control.

"It was like working in a store with sales slips," Capt. Vance H. Taylor said of the big break-through days.

"We were handling from 1,300 to 1,800 sorties a day. A fellow would mention a target and I would hand a slip of paper to another man and then in a few minutes back would come the slip of paper reading 'target destroyed'."

After the breakthrough at St. Lo and the working over of the Falaise pocket, the American, Canadian and British armies swarmed over Europe, overrunning Germany's new empire as the Nazis had run over Europe four years before —and fighter-bombers of the 9th were leading the way.

The operation of fighter control appears relatively simple when you see it. Planes are in the air and their pilots call back by radio to tell what they are doing, what they see and where they are. Or if they are not certain exactly where they are, controllers can easily find out by means of a radio "fix" through Direction Finding stations. Men receiving this information think it over and if things seem to be doing all right they say "Roger" and get off the air. In case there is something new for the planes to do the pilots are told about it, like this Sunday stuff at Mons for example. But actually, fighter control represents one of the most complex air warning and communications nets in warfare, and its men are among the most able and best trained in the Army.

That's why, without batting an eye, a captain will depart from the orders set down by a major general and send airplanes far from the places they were originally assigned to go. In case the decision calls for a definite change of policy, the captain naturally consults higher authorities, but 9th Air Force leaders have considerable confidence in their controllers. Moreover, the latter have utmost confidence in themselves and in the pilots with whom they work.

Capt. Lucius C. Tirey, who came in on the late shift, began talking of reconnaissance. "You've got to remember one group, a tactical reconnaissance outfit," he said. "You've seen them flying around, two-plane teams, one maybe flying level while the other goes up on one wing and then on the other to look things over. Those boys are beautiful pilots and beautiful soldiers, and the flying they do would knock you out. From daylight to dark, they are the best there is on recognition, and when they tell you something is enemy, it's enemy. If they don't know it's enemy they won't tell you it is. And when the weather is bad, they go out on weather reconnaissance flights just to find out how bad things really are."

Maj. Joseph J. Cody, senior controller, came over and leaned against a wall. They say he is usually leaning against something or sitting on something. "The boys get so

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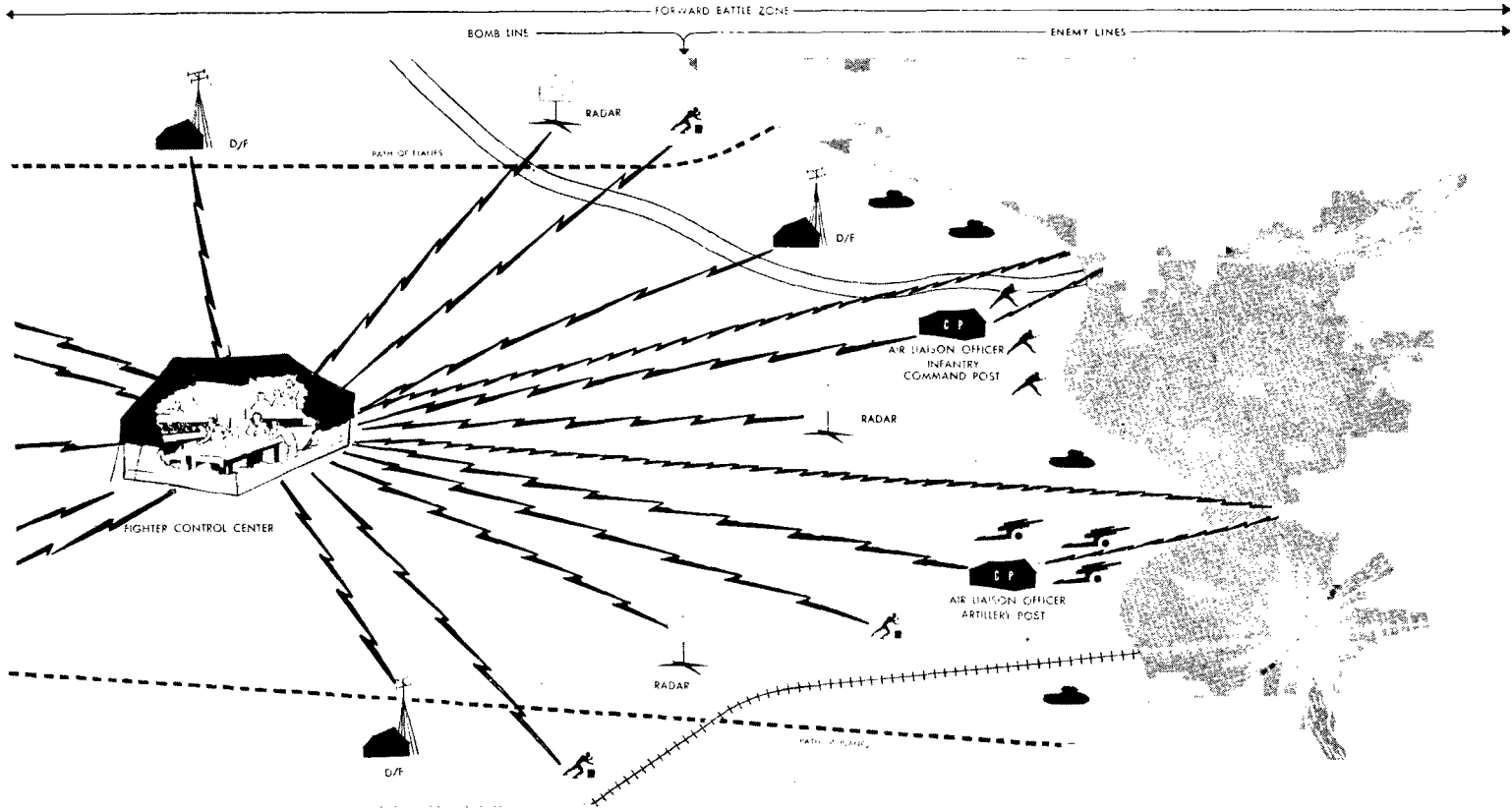


Officially their mission is liaison work; actually they are cargo carriers, ambulance planes and even bombers

LITTLE PLANES WITH

By Herbert Ringold

AIR FORCE Staff

Liaison planes such as the one in the top photo carry supplies from rear bases to the rear to isolated outposts (center) in jungle areas where transport planes can not land. Evacuation of wounded from front line positions is another big assignment for these little planes.

THE L-4 putt-putted along at 70 miles an hour over, around and between the 5,000-foot Burmese mountains. The non-commissioned pilot consulted his compass—the sum total of his navigational instruments—and pushed his light plane down on the tree tops. He was over enemy territory. His combined firepower was a .45 caliber revolver which he brought along purely for morale purposes. He wore no parachute. The case of dynamite in the rear section did not add to his peace of mind as the monsoon winds bounced his plane perilously close to the mountain crags. Part of his cargo included caps for the dynamite, but he carried them in his pocket so that he could jettison them quickly in case of trouble.

He found his destination—900 feet of open ground, which under no stretch of the imagination could be called a landing field. It was a rice paddy—the only piece of ground within 50 miles that was not covered with dense foliage and giant trees. The pilot was on a double mission of mercy. He was carrying supplies to a group of Merrill's Marauders who were fighting behind the Japanese lines in northeastern Burma. On his return trip, he was to evacuate a wounded man.

The pilot approached the rice paddy, pancaked down and used the full length of the field to make his landing. He stepped out of his plane and looked for the men who were to meet him there. No one was around. The day before, this area had been held by more than a hundred men. Suddenly, a lieutenant poked his head out of the bushes and yelled, "Start running, buddy. The Japs are 200 yards behind you." The pilot took off into the jungle and the enemy was finally beaten back.

This liaison pilot wasn't especially surprised at the proximity of the enemy. For six months, his outfit had been operating right under the noses of the Japs, evacuating wounded, carrying supplies, doing reconnaissance and performing a variety of other functions in support of the ground troops who were fighting deep in the jungle country. Even if the ground forces could have marched safely to the nearest source of medical attention, it would have taken at least two weeks to batter their way through the jungle terrain. The light planes made the trip in a couple of hours.

Liaison squadrons are a comparatively new addition to the Army Air Forces. The first squadron went into a combat theater in spring of 1943. Several squadrons are on duty in the European and Mediterranean theaters, two are in Burma, a few in China, and additional squadrons are being organized at the present time. Officially, the mission of the AAF liaison squadrons is to provide theater and task force headquarters and ground force units with general liaison, mes-

senger and courier service in areas behind the front lines of enemy troops. Actually, liaison squadrons are performing functions in combat theaters which will never be found on any activation chart.

Three types of planes—the L-1, L-4 and L-5—were used. The L-1, no longer in production, has a cruising speed of approximately 100 mph, a 280-horsepower Lycoming engine and a landing speed of about 36 mph. The L-4, now used primarily by Field Artillery, has a cruising speed of 75 mph, a 65-horsepower Continental engine and a landing speed of approximately 38 mph. The L-5, now the plane officially assigned to AAF liaison squadrons, cruises at about 110 mph, lands at approximately 50 mph and has a 185-horsepower Lycoming engine.

Each liaison squadron has 7 officer pilots and 32 noncommissioned pilots, of whom 4 are master sergeants, 12 tech sergeants and 16 staff sergeants. The AAF light plane operations are not to be confused with the use of liaison squadrons by the artillery. AAF liaison squadrons are attached to the various air forces where they may be assigned to the ground force units for over-all liaison functions. Their planes are piloted by air force personnel. Artillery liaison planes are flown by Artillery personnel and are used only in connection with the operations of the Artillery.

To demonstrate the potential performance of the light planes, two 14th Air Force officers actually flew the Hump in liaison planes, a procedure which originally had been recommended against when the question came up as to the best method of moving these planes from India into China.

A BIG PUNCH

Having heard of the difficulties of hopping the Hump, Maj. Fred Welsh and Capt. Edward Maher decided to do it in a pair of L-5s. They took off from a base in Assam and landed at an advanced field in China. Major Welsh reports, "We flew by the seat of our pants just as the old barnstormers used to do. Of course, we made a thorough check with the China National airlines and the Air Transport Command, so we knew the low spots and the passes to hit.

"We got as high as we could—9,000 feet—and negotiated most of the passes. We had to drop to 300 feet some of the time, just skimming the tree tops. Coming through the main pass, we had to fly single file, but we got through without any trouble."

In Burma, there were two separate light plane operations. One squadron attached to the 10th Air Force, originally headquartered at Ledo, India, supported the Chinese-American forces in India which included Merrill's Marauders. The other light plane force was part of the Air Commandos, under the combined direction of Cols. Philip Cochran and John Alison who coordinated their activities with the late Maj. Gen. O. C. Wingate of the British Armed Services.

Even before the commando operations began, the liaison planes went into action in response to a desperate call for help from the British ground troops in southern Burma. A large British force had been surrounded and trapped in the Arakan section and was in the immediate danger of being wiped out. Many hundreds of the British had been wounded and there was no way to bring them out of the jungles. Seven light planes and nine sergeant pilots were sent down and in 15 days they successfully evacuated 700 casualties. The missions were so important that the British provided Spitfire cover for the light planes. In all of their later operations, however, the liaison planes never had any fighter protection.

The use to which the "little" planes were put in the commando strike may be considered a typical example of their general capabilities. General Wingate, speaking of these activities, said, "Without you men and your aircraft, this campaign could not have hoped to be a success."

That a type of plane which heretofore had been considered nothing more than a message carrier and a "toy airplane" should receive such high praise is a tribute to all concerned, who found new ways to solve old problems. One important difficulty faced was the problem of keeping supplies flowing into the ground forces, who were completely isolated in the jungles. Liaison planes formed a team with C-47s, and handled a problem which neither type of plane could have done alone. The transports came in to the large back bases with a full load of supplies and the light planes dispersed this materiel to the small advanced outposts spread throughout the jungle.

The light planes flew into paddy fields located right in the heart of the Japanese territory. They took off and landed over the heads of the defending enemy. One pilot got 21 holes in his plane when he turned left on a take-off rather than veering to the right, away from the Japs. It was not unusual for the opposing forces to occupy both ends of the same landing field. Liaison pilots actually had to fight [illegible] for possession of their aircraft. On one occasion, the Japs advanced and captured some of the [illegible] pilots turned themselves into ground troops, joined the British forces and recaptured their planes.

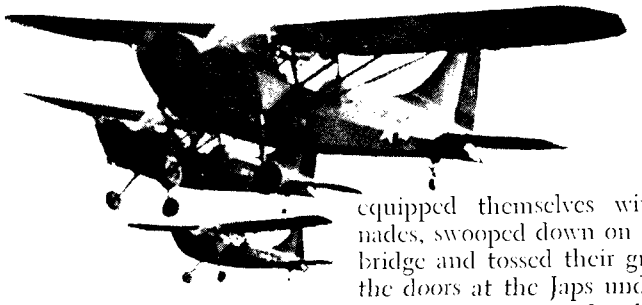
Most maintenance was handled by the liaison pilots. A roving crew of mechanics went from outpost to outpost doing the heavy work and reclaiming junked parts, but usually a light plane pilot flew his plane, fought to protect it and took care of it himself.

Colonel Cochran said, "Our light planes did everything. They evacuated wounded and did one of the finest jobs I have ever seen. They were cargo carriers, transporting everything from barbed wire and bedding rolls to mortars and mortar shells. We used them to help direct our ground activities, to observe enemy movements, and a couple of times we made bombers out of them and got excellent results. If we needed to round up the ranking officers from various points in the jungle for important conferences, the light planes did the job."

Exact figures are not available, but Maj. Gen. George Stratemeyer, commanding general of the Eastern Air Command, estimates the light planes flew 5,000 to 8,000 sorties during the commando operation. They evacuated in excess of 2,000 casualties. In his official report to General Arnold, General Stratemeyer said, "Most spectacular perhaps of all the air commando aircraft has been the performance of 100 light planes attached to the group."

During the commando operation, the light planes performed many different functions, the most important of which include:

Evacuating wounded. The L-1 and the L-5 normally carry only two men each. But in response to the urgent situation,



it was routine for the L-5 to carry three, and the L-1, four passengers. On occasion, the L-1 carried five men. There was no other way to bring out the wounded. As Colonel Alison says, "The men were very glad to sacrifice comfort for safety. A wounded man behind enemy territory is a worried man. The knowledge that the light planes were evacuating the casualties was a great help to general morale. Those planes came into postage stamp fields of 500 feet and less. You'd look at the heavily loaded planes and wonder how in the world they could do it. There was jungle on all sides of the strips and we lost a couple of planes when they crashed into the trees on their take-offs. Because the fields were so small, only a few planes at a time could come in, so we ran a regular shuttle system with some planes making three and four trips a day."

Carrying supplies. The official specifications of the L-5 indicate that it was built to carry approximately 250 pounds of cargo. Colonel Cochran commented, "Our normal load was twice that. And usually more." The liaison planes carried supplies attached to each wing and, when no landing fields were available, dropped the materiel to the troops below by use of parachutes. Whenever possible, however, landings were made to take advantage of the full cargo capacities of the light planes. On one occasion, the liaison planes saved the day for a British force which had been isolated and cut off from the main body. The planes were loaded down with mortars, mortar shells, rations and barbed wire, and flown right into the fighting zone. They landed with sufficient supplies to enable the British to hold off the Japs until an airstrip could be built to handle the big transports.

Bombardment. It seems completely incredible that liaison planes can be turned into bombardment aircraft. The Commandos attached 100-pound bombs to the wings of the L-5, and a 250-pound bomb to the belly of the L-1, and bombed the enemy from low altitudes. Once, a force of Japanese took cover under a bridge and fought a strong delaying action from their protected position. Two men took off in an L-5, equipped themselves with hand grenades, swooped down on the top of the bridge and tossed their grenades out of the doors at the Japs under the bridge.

Spotting targets for bombers. The light planes were also used to drop smoke bombs on enemy targets, directing the heavy bombers to the strike point. One man sat in back of an L-5 with smoke bombs which he tossed overboard when the plane flew in at zero altitude. The heavies then bombed on the smoke. This trick was pulled only four times because, as someone explained, "It got so that it just wasn't healthy coming into a Jap target a few feet over the ground in a plane going no faster than a hundred miles an hour."

Transport of personnel. The nearest the light planes came to performing their regular liaison function was when they were used to gather up the various commanders who were at different spots in the jungle and bring them to a central meeting point. Usually, small groups of men were fighting in isolated sections spread out over 100 miles. If, for example, General Wingate wanted to talk to his brigadiers, light planes would round them up within an hour. It is useless to estimate how long it would have taken these men to come in without liaison planes—it just couldn't be done. With the light planes, Colonels Cochran and Alison could visit all of their units within a short time and be advised of the current tactical situation. Otherwise, because communications were haphazard, they couldn't even guess.

Reconnaissance. In the Burmese jungles, it was often impossible to know who was a mile in front of you without going up in a light plane and taking a look. The liaison planes worked in close coordination with the advancing ground forces by reconnoitering the territory and dropping notes to the advancing columns with information as to the Japs' strength and position. Light planes were used to keep a close and constant watch on all trails leading into the landing strips to detect the existence of any Japanese patrols.

Perhaps the most unusual of all the operations was performed by a helicopter which was used in conjunction with the liaison planes, marking the first time that a helicopter was ever employed in combat. A light plane carrying three slightly wounded passengers was forced down behind the Jap lines with an engine failure. There wasn't sufficient cleared ground in the vicinity for another light plane to land, so the helicopter came into action.

Initially, notes were dropped from a liaison plane, advising the stranded party to make its way up a ridge away from the Japs who were thought to be in the neighborhood. The men hid for four nights in the jungle, being kept alive by supplies of food, water and medical supplies dropped by the light aircraft. Meanwhile, a YR-4, two-place helicopter, piloted by Lt. Carter Harman, took off from Lalaghat and flew by stages to Taro, crossing a 6,000-foot mountain range en route. At Taro, an extra gasoline tank was installed for the 135-mile flight to a landing strip behind the enemy lines.

The stranded men were again directed by dropped notes to go to a nearby jungle clearing. The helicopter was flown to a light plane strip about five miles from the paddy clearing and there received a wig-wag signal from a liaison plane that the party was ready to be rescued. Lieutenant Harman made two flights to the clearing, returning each time with two men. Additional rescue missions were made by the helicopter, including the pick-up of two more casualties, one of whom was a litter patient who had to be strapped on the outside of the helicopter. Colonel Cochran, in a letter to Colonel Alison who had returned to the States, wrote, "Today the egg beater went into action and the damn thing acted like it had good sense."

Recent experiments by the Wright Field engineers with light plane operations include the use of a microphone so that liaison pilots can deliver a vocal message from as high as 3,000 feet, eliminating the necessity of note dropping. Colonel Cochran summed up the activities of the light planes in Burma by saying, "They did everything but talk." Now, they can actually do that. ☆

Lost Parachutes

Nos. 42.9643, 42.6689, seat type; return to transportation officer, 27th Sub-Depot Supply Officer, Eglin Field, Fla., Attention of Lt. C. F. McCoy, Electronics Section.

No. 42 1037371, seat type, return to Operations Officer, 369th Fighter Group, AAB DeRidder, La.

Nos. 40-306, 41-33439, 42-486128, seat type; return to Base Operations, Jackson Army Air Base, Jackson, Miss.

No. 42 343465, seat type; return to Lt. F. D. Butterfield, AAF Pilot School (Basic), Marana Field, Tuscon, Ariz.

GET WISE

Here are a few of the easily avoided mishaps that are costing the AAF many lives, limbs and manhours. Get wise: you can pay for mistakes like these with your life

By LT. COL. GEORGE S. RICHARDSON, MC

9th Air Force

Case I. Some people should never be given a knife. They're bound to hurt themselves. Take the GI in Italy, for instance. Instead of plunging his issue knife into a German belly, he sent it into his own. Not intentionally, of course. He wasn't committing hara-kiri. He was merely trying to make a hole in some leather. Placing the butt of the knife on the table, he pressed the leather against the point. Darned if that knife didn't go right through the leather and into the soldier's abdominal wall. To repair the damage, a surgical unit required an hour—an hour of valuable time which could have been given men wounded in action.

Case II. Perhaps the four officers, who were riding a jeep in Normandy, couldn't read. It's hard to believe they would be foolish enough to disregard the sign which in plain English warned: "Shoulders are not free of mines." The quartet was traveling a rural road, when for some reason they decided to turn back. The driver swung out on the shoulder of the road and all that settled to earth after the explosion was dust. The grave registration men are still looking for the dog tags.

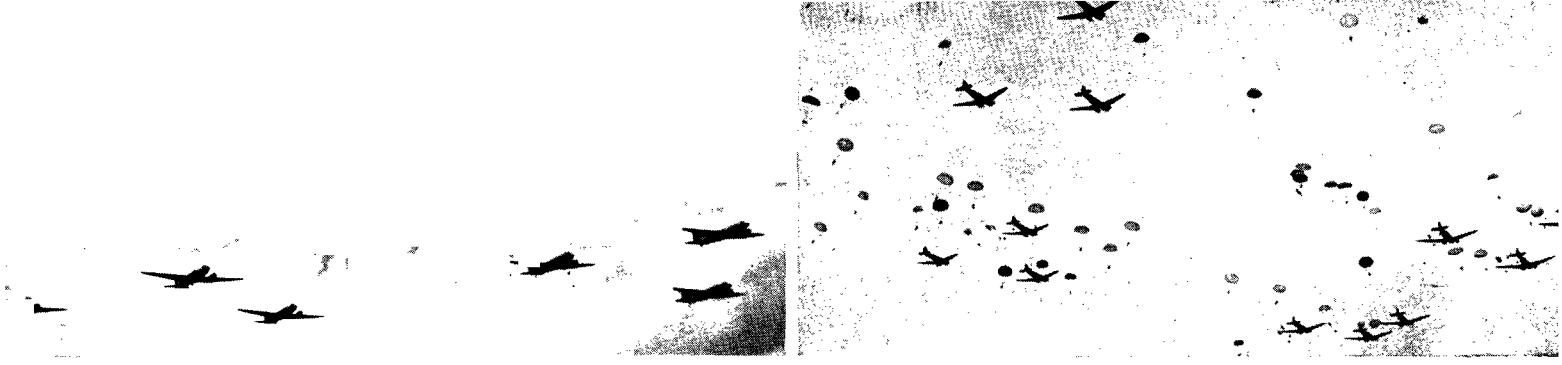
Case III. The ground crewman was a good-looking 19-year-old kid. But he isn't good-looking any more, because he didn't use his head. He decided to make a cigarette lighter from a 20 mm shell, figuring the gadget would be a nice souvenir. After removing the projectile, he found the wadding was packed tightly. Picking at it with his knife didn't seem to do much good, so he lightly tapped the base of the shell. Sometime later, he woke up in a field hospital. He couldn't see, and his hands and ear hurt him. He didn't realize immediately that both eyes had been blinded by casing fragments, that both hands and part of one ear were gone and that his face would always carry blue scars from the shower of exploding powder particles. He knows all about it now. He knows also that fooling with ammunition is dangerous. But he got wise too late.

Case IV. Clean clothes are nice, but there's a limit to the price a man should pay to get them. A line chief in Africa had a whale of a laundry bill—the torture of infected burns for days and nights on end, six months in the hospital and ugly scars for life. Cleaning facilities weren't very good in the desert, so the line chief washed his coveralls and pants in a bucket of gasoline. It was unfortunate that a spark from a cigarette touched off the fumes, but lucky for him that a B-24 crew was willing to risk a flight through a sandstorm to get him to a general hospital in time to save his life. He's home now, but he'd rather be back on the line, keeping those planes in shape to speed the victory.

Case V. "Don't point" is a rule which applies to off-duty gun-handling as well as it does to social behavior. Every soldier has been told time and again never to point a gun at anyone he doesn't intend to shoot. An AAF man in France disregarded the rule to his sorrow. Playing "soldier" with a group of French youngsters, he "charged" at them with his carbine. Apparently the safety was off, for the piece was fired, and a 15-year-old boy was shot through the abdomen. The kid lived only because a field hospital was at hand and surgeons were able to operate within a few minutes. But while the boy's life hung in the balance, the soldier was disconsolate. He still feels pretty unhappy about the whole business.

Case VI. Booby traps are not always in obvious places. Six enlisted men in Normandy found that out. To escape the unceasing rain, they took refuge in a building of one of the small towns. They should have known better, for the area had just been occupied. There were no Lugers lying around, no rifles stacked in a corner, no pictures on the wall, no trip wires or steps. Nor did they find any thermite candy nor bars of the soap that explodes and blows your hands off. They felt they were pretty safe. But in cleaning up the place, they moved some "junk" which did the trick. The burial detail found enough pieces to make some sort of a showing. All the men were insured, but their folks thought a lot more of them than they did of $10,000.

Case VII. Tense, white and self-reproachful, the Service Group lad came into the field hospital. He said he wished "someone would give him a good, swift kick." But that wouldn't help a bit. A kick wouldn't replace his right hand. When the emergency dressing was removed, the hand looked just like pictures you've seen of Jap hands shattered by suicidal grenade explosions. It was a grenade that did the job on the Service Group boy, too. But it wasn't thrown by the enemy. The "dud" he had picked up proved to be alive. He was flown to a general hospital where the hand and part of his forearm were amputated. The boys in his outfit said: "Too bad about Joe. A good guy like him didn't deserve such luck." But it wasn't luck. It was sheer carelessness. He'll wear a prosthetic hand the rest of his life. ☆



Backbone of airborne assault in past operations and for the new First Allied Airborne Army is the C-47 shown here in invasion formation.

AIRBORNE ARMY

THE history of warfare is the chronicle of armies' efforts to turn the enemy's flanks and to protect their own. Defenders try to anchor their lines at both ends. Attackers keep maneuvering until they somehow envelop the enemy, getting to his side or rear.

In this war, air bombardment has been the great new means of getting behind the enemy. Industries, transport systems, and supply depots have been bombed to rubble. Communications lines have been slashed. Land forces have been harried and thrown disastrously off their stride.

Now comes a still newer development, a method by which the enemy's ground troops may be enveloped from a wholly unpredictable quarter—vertical envelopment from the air. It is the First Allied Airborne Army.

This tough, spectacular force, organized and commanded by Lt. Gen. Lewis H. Brereton, is not to be thought of in terms of past paratroop or airborne operations. It is more than a spearhead. It is an army in every sense—a strategic striking unit of enormous power, able to supply and maintain itself and to function independently against major objectives. Nothing like this army has ever been seen.

Allied airborne operations have previously been tactical in nature. Paratroopers and infantry, trained by the ground forces, have been flown in troop carrier planes and gliders to the scene of the battle for quick, specific jobs. To take airfields, perhaps, or knock out artillery positions. Their work, though critically important, has been incidental to larger operations. Once landed, they have fought under command of ground officers and, except for supply or evacuation, have had no further connection with the air forces.

This was Germany's technique, also. The Germans never organized air troops beyond divisional status and always relied upon the Luftwaffe for transport and supply. It is realized now that Germany's early airborne successes were largely due to a lack of preparedness on the part of her victims.

This has not been the case in Allied airborne assaults. Most of these have taken place against stubbornly defended enemy territory. Normandy provided perhaps the most brilliant success of such operations. On D-day three fully equipped divisions were landed behind German lines with the set task of seizing and holding the flanks of the Cherbourg Peninsula while behind them seaborne troops slogged up the beaches to overcome enemy resistance. General Eisenhower has said that without achievement of this mission the entire assault might have been impossible. Later, in the south of France, paratroops and airborne infantry were used to occupy the high ground overlooking the rocky coves and inlets toward which hundreds of Allied landing craft were steering.

These exploits, along with others in Sicily, Italy, Markham Valley of New Guinea, and elsewhere, surpassed in real effect any of the vaunted German assaults from the sky and demonstrated the value and unexplored possibilities of the airborne attack.

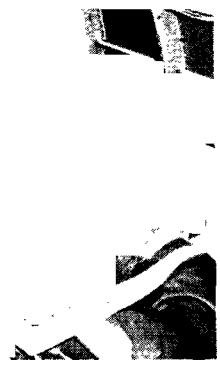
The First Allied Airborne Army is a logical outgrowth of all this experience. Conceived and planned by General Marshall and General Arnold, this army is a weapon of untold military and psychological power. The projected scope of its activities is enough to make every German start looking under his cot at night.

Composition of this army cannot be set forth exactly, but it contains elements of paratroops, airborne infantry, engineers, signals and communications men, and artillery. Supporting the combat force are streamlined supply, ordnance and medical units.

The air teams consist of troop carrier crews, radio operators, weather experts, maintenance crews, etc. Most of their planes, gliders, and equipment are precisely the same as have been used heretofore, with C-47s doing the bulk of the heavy duty.

From a personnel standpoint, this army is the interna-

Supplies and paratroops are being dropped in the photos below during intensive training maneuvers which preceded the big Normandy drive.



Airborne soldiers, shown here during invasion of southern France, can be used by FAAA to win and consolidate airheads behind enemy lines.

Here is a survey prepared just before General Brereton's tough, colorful organization invaded the Netherlands

By MAJ. CHARLES D. FRAZER

AIR FORCE Overseas Staff

tional set of the Allied armed forces. It is composed of both British and American airborne troops and airmen, plus men of French, Polish and other nationalities.

All such components are organized under a single command and will operate under that command at all times, subject only to the needs of Supreme Headquarters. Flexible, capable of striking anywhere with great energy, it will function on a basis of equality with all other field armies.

No longer an incidental force, but one having large strategic objectives of its own, the Airborne Army resembles the cavalry of other wars. It is designed for flash performance rather than a long, enduring period in the field. Equipped with motor transport, light guns, howitzers, and the usual infantry weapons, these troops are able to inflict severe damage on the enemy and to dislocate his operations in various ways.

Nevertheless, as the commanders point out, this army is a fragile and expensive tool of war. It should be used only when potential results make the risk worth while. Just as it is wasteful to utilize air bombardment against a target which could be leveled as well or better by field artillery, so is it unlikely that the airborne soldiers will ever be employed against a point which can be taken by regular infantry or armored forces.

This army might be used, on the other hand, to cut and capture a vital railway system well behind enemy lines. Or it could be dispatched to prevent the retreat of an opposing army, dropping troops to close a gap in a pocket which cannot be closed any other way, to seize bridges upon which the enemy is counting for reinforcements or supplies, to separate two armies which may be trying to consolidate, and for similar purposes.

Defensively, too, this army could be employed with telling effect, perhaps to plug a hole in Allied forward lines or to protect a major flank against sudden onslaught.

Whatever the purpose, however, the airborne army is essentially built for quick, unnerving, costly blows. When it goes into action, it should be and is prepared to hold an area until relief by regular troops can arrive. Its job is to win and consolidate an airhead, generally behind enemy lines (a nebulous figure of speech in the present war), supplying and maintaining itself the while, and then to be replaced by heavily armed ground troops.

Several months ago such an army could barely have been conceived, much less organized. Air supremacy means everything. Not only must the airborne army be sure of definite local air superiority while landing and assaulting initial objectives; it relies upon constant air support against heavy enemy armor. As a hardened infantryman once said, "You really need air power to hold a sector; you've got to have it to advance, and you certainly can't retreat without it. In other words, brother, it's important."

This is one of the reasons why probably half the commanding officers of the Airborne Army are airmen. These men know what is possible in the way of air support and supply. They know the problems to be solved in any type of operation.

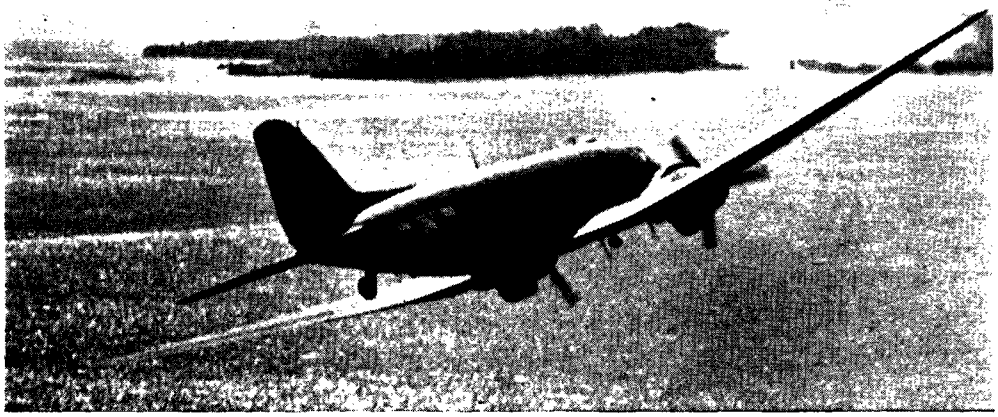
Formation of the First Allied Airborne Army has vastly simplified assault technique. It has brought under one head all possible elements of airborne troops, merged them with the prime movers—that is, the troop-carrying units, completely standardized implements and techniques and training. Its headquarters staff, manned by American, British, and Allied ground and air officers, works as a unit and creates plans based on a thorough interchange of ideas and requirements. That staff is responsible for the success of the entire mission—for transport, landing, supply, and all subsequent field operations.

Many military leaders believe that the airborne army will change the entire pattern of warfare—and even of peace. Its potential employment as a peacetime police force is apparent. Whatever happens, it is a bold and daring idea. ☆

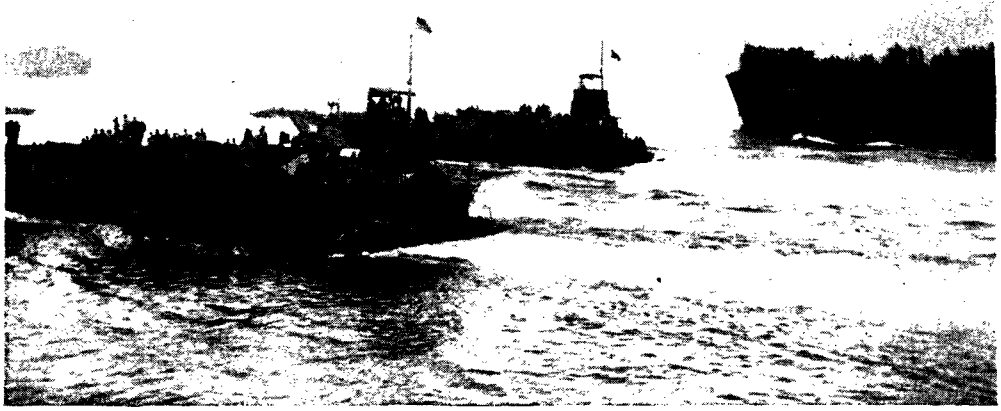
Countryside between Toulon and Cannes is speckled with parachutes that brought in men, supplies and equipment like field piece at right.

THE INVASION OF NOEMFOOR

In an overwhelming sea and air assault, Noemfoor Island, located at the mouth of Geelvink Bay in Netherlands New Guinea, was wrested from the Japs in exactly seven days. Noemfoor is a strategically important stepping stone to Sansapor, springboard to Halmahera and the Philippines, 600 miles away. On July 2 infantry went ashore on the west side of the island near the key Kamiri airdrome which was being hit at the same time by paratroops dropped from C-47s of the 5th Air Force. Paratrooper in foreground is getting his chute under control while B-17 patrols the sky. The airdrome was captured in two hours.



Smoke in background is from Japanese shore guns which were silenced by cruisers, destroyers and bombers as the invasion fleet and C-47s moved in. Since Noemfoor Island has no seaworthy approaches, aerial reinforcement of troops and supplies was the most efficient method available.



With the coastal batteries knocked out, LCIs and LSTs headed for the beach at dawn, doors open and ramps down ready for the Ducks to hit the surf. Additional equipment and supplies were dropped to the men from transports as soon as the beachhead gains had been consolidated.

Dead Japs in a trench at the edge of the airfield. Jap losses were 1,684 killed, 171 taken prisoner; our casualties were very light.

Humiliated paratrooper swings unhappily from a tree at the fringe of the airfield watching his buddies take the Kamiri strip.

the B-29 and YOU

By MAJ. LUTHER DAVIS
AIR FORCE Staff

THE gunner had completed 85 missions in B-25s and he was being interviewed at an AAF redistribution center. "If you had your choice," said the interviewer, "what would you want to do next?"

Loud and clear came the sergeant's answer. "I want to be assigned to the B-29."

At this particular moment it can be said safely that casual aircrew members with combat experience in four-engined planes who get back to the States and request B-29 training have a good chance of getting it. Others with combat behind them may get into the Very Heavy program upon their own request if their particular experience isn't more urgently needed elsewhere. Newly graduated aircrew members take the same chances with probabilities, rosters, and just plain luck that they always have.

Let's assume that you have been tapped for the B-29. This means, first of all, that you go to the 2nd Air Force which is commanded by Major General Uzal G. Ent with headquarters in Colorado Springs, Colo. For transition training, individual combat crew member training, and replacement training, some may go to Brig. Gen. Newton D. Longfellow's 16th Wing. There many of you will see your first Superfortress.

Many novitiates to the Boeing Superfortress admit to being disappointed at finding that the thing is just an airplane, despite all the publicity, and not a magic carpet at all. It smells of gasoline and hot metal, requires constant attention and the same continual application of common sense as any other plane.

However, given the fact that it is an airplane, it's the most complete, the most advanced, and in many ways the most efficient in the world. On your first ride you'll notice that, for the crew members forward particularly, it is astonishingly quiet. The pilot, copilot, bombardier sit well ahead of the engines; the interior is sound-proofed so that those in command of the plane can talk to each other without benefit of intercom.

The pilot and copilot have fewer instruments than they have in any other four-engined plane—because most of the purely engineering instruments are given to the flight engineer, who has his place of business nearby. The navigator has a good place to work and a very complete set of self-computing, handy gadgets; an astrodome he can really get a sight from. The bombardier sits where he may signal or speak to the pilot and copilot without any time-lag. The radioman has lousy visibility but more equipment than KDKA, Pittsburgh. The gunners—they enter the emancipated life.

There's a system of remote fire control based on the fact that all B-29 gunners, except the tail gunner, are removed from any manual contact with their guns and fire them from remote stations. The tail gunner, unlike the others, is near his guns—he can at least see them—but he doesn't actually touch them.

Sighting is by automatic computers which correct for range, altitude, temperature, and airspeed. This means that gunners, removed from their guns, are spared the jar and vibration of recoil making it much easier to track and hold a target. The gunner's personal comfort is greatly increased as he doesn't have to crowd himself in behind his guns and ammunition. They have comfortable seats, room to stretch and move around, and more armor protection than in any other combat plane.

The B-29 handles more easily than any other four-engined airplane due to the perfectly balanced controls. It takes off easily with partial flaps at between 20 and 30 degrees but does not gain altitude or speed very quickly immediately after take-off. Because of the slim and aerodynamically perfect design of the engine nacelles, cowls must be handled carefully and cruising speed reached as quickly as possible.

The B-29 program is expanding all the time. If you should find yourself part of it, here is a preview of what you can expect

It has pronounced step characteristics in flight and is very definitely a position airplane. It flies easily and well on automatic pilot; has excellent stalling characteristics, giving plenty of warning. Once stalled it will oscillate itself out of a dive even if you don't touch the controls.

Landing is quite simple, although students have a little shock in the beginning because they sit so far to the side of the center line—it is nine feet from the pilot's left hand to the copilot's right. Eight to twelve hours is about usual for qualified multi-engined pilots to check out in the B-29—including night flying, instrument, and all the rest.

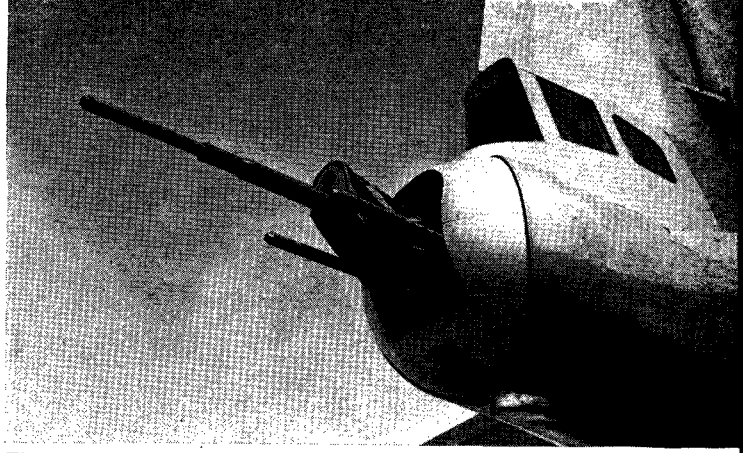
Operational training for the B-29 is the responsibility of the 17th Bombardment OTU Wing commanded by Brig. Gen. Frank A. Armstrong, Jr. General Armstrong will be remembered as the man who led our first six heavy missions over Europe; as the man who reorganized and headed the old 46th Wing which trained many B-17 crews.

In Nebraska and Kansas, the 2nd Air Force has evolved a system of training in which the permanent base staff works next to and with their Group opposite numbers so that each Group—B-29 Groups are on about the same T/O as any other heavy Group—gets the benefit of a well organized base with complete continuity throughout their training period.

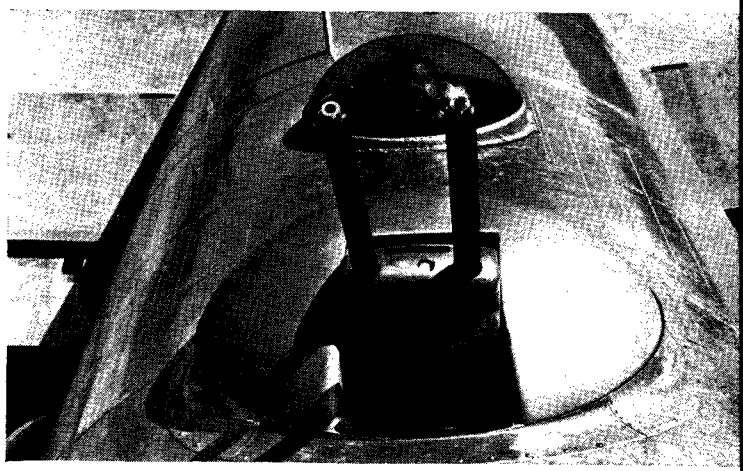
The 16th Wing's Combat Crew Training station and the 17th's Operational Training station work under the same directive from Headquarters 2nd Air Force. While some aircrew members go through both the CCTS and the OTU more get only the OTU training. Thus a man may expect not less than four months and not more than seven months to elapse from his entry into B-29s to his departure for combat.

The training directive provides that training be in the B-29 with the B-17 as a companion trainer —you can learn navigation in the Fortress just as well as in the Superfortress. The latest directive from 2nd Air Force calls for 126 B-29 hours and 44 B-17 hours at both the CCTS and the OTU.

All training in the B-29 has to take cognizance of the size of the plane and of the fact that, due to the plane's division into separate compartments, crew members



The tail gunner sights from the glasshouse above his two fifty calibers and one twenty millimeter cannon. He has his own pressurized compartment, and plenty of soft upholstery to lie on.



The gunner in the top blister runs his own guns and also is in a position to help coordinate and control the fire of the other gunners should there be any question of target priority.

must be very highly disciplined and the entire crew must cooperate and work as a team more than in the B-17 or B-24. While the pilot can talk to his crew forward he has to trust the flight engineer to handle the cowls, to make correct throttle adjustments for the cruising conditions the pilot calls for, to compute correctly the loading and consequent performance of the plane. He can't see his wheels or all his engines—has to trust the blister gunners to watch them for him.

Communication between the forward pressurized compartment and those aft is by means of a small, round, padded tunnel running above and the entire length of the bomb bays. It seems obvious that nobody's going to want to spend much time in this claustrophobiac's nightmare while a fight's going on.

In other words the pilot—who, in B-29 literature is always called the airplane commander—won't see his gunners when the plane is airborne; runs a good chance of failing in his own job if the gunners don't help him by reporting on the flaps, landing gear, engines. So that the airplane commander will have personal acquaintance with the rest of his crew it is standard B-29 procedure for all members to line up under the wing both before and after flight and stand inspection by the pilot.

There are eleven men in the B-29 crew; pilot, copilot, bombardier, navigator, flight engineer plus six enlisted men. The bombardier, navigator, radio operator find their job very similar to what it is in any other plane—just more of it—and the flight engineer is unique; was trained for the B-29 from the very beginning. Thus only pilots and gunners have any real transition problem.

Pilots entering the program have either, (1), a four-engined ticket to begin with, (2), a thousand or more hours in other types of aircraft, or, (3), are just out of flying school with a total of about 300 hours of which about 100 have been in four-engined aircraft. With such aerial backgrounds pilots have no trouble with the B-29. Truth is quite a few twin-engined pilots have checked out in B-29s with neatness and dispatch.

The gunners spend hours on mock-ups and ground-borne gadgets before they ever see their airplane, although computing sights are theoretically easier to operate than the conventional open sight. The great thing for them is to learn a system of fire control and fire priority that requires a high degree of cooperation and discipline—teamwork.

In fact that's the story on every job in the B-29—more than ever you'll be a member of the aircrew; more than ever dependent on what the others do and don't do. ☆

What's your air force I.Q.?

This month's AIR FORCE QUIZ is a little rough. Credit the usual five points for each correct answer. A score of 85 or above this time is excellent; 70 to 80, not bad; 60, fair; below 60 and—well, it could happen to anybody.

Answers on Page 59

1. Maj. Gen. George Stratemeyer is commanding general of the
A. *Far Eastern Air Command* B. *10th Air Force*
C. *Eastern Air Command* D. *13th Air Force*

2. The wingspan of the B-29 is
A. *174.6 feet* B. *192.7 feet* C. *119.3 feet* D. *141.7 feet*

3. When a man is returned from an overseas tour of duty, he normally goes to a Redistribution Station nearest
A. *The port of debarkation* B. *His last station in the United States*
C. *His home* D. *The station to which he most likely will be assigned*

4. An officer's leave may accrue for a period of four years.
A. *True* B. *False*

5. The first shuttle bombing flight from Italy to Russia took place on
A. *June 2* B. *May 17* C. *July 10* D. *June 29*

6. The Commanding General of the 20th Air Force is
A. *Brig. Gen. Haywood Hansell* B. *General Henry H. Arnold*
C. *Maj. Gen. Hoyt Vandenberg* D. *Maj. Gen. Davenport Johnson*

7. Troop carrier Pathfinder crews in the Normandy invasion flew in
A. *C-47s* B. *B-17s* C. *C-46s* D. *C-87s*

8. The horsepower of the P-63 engine is
A. *1,000* B. *1,700* C. *1,200* D. *1,500*

9. Engine temperature is controlled on a liquid-cooled engine by
A. *Pressure baffles* B. *An oil temperature regulator*
C. *Radiator shutters* D. *A thermocouple on the cylinder*

10. The Flying Dutchman is
A. *A native of Holland trained by the AAF* B. *The name given to the P-61*
C. *A life boat dropped for rescue purposes* D. *Part of the engine of the B-29*

11. Normally, an American rocket firing plane carries how many rockets?
A. *Four* B. *One* C. *Three* D. *Six*

12. Carney Field is located on
A. *Bougainville* B. *Guam* C. *Guadalcanal* D. *Tinian*

13. The Jap aircraft referred to as a "Betty" most closely resembles our
A. *B-26* B. *P-40* C. *B-17* D. *P-39*

14. The yearly base pay of a colonel in the AAF is
A. *$8,000* B. *$2,500* C. *$4,000* D. *$6,000*

15. The approximate speed of the R-4 helicopter is between
A. *120-130 mph* B. *90-100 mph* C. *60-70 mph* D. *150-160 mph*

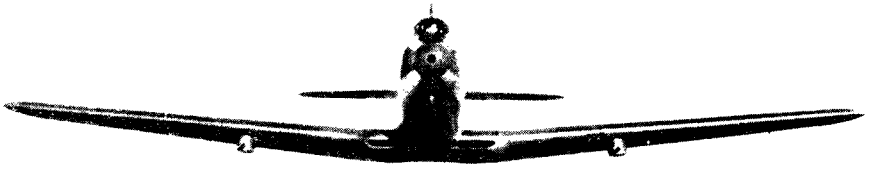
16. One silver oak leaf cluster is authorized for wear in place of how many bronze oak leaf clusters?
A. *Five* B. *Three* C. *Ten* D. *Eight*

17. The Bonin Islands are located between
A. *The Marshalls and the Marianas* B. *Japan and China*
C. *The Marianas and Japan* D. *The Carolines and the Marshalls*

18. The letter designation "L" stands for what type of aircraft?

19. The westernmost island in the Aleutian chain is
A. *Umnak* B. *Kiska* C. *Adak* D. *Amchitka*

20. Identify this airplane.



The hard facts about INCOME TAX

By Brig. Gen. L. H. Hedrick

The Air Judge Advocate

The following article is the third of a series written for AIR FORCE *by General Hedrick.*

As a soldier you have certain privileges, but that doesn't necessarily mean you're exempt

MANY servicemen returning from overseas have been astonished to find themselves in debt to the government for income taxes. Somebody has told them, most of them can't remember just who it was, that as long as a man is on duty outside the United States he is exempt from taxation.

This is typical of the misinformation that is going around concerning the application of the tax laws to military personnel. There is more confusion about taxation than about any other phase of the civil affairs of service men and women.

One rumor has it that every soldier below the rank of lieutenant colonel is excused from income taxes. Another is that when a man enters the service, any taxes he owes on previous income are wiped out. And so on and on.

It is time to do some debunking. This article will undertake to explain, briefly and simply, how the tax laws affect you as a serviceman. It won't make you an expert, but it will offer some guidance, and it might serve to keep you out of trouble with your Collector of Internal Revenue.

It is quite true that you, as a soldier, are entitled to special consideration as far as your income tax is concerned. To begin with, consider the special provisions for service personnel which are currently applicable. It will be desirable later on in this article to point out the respects in which current provisions differ from those of previous years, since some men and women now overseas may have to file two or three years' tax returns at once when they return.

Perhaps the most important current provision is the one which exempts the first $1,500 of Army pay from income taxation. What that means is that a major, for example, with a base pay of $3,000 and no other income, reports only $1,500 of gross income on his tax return.

The $1,500 exemption is good only for Army income. A private, for example, who has only $600 of Army pay gets an exemption of $600. If, from outside sources, he has other income, he gets no deduction from that merely because he is in the service.

Any serviceman who, having applied his military exemption, finds that his remaining gross income, Army pay or otherwise, amounts to $500 or more must file a return, even though on the basis of that return he owes no tax. This rule applies regardless of the taxpayer's marital status or the number of his dependents.

It should be emphasized here that taxable Army income includes more than base pay. It also includes flying pay, longevity pay, overseas pay, parachute pay and any profit one might have made from travel allowances, either mileage pay or per diem. Only rental and subsistence allowances are not income for federal tax purposes.

A complete vacation from tax obligations, both returns and payments, is permitted only for service men and women serving overseas. For them, the due dates are simply postponed until the 15th of the fourth month following their return to the United States, when they must file all back returns and pay all back taxes, unless they are granted a deferment.

For this postponement based on overseas service, such service need not be continuous. A soldier who has been overseas for as long as 90 days may return to the United States on temporary duty for a period up to 90 days without losing his postponement privilege.

Congress has made provisions for persons who took substantial cuts in income when they entered military service. A soldier who can show that his ability to pay his taxes has been materially affected by reason of his entering the armed forces may postpone actual payment until six months after his discharge. An application form for this deferment may be obtained from a Collector of Internal Revenue. Your legal assistance officer will help you prepare this application.

Contrary to a widespread impression, soldiers, like other taxpayers, have been placed on a pay-as-you-go basis. Employers make deductions from civilian salaries for income taxes. Soldiers, on the other hand, pay by March 15 or quarterly on the basis of declarations of estimated income. By March 15, a soldier files with the Collector of Internal Revenue for his home collection district a declaration form showing his estimated income and tax for that year. He either pays the full amount of the estimated tax at that time, or divides it into four instalments—paying one-fourth with his declaration and the remaining quarterly instalments on June 15, September 15 and December 15.

By March 15 of the following year, the taxpayer files a final return on the basis of the actual income he has received during the previous year. If the corrected tax is more than he estimated a year earlier, he pays the difference. If it is less, he gets a refund from the government or applies the excess on the succeeding year's taxes.

If a man dies in military service, all income taxes which he owes to the government at the time of his death are forgiven. This applies not only to taxes on Army pay, but to all income taxes. If a serviceman's wife, not yet notified that he has been killed, makes a payment on his income tax after his death, she is entitled to a refund.

Except for these special provisions, the income tax returns for soldiers are figured exactly like those of civilians. As always, the taxpayer takes his deductions for such items as contributions, taxes and interest, thus arriving at his net income. From this, he subtracts $500 for his own personal exemption. To determine the normal tax he subtracts the personal exemption from the net income and takes three percent of what is left. If it is a joint return, a personal exemption of $1,000 may be taken, provided the gross income of each spouse is $500 or more. If one of the parties to the joint return has a gross income of less than $500, this amount plus $500 is the amount of personal exemption.

In addition to the normal tax, there is a graduated levy known as the surtax. To compute this tax, begin with the net income and subtract $500 for the taxpayer's personal exemption, $500 for a spouse and $500 for each dependent. The remainder is known as the surtax net income. The surtax starts at 20 percent for a surtax net income of $2,000 or less. It is 22 percent on the amount of surtax net income between $2,000 and $4,000, 26 percent on the amount between $4,000 and $6,000, 30 percent on the amount between $6,000 and $8,000, and so on up.

There is an easier way than going through all the computations explained above. If his gross income is $5,000 or less, the taxpayer may merely consult a table which shows taxes for various levels of income and pay accordingly. This table automatically allows the taxpayer an arbitrary deduction of approximately 10 percent, which is in lieu of the actual deductions he would be permitted to take if he figured his tax step by step. If his gross income is over $5,000, the taxpayer may elect to take a standard $500 credit in lieu of the various specific deductions.

However, the taxpayer, if he prefers, may make his return the hard way, figuring out his deductions, net income, surtax net income, and the normal and surtax levies.

Persons who filed declarations of estimated tax for 1944 will recall that in making their computations they included a victory tax. Subsequently, that tax was abolished, but in effect it has been replaced by revised normal tax and surtax rates. The final return on 1944 income, which will be filed by March 15, 1945, will be computed on the new rates, and the taxpayer will be credited with any payments he has made on the basis of his 1944 declaration, which included the victory tax. This change will not make any substantial difference in the amount of tax involved.

Now have a look at some of the principal differences between the current tax provisions and those which were applicable in previous years.

The most complicated changes were those which affected the transition from the former tax payment system to the pay-as-you-go plan. Until 1943, all income taxes were paid during the year following the taxable year. Taxes on 1940 income were paid in 1941, taxes on 1941 income in 1942.

The formula for effecting the change-over was complicated, since it was necessary for most taxpayers to start paying their 1943 taxes before their 1942 tax obligations had been discharged fully. The civilian taxpayer became current by paying the larger of the two years' taxes plus one-fourth of the smaller tax. Thus, if a civilian's 1942 tax was $100 and his 1943 tax was $150, he paid for the two years $150 plus $25, or $175.

The change-over plan was more generous for soldiers. The system established for civilians applied to a soldier only in the event his 1943 tax was larger than his 1942 tax. If the 1942 tax was the larger—and this was the case with the great majority of military men—he was permitted to recompute his 1942 tax, disregarding his earned income for that year and, in effect, pay only the 1943 tax plus one-fourth. In other words, assume a soldier's 1942 tax, all of it on earned income, was $500, and his 1943 tax was $200. For the two years, then, he paid $200 plus one-fourth or $250. Earned income is salary, commission or bonus. However, the first $3,000 from any source is deemed earned income for income tax purposes.

This meant that if a soldier's 1943 tax turned out to be zero, he was entitled to a refund of all he had paid on his 1942 tax, provided all of this tax had been on earned income. This was a windfall to a man who earned a large civilian salary in 1942 and subsequently entered the service at a reduced income.

The victory tax was effective only for the taxable year 1943. For most military men with no outside income, it usually amounted to only a few dollars. It was computed on the taxpayer's so-called "victory tax net income," which would normally be a serviceman's Army pay less his $1,500 exclusion. The tax, then, would be five percent of the victory tax net income after a personal exemption of $624, minus 25 percent of the tax if the taxpayer was single, 40 percent if he was married. An additional two percent of the tax was deductible for each dependent.

In 1943, the exemption for each dependent was $350, and a dependent was defined as a child under 18 or a person physically or mentally incapable. Now a dependent is a close relative who receives from the taxpayer 50 percent or more of his monetary support from the taxpayer and whose gross income from other sources is less than $500 a year. A married man's personal exemption was $1,200 in 1943, and a single person's $500.

The earned income credit was deductible in 1943 for the last time in computation of the normal tax. That credit was 10 percent of the net income or the earned income, whichever was the smaller figure.

The first special provision for servicemen was made for the 1942 taxable year. In computing their gross incomes that year, enlisted personnel were permitted to deduct from their Army pay $250 if single and $300 if married. The $1,500 military service exemption was first effective in 1943.

Many state income tax laws have been modified in favor of men and women in military service. Montana and Kentucky exempt them completely. In Virginia the first $500 of military pay and allowances is not considered income for state tax purposes. Oregon exempts the first $3,000 and Minnesota the first $2,000. Most state income tax laws provide substantial personal exemptions in any case, so that relatively few military men are affected by these laws. However, for purposes of state income taxes, a soldier's rental and subsistence allowances are generally considered income.

Obviously, it has been impossible to answer detailed questions about the tax laws in the space of this article. The best this explanation could attempt has been to cover the important provisions affecting servicemen. If you are overseas, perhaps what you have read here will help you plan your personal affairs when you return to the United States.

Tax law is now extremely complex. Most persons require guidance to compute properly their tax obligations to the government. You are entitled to qualified assistance, and such assistance is available. If you have any questions, either now or when the time comes for new tax returns, declarations or payments, the legal assistance officer at your station will be glad to help you. If there is no legal assistance officer at your station, you may write direct to The Air Judge Advocate, Legal Assistance Division, Washington 25, D. C. ☆

PEARLY GATES

The first thing the average GI wants to do when he gets back from overseas is to phone somebody—usually his girl. The next is to drink three chocolate malts. The next —well, that's *his* business. Casual personnel being returned from Africa, the Middle and Far East by air usually come through ATC's big base at 36th Street in Miami. If you're assigned home from one of those theaters and are lucky enough to fly, chances are you'll come through 36th Street. And if you're from some other theater and land in New York or San Francisco, you'll find conditions very similar to those shown here.

First sight of an attractive American girl. Lots of returnees look the way the wolf in the sun helmet looks. Some look even wolfier.

"Yeah, Mabel, it's Joe. J-O-E. I know he's in China. I'm just back. I mean, I'm not in China anymore. I'm HOME!"

There's a milk bar where returning casuals get their first taste of ice cream—and the men leaving prepare for the long drought ahead.

"I swear these items are for personal use only: one Churka Kukrie, one Samurai sword, one scarab from Cairo."

Jap Air-to-Air Bombing. It has become apparent that Jap strategists are counting heavily on air-to-air bombing to combat our bomber formations. Reports from all areas of the Pacific indicate increasing use of this type of attack, which is less hazardous to the attacking airplane than conventional fighter interception.

Many Jap airplanes are being equipped primarily for use in air-to-air bombing. This 7th Air Force report is typical:

"On one Truk mission, a heavy bombardment group was intercepted by single-engine fighters at about 19,500 feet shortly after the bomb run. The enemy fighters did not make any firing passes but did maneuver into range several times only to pull out after our gunners opened up. About eight air-to-air bombing passes were made from one o'clock and three o'clock high, the attacker taking care to remain well away from the AAF planes. About four bombs were dropped, two of which were close to altitude and on the course of the bombers. Had it not been for evasive action, several AAF planes would have sustained hits. As it was, three planes flew through the streamers without damage."

The Japs have undertaken to standardize an air-to-air bomb attack plan for the Zeke fighter. It's like this:

The attacker comes in high from head-on, levels off for the bombing run at an altitude of about 300 feet higher than our bomber. At a range of 3,300 feet from the bomber, the fighter pilot finds that the bomber's wing span completely fills his bombsight ring. At that point, he releases one or more of the ten 66-pound bombs he carries under his wing. The bomb has a three-second time delay. The rate of closure between the released bomb and the target plane is 800 feet per second. Thus, the bomb will detonate when it is one second or about 800 feet ahead and 200 feet above the bomber—that is, if the Jap's aim is on the mark.

Current fond hope of the Jap air-to-air strategists is a new 132-pound bomb. Also getting attention just now is a rocket-type air-to-air bomb, from which the Japs have officially promised "violent results."

It was the air-to-air bomb that a Jap airbase commander had in mind when he recently reported:

"Considering the violent aerial warfare in the southeast area at the present time, the enemy is making quantity and large model planes speak for themselves and is adopting a strategy of overwhelming force. On our side, no matter how good a fight we put up against this enemy which exerts such force there is naturally a limit to what we can do, and there will be no avoiding a desperate fight. Nevertheless, if we adopt a strategy which will prevent the presence in the sky of these massive quantities and large model planes, then this phase of the decisive battle in the sky must in the end inevitably change."

Clever. For good or ill, the Jap is an ingenious soldier. Take the fellow who gets fed up beyond endurance with life in

THIS IS

an outpost. Figuring that illness would be a good way to bring about his evacuation to Japan, he contrives to get sick. His favorite stunt is to pour water into his ears and keep it there until infection sets in.

Nazi Squirt. The ME-163, German jet-propelled single-engine fighter, was encountered for the first time by our fighters late in July.

A pair of them, apparently attempting to attack our bombers, separated when they observed P-51s approaching. One went into a 45-degree dive; the other climed into the sun at 50 or 60 degrees. The latter appeared to be climbing at a speed of about 500 miles per hour.

Although the airplane is capable of great speed in climbing, diving and maintaining level flight, it seems to lack maneuverability.

The German Air Force has a few 163s in operation and also a small number of ME-262s, its twin-engine jet-propelled planes.

Dual Purpose. Recent capture on Saipan of fifty-five 120 mm dual purpose guns and the capture at Biak of guns of the same caliber and model indicate that 120 mm guns may be used more and more frequently in Jap antiaircraft defenses.

A mechanical director computes firing data. Gun elevation is zero to 85 degrees; rate of fire, 10 to 12 rounds a minute; horizontal range, 21,000 yards, and maximum vertical range, 35,000 feet.

AWOL. Briefly, here's what happened to Jerry, a German sailor. With a 21-day leave pass in his pocket, he boarded an electric train in France for the four-day trip home. The train stalled when the Allies bombed out the power station that supplied it. He waited three days for a steam locomotive, which finally arrived, but it hooked on to the rear and pulled the train back because by then the line ahead had been bombed out. At a junction, it switched to another route, but had to back up again because that line also had been blasted. Jerry went back to the station he had left four days earlier, boarded an ancient narrow-gauge train that, after a circuitous trip beset by interference from the Allies, got him home on the 10th day of his leave.

Six days later, he grudgingly started back to duty. Again he had delays. Supply trains had priority over the tracks that remained, so he finally boarded a bus, got back to his station worn out and with a deal of explaining to do. He had overstayed his leave and his ship had sailed without him.

Phony Messages. As we have emphasized before in these pages, one cannot believe all one hears by radio in a combat zone. Our enemies frequently transmit deceptive messages in the hope of disrupting our operations, and sometimes they succeed. Authentication of messages is essential.

Here are some recent phonies:

YOUR ENEMY

An aircraft flying one of the overseas ferry routes was instructed to return to its base. The radio operator did not challenge the message, and the pilot headed back. When the aircraft landed, it was discovered that the message had not been transmitted by the base station or any other station in the net. It obviously came from an enemy submarine.

At another overseas point, a ground station received a distress call purporting to come from an aircraft. For several minutes, the net was tied up with emergency procedure. In the midst of these efforts, the aircraft involved landed at one of the stations participating in the rescue procedure. The message had not come from this aircraft. Again, presumably, an enemy submarine turned the trick.

During the Tarawa operation, a Japanese operator took over the call of the commander of one of the transport divisions and gave orders to land troops and supplies west of a certain pier, where Japs armed with automatic weapons were lying in ambush. The radio operator, alert and suspicious, demanded authentication. There was no reply, and orders were given to disregard the phony message. This Jap attempt at deception failed.

AA in a Hut. A current Jap trick is to camouflage heavy antiaircraft installations as native huts. A structure of this kind, made of palm fronds and camouflage nets, rests on a runway of planks so that it can be moved quickly to clear the gun for action. The device is in line with the Jap system of relocating antiaircraft installations at frequent intervals.

Emplaced Flame-Thrower. In both France and Italy, the Germans have used emplaced flame-throwers which, while effective as a psychological measure against advancing troops, are not of great tactical value.

The flame-thrower consists of a heavy cast iron cylindrical tank with an eight-gallon capacity, a small cylindrical propellant container screwed into the tank, and a flame tube two inches in diameter which rises from the top of the device and bends forward about 20 inches. A container just below the muzzle holds the ignition squib which ignites the liquid as it is emitted from the tube. It is fired by electrical impulse.

The burst is 1 to 1½ seconds, and the heat is intense at a distance of 10 yards from the flame. Weapons of this kind have been found emplaced directly behind minefields and barbed wire entanglements. Usually they are concealed in piles of rocks so that only the muzzles are exposed.

Little Gentlemen. A recent Jap order to troops in Burma pointed to the importance of understanding the psychology of the natives. Soldiers were urged to "display the spirit of the Imperial Army."

Because they were regarded as "distasteful to the natives," the following practices were frowned upon:

Disfigurement of the pagodas.

Striking natives.

Insulting priests or coercion of natives.

Molesting women.

Exposing the naked body.

Jap Firepower. More reports of increased Jap armament: It is now known that the Emily, Jap four-engine patrol bomber, carries five 20 mm cannon, one in a top turret, one in a tail turret, one in the nose and two in the waist. The top and tail turrets are hydraulically powered for elevation and traverse, and the nose gun is hydraulically powered for elevation. The top gun has a 360-degree traverse and 85-degree elevation. The tail turret has 40-degree traverse to either side. Waist cannon cover a cone of approximately 120 degrees traverse and 85 degrees elevation. Armor plating on this bomber also has been increased.

Shympathy and Shtuff. Ready to face the facts ugly though they be, a German division commander issued the following order:

"Real comradeship can prevent much trouble. A soldier should help drunken comrades to keep out of trouble. If a soldier is ordered to get a drunken comrade home, he is obliged to obey. Men who report late because they help a drunken comrade will not be punished."

Just Like That. The way to destroy Allied air power, says a recent official Jap document on the subject, is to "deal the enemy air force its death blow at the outset of the battle by seizing the initiative with a surprise raid which employs an overwhelmingly superior air force."

It adds: "Then the enemy will be destroyed by a succession of relentless attacks which allow him no chance for recovery. The principal aim will be to achieve psychological and material success by using a concentration of power and by selecting the time and measures demanded by the situation."

And as a final thought: "We will plan to achieve complete success in battle by making repeated attacks in succession regardless of loss."

Airmen of the 14th Air Force and their Chinese allies fight against the advancing Japanese

Lake in powered landing barges, sampans, double and triple decked river steamers supported by gunboats and light destroyers. On land, along the eastern flank of the drive cavalry spearheads led the attack, supplied by motor convoys and pack horse trains. The Japs avoided the good roads which Chinese had blocked and were prepared to defend. Instead, they streamed down neglected secondary roads and over winding paths through hills and between rice paddies.

During the first month the weather was so bad that Japs relied upon it for protection against air attack and moved freely and openly during daylight. Except for the opening days of the attack, weather grounded the Japanese air force, and the enemy commanders expected the American air force to suffer a similar fate. In that error they reckoned without the fighter-bombers of Col. David (Tex) Hill's famous fighter group. For weeks on end these men flew through non-operational weather, took off in rainstorms that screened the end of the runways, battled fog and fronts and 100-foot ceilings, and twisted their way up rivers and valleys to find and slaughter enemy columns. The P-40s and Mustangs of this group flew eight to ten missions a day from rain-soaked fields, with many pilots averaging three and four missions a day for a week at a stretch. One squadron leader flew 47 missions in less than three weeks, was shot down twice, ran back to safety across the battlefield with Jap patrols on his heels, then shot down three Jap planes in a single fight over Hengyang. All of these missions were flown on the deck and in the teeth of heavy ground fire. On many river sweeps, ceiling and visibility were so bad that pilots could see neither bank of the stream and their props kicked spray off the water.

The slaughter during this phase of the campaign was terrific. Time after time the Americans caught cavalry columns of 500 to 2,000 men and horses strung out along roads in narrow valleys. Parafrags and rockets tore great gaps in the columns in the first surprise attack, then the fighters returned in pass after pass to strafe the survivors. The main truck road running southwest from the Yangtze River bases was combed repeatedly and it soon was dotted with burned and wrecked trucks. Heavy attacks were made on the huge flotillas and heavily laden transport fleets moving down Tungting Lake and the rivers south of the lake. Rockets gutted the big transports, dive-bombing knocked out gunboats while parafrags and strafing made a bloody shambles of troop-loaded barges and gas-carrying sampans. Pilots dumped their belly tanks into the mass of wrecked boats, troops and horses, and the next pilots set the gas ablaze with tracers. Close liaison between Chinese ground forces, American field radio teams and air force units resulted in many devastating strikes during the early phases of the campaign. In one series of five missions against Japanese landings on the south shore of Tungting Lake, the American fighter-bombers killed 1,500 troops, 300 horses and sank nearly 200 boats.

By July 10, American planes had sunk 3,980 boats, including 30 large steamers and five gunboats; killed 8,000 troops and nearly 3,000 horses and had wrecked or burned 800 trucks. Marshal Hseuh Yo, commander of the Chinese field armies, credited the American planes with killing and wounding 14,000 Jap troops and destroying 26 field supply depots.

By the time Japanese forces had reached Hengyang and the Chinese 10th Army had made a determined stand, the enemy was temporarily depleted by the American air assault, and it took more than a month to move enough fresh troops and supplies through the gauntlet of the 14th's air attack to wipe out the Chinese defenders and take the town. While General Fong's 10th Army was sacrificing itself in the ruins of Hengyang, fresh Chinese armies were able to reach the front and establish a defense line south of Hengyang.

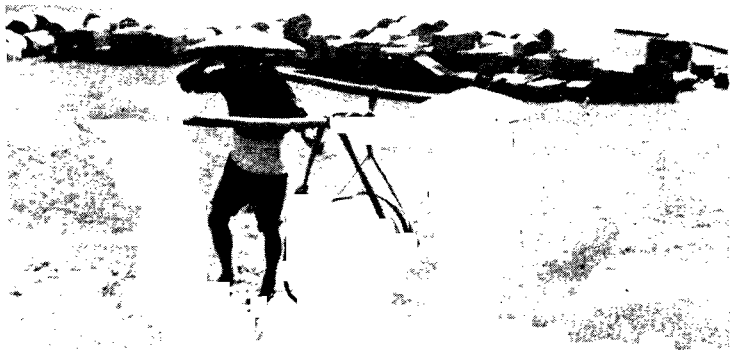
During the 49-day battle for Hengyang, bombers and transports dropped tons of rice, ammunition and medical supplies to the besieged garrison. The Americans dive-bombed Jap artillery positions and pill-boxes around the town, strafed trenches and destroyed hillside temples which the Japs had converted into strong points and command posts.

Jap prisoners captured around Hengyang gave eloquent testimony to the effectiveness of the American air attack. Most of them were captured on food foraging expeditions, made necessary by the failure of rice supplies to reach the front. Many prisoners reported that they received no rations for a week at a time and were forced to live off the land. They were captured while digging potatoes, stealing peaches and chasing chickens, and many had only the ammunition which was left from the 150 rounds issued them at the start of the campaign. All were bitter about the lack of air support from their own planes and many said the only tactical planes they had seen were American. Casualties among some units were so heavy in air attacks that they were withdrawn from the front.

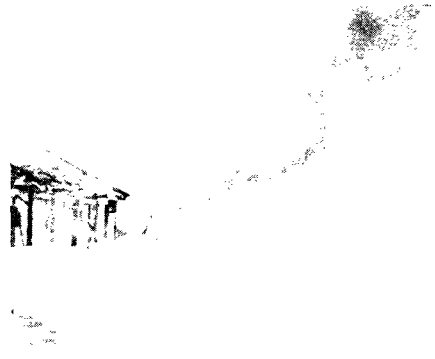
When the weather cleared in early July, Mitchell bombers joined the battle. Cannon-carrying B-25s swept the broad Siang River and Tungting Lake as well as the Yangtze where fresh troops and supplies were still moving west to Hangkow. Gunboats, transports and freighters were sunk by long range shelling from the airborne 75s. Supply depots became a special objective of the Mitchells, and with Mustangs leading the way and marking the targets by dive-bombing, the medium bombers followed and delivered the heavy punch. Every main Japanese field supply depot between Yochow and Sinshih was repeatedly hit, and the main transshipment point at Sinshih was virtually wiped out in a 72-hour sustained attack. P-40s and Mustangs dive-bombed by day while Mitchells and Liberators from rear bases saturated the target by night. Truck parks, fuel and ammunition dumps and rice stores all went up in great fires and explosions that rocked the town for a full day after the bombing. The major

(Continued on Page 60)

Chinese helped move supplies before Japs overran base at Hengyang.

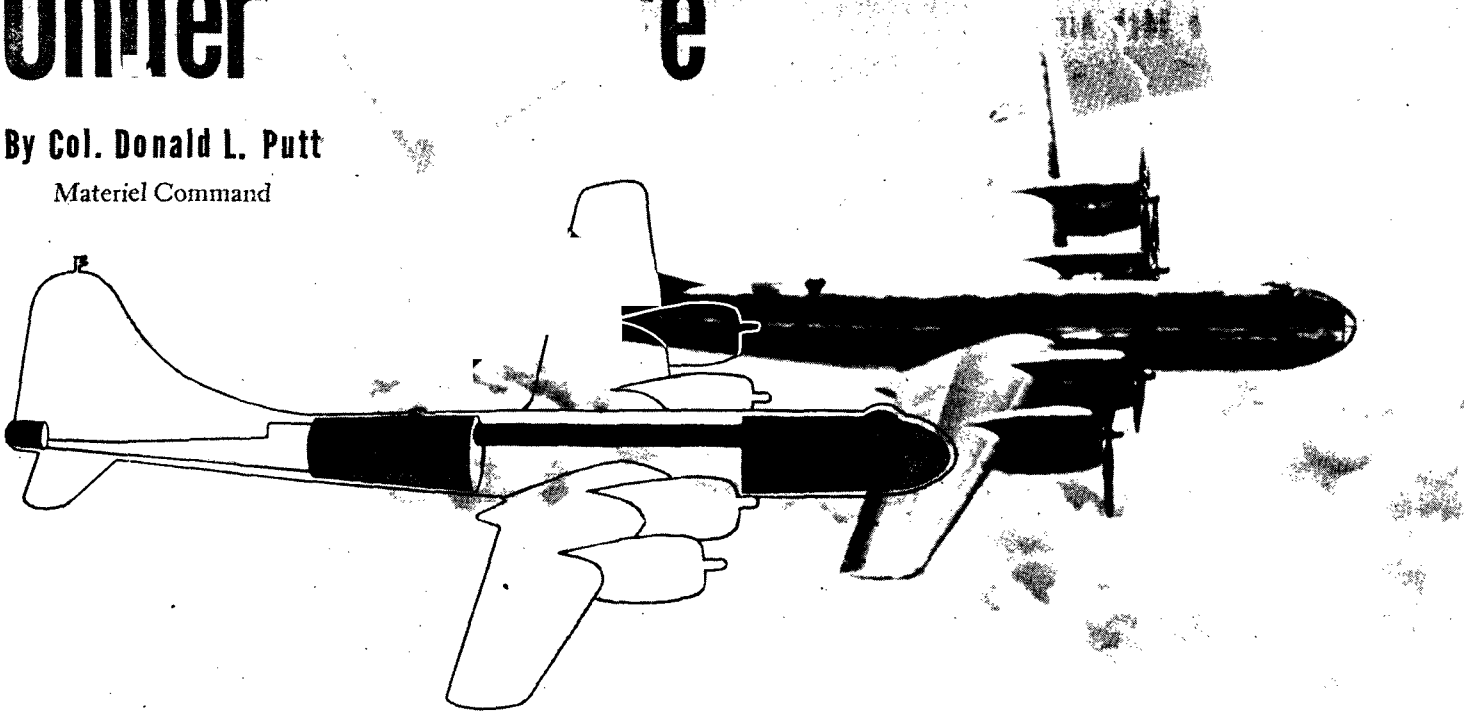


The AAF left scorched earth for Japs who took Hengyang airfield.



Under e

By Col. Donald L. Putt
Materiel Command



The pressurized interior of the B-29 is the result of research and experimentation which began in 1919.

For more than 25 years, aeronautical engineers have experimented with pressurized cabins as the solution to problems of anoxia and bends encountered at high altitudes.

The mechanical problem has been to build an airtight plane that can fly in the substratosphere where the air is thin and the pressure is low—an aircraft with a leak-proof cabin that would maintain low-altitude atmospheric pressure during high-altitude operations.

Although the first tactical aircraft incorporating pressurization was the B-29, the AAF had launched its research program on pressurizing airplanes in 1919.

There were two possible solutions to the problem. One was to force oxygen into the lungs through pressure masks worn at high altitudes; the other, to pressurize the cabin air.

In 1919, Lt. Harold R. Harris, a test pilot, took off in an airplane with a sealed tank-like chamber covering the cockpit—the first test flight of a pressure cabin. Air from a wind-driven blower mounted on the plane's wing was compressed in the cockpit. The test failed when the pressure control mechanism went haywire. Instruments recorded a cabin temperature of 150 degrees and an altitude of 9,000 feet below sea level!

Our engineers were faced with the problem of designing the fuselage structure of airplanes to seal perfectly the joints, doors, windows and instruments. The project had to wait because the proper planes weren't even on the drafting boards. Fifteen years had passed before the problem was tackled again.

In 1934, Wiley Post submitted a pressure suit—a blown up pair of overalls made air tight with a rubberized parachute silk and an aluminum oxygen helmet—for experimental test flights to high altitudes. The suit worked, but because of its weight and bulk it greatly impaired movement of airmen.

With development of larger planes, more powerful engines and improved turbo superchargers, AAF engineers again turned to the pressurized cabin.

The first successful pressurized airplane was the XC-35, a modified Lockheed Electra airliner. Engines had exhaust-driven turbo superchargers that maintained an interior pressure under 10,000 feet when at an operational altitude of 25,000 feet, later increased to 30,000 feet.

Cabin supercharging was accomplished by an auxiliary impeller operating on the same shaft as the engine supercharger. Major disadvantage of this system was that the speed of the cabin supercharger varied with the main engine output. When the engine slowed down, pressure within the cabin dropped off. Among other drawbacks, frost formed on the inside and ice on the outside of windows, and airspeed meters, rate of climb indicators and other instruments malfunctioned because of instrument case leakage.

These problems were partially solved in the XC-35 airplane. In principle, at least, AAF engineers were on the right track toward a practicable pressurized cabin system.

Boeing built the ideas into the "307" transport, four-engined Stratoliner which brought "upper-level" flight to the airlines in 1939-40.

Supercharging the 307's cabin was accomplished by a mechanical compressor geared directly to the engine rather than to the turbo-supercharger. Constant speed propellers insured constant engine rpm so the geared compressor would permit the cabin to maintain its pressure during descents. The cabin, however, was only pressurized to 12,000 feet at 20,000 or about 2½ pounds per square inch.

Although the fuselage of the "307" was much larger in diameter than XC-35's, it also utilized the circular cross-section introduced in the Army's first substratosphere aircraft as the best, strongest and lightest shape for pressurized chambers. Theoretically, since air under pressure tends to

equalize in any container—witness the bubble—the ideal pressure-cabin would be a hermetically-sealed sphere. Since a sphere-shaped cabin does not meet the requirements for aircraft fuselage design, engineers turned to a cylindrical fuselage construction with airtight spherical-segment pressure bulkheads.

The AAF next embarked on an experimental pressurizing program with a medium twin-engine bomber, North American's XB-28. This plane used the mechanical engine-geared supercharger which kept an 8,000-foot cabin pressure in the aircraft at 33,000 feet. Cabin heating was accomplished by auxiliary heaters in the ducting that circulated air through the cabin. A plastic compound was sprayed throughout the interior to seal-proof the chamber. Thin rubber strips also were sandwiched between all riveted joints.

The new problem of locating armament properly in a pressurized plane was solved by placing all turrets on the XB-28 outside the pressurized areas. Guns were remotely controlled from pressurized sighting stations.

Constructing an airtight cabin in the B-29 involved a search for new sealing materials and fabrication methods. Rubber cement, used in the XC-35, proved unsatisfactory for blisters, turret wells and the greenhouse nose. Structural joints and ducting necessitated new methods of sealing.

Two types of structural sealing were adopted: compressing sealing compounds between all joints with conventional riveting and riveting all joints as in normal construction and painting or coating with sealing material. In the compression method, adhesive tape is sandwiched between all overlapping joints and riveted to produce an airtight seal. A new sponge-like plastic compound is sprayed over all joints after conventional riveting in the other type of construction.

Both methods effect a seal which allows only ten pounds of air per minute to escape through necessary openings for valves and bulkheads. Cabin air blowers pump four times this amount of air into the cabin every 60 seconds. Regulators maintain normal cabin pressure by "balancing" incoming air against normal air leakage.

The danger of pressure blowing out plexiglas blisters enclosing sighting stations and the pilot's compartment have been eliminated by use of two layers of Lucite with a single ply of Butacite sandwiched in between. These transparent materials have self-sealing properties that restrict a shell hole to minimum size. Discs of the same material permit patching of holes, with inside air pressure holding the disc against the opening. Because the new compound is soft and flexible it does not shatter.

To determine the effect on skin structure of the sudden escape of pressurized air through a shell hole, firing tests were conducted that proved shells had little more damaging effect structurally against a pressurized cabin than against a conventional cabin construction. Explosive decompression, resulting from shell-fire, did reveal one danger spot—it caused air to accelerate at such terrific speeds through the tunnel that the force was enough to catapult a man out either end with dangerous effect. Small doors were installed at both ends to suppress airspeed in the tunnel to a safe point.

The B-29 has three compartments pressurized from the same system. The forward section for the flight crew extends from the nose to a pressure bulkhead just forward of the bomb bay. This compartment is connected by a pressurized tube, 34 inches in diameter, that runs through the bomb bay to the aft pressure cabin where gun stations are located. A third pressure chamber is in the extreme tail, housing the rear gunner.

During pressurization of the first structural test model to determine its safety limits, the cabin was pumped to a pressure three times as great as it would need at its maximum altitude before the nose section blew out.

After experimentation with the mechanical supercharger on the XB-28, we again turned to the turbo-driven supercharger for pressurizing the B-29. The new system eliminated the auxiliary impeller (for cabin air) that was on the engine turbo-supercharger of the XC-35. By bleeding the compressed air from the turbo impeller into the cabin, as well as into the carburetors, the B-29 system is simplified in design and lightened in weight. Cabin air is taken from the turbo superchargers of both inboard nacelles by a system of ducting. Compressed air from either nacelle is sufficient for pressurization of the entire cabin in the event of one engine failure.

From sea level to 8,000 feet the cabin "altitude pressure" is the same as the altitude at which the aircraft is flying. From 8,000 feet to 30,000 feet, the regulators maintain a constant 8,000-foot pressure inside the cabin by allowing only air above that pressure to escape. Above 30,000 feet the system of supercharging maintains a 6.55 pound per square inch differential in pressure between the cabin and the outside air, or, for example, a cabin altitude of 10,200 feet at 35,000 feet.

Heat in the cabin comes from two gasoline operated heaters and the heat of compression from the cabin superchargers. A thermostat automatically controls the heating units.

Turrets on the B-29, located outside the pressure areas, are fired remotely from fire control stations that are pressurized. Upper and lower forward turrets rest in large "cans" which drop down into the pressure cabin.

The Allies are not alone in their development of the pressurized cabin. Some ME-109Gs have cabins with a pressure differential that maintains 10,000-foot cabin altitude at 35,000 feet. And reportedly, the diesel-powered JU-86K reconnaissance airplane has been flown above 44,000 feet. Its pressure cabin uses blowers and ducting with an internal turbo-supercharger.

These Nazi planes, however, have not been seen in combat other than on lone reconnaissance missions. Only the AAF is using pressurized cabin airplanes tactically in large numbers. ☆

Above 30,000 feet, a 6.55-pound per square inch differential is maintained between the internal and the external air pressure.

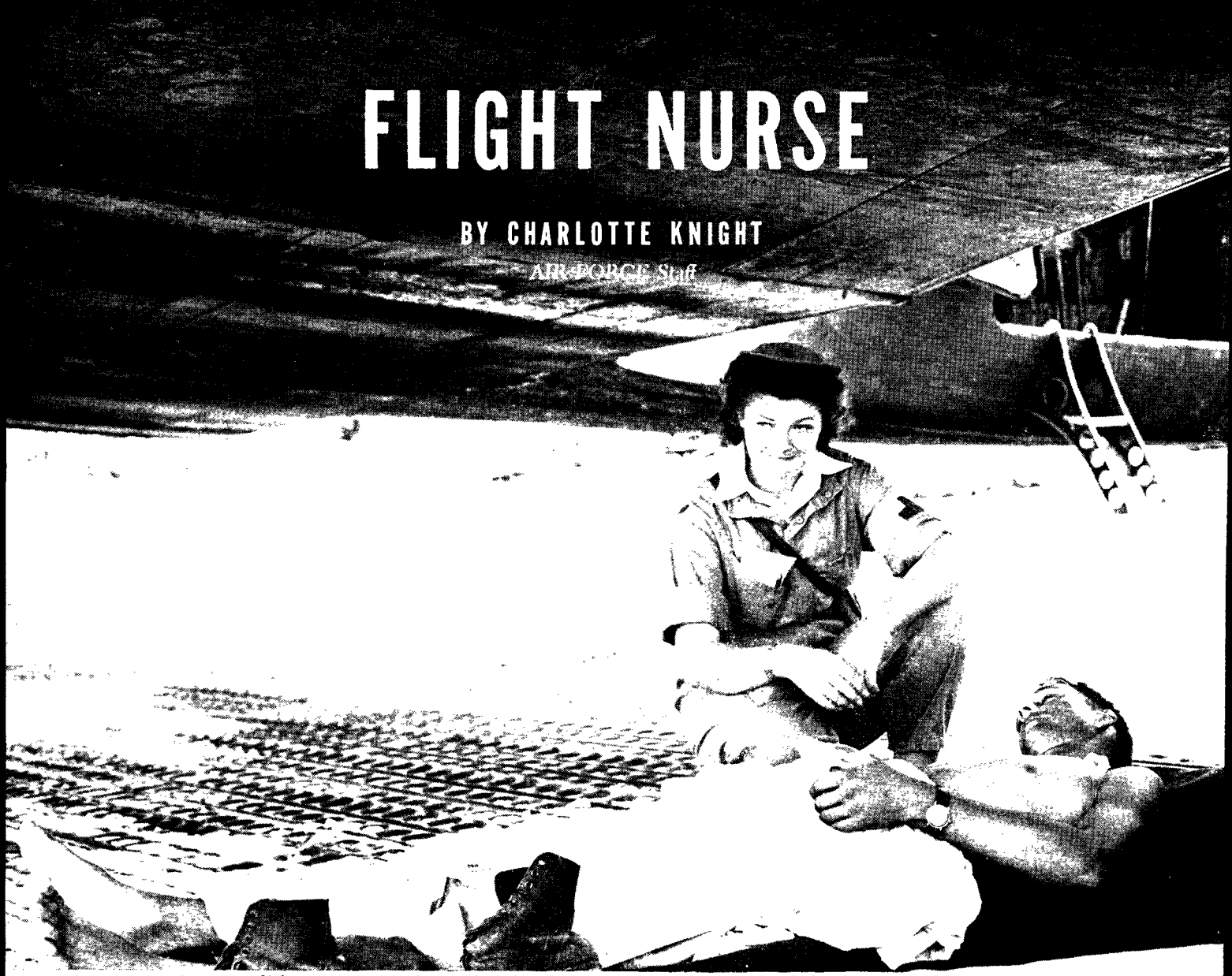
From 8,000 to 30,000 feet, regulators maintain a constant 8,000-foot pressure by allowing only air above that pressure to escape.

From sea level to 8,000 feet, pressure inside is the same as atmospheric pressure at the altitude at which the plane is flying.

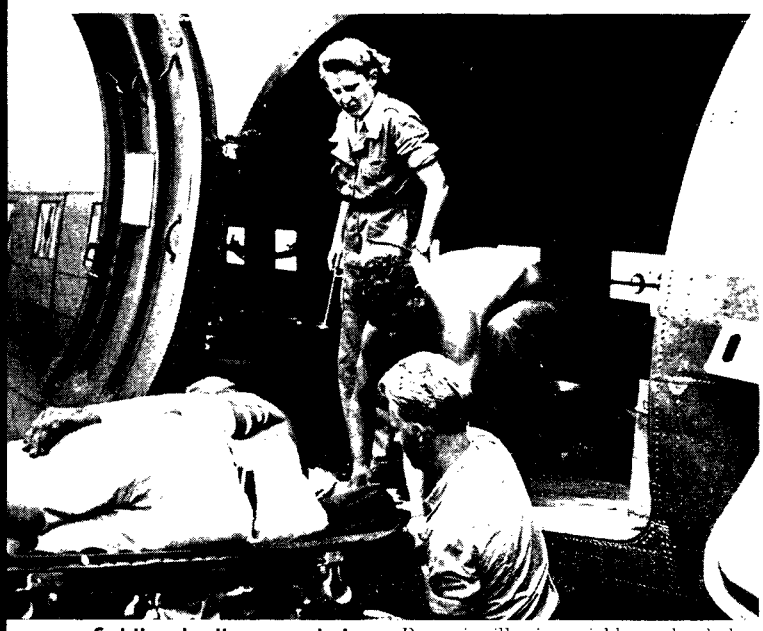
FLIGHT NURSE

BY CHARLOTTE KNIGHT

AIR FORCE Staff



Lt. Harriet Thomas, flight nurse assigned to Admiralty Air Evacuation unit, prepares Cpl. Silver Amos for trip to rear area hospital.



Soldier badly wounded on Bougainville is quickly unloaded at Guadalcanal base hospital under the supervision of Lt. Rial Smith.

Pistol-packin' Flight Nurse of the 5th Air Force checks her ambulatory patients with pilot who will fly them from Hollandia to Lae.

If there were a popularity contest in the AAF, these competent, courageous girls would win it hands down

Flight nurses at a 9th Troop Carrier base in England had been alerted for a month. Across the field was a stockade filled with paratroopers ready for an order to scramble into the C-47s. That afternoon a car with a four-star insigne had been seen on the field. But restrictions had been on, then off a dozen times and Flight Nurse Frances Sandstrom thought surely she would have time to enjoy the lonely luxury of a soapy shampoo. She went to the shower room, turned on the water, soaked her hair—and the invasion began.

Lieutenant Sandstrom dressed hurriedly, pushed her dripping hair into a knitted GI cap and ran out to the flight line to join the other nurses.

"It never fails," she explained breathlessly. "If I wash my hair, something always happens!"

The Skytrains thundered down the runway, loaded with paratroopers. Nurse Sandstrom watched them go, too excited to feel the water trickling out of her cap and down her neck.

"We stood there until they were all gone, then we waited for them to come back," she said. "We knew most of the crews, as we had been restricted to the base so long. I guess we nurses were like a cheering section at 0200 when they began coming back. As soon as we could see the number of a plane we'd yell, 'There's Jack . . . there's Mike . . . there's Jimmy, hooray!' and we kept it up until every plane was safely back.

"Next trip they hooked up the gliders and took off again with airborne infantry. We knew the first surprise was over, that the Germans would be expecting them. And believe me, this trip we really sweated them out. After a long time they started coming back, but this time it was different. The planes were shot up. Some of the crews were wounded, and some of the C-47s had ragged holes in their wings. We waited on the line, counting each one—and finally, again they all got back."

The nurses had not long to wait and just watch the skies, however. Exactly four days later, five nurses from that base flew to France. On D-plus-9 Nurse Sandstrom made the first of her many trips to Normandy.

"We took off that morning and flew over the Normandy beach and landed. We were the first plane to land on the first steel mat strip put down by our advance engineers. They had just finished the job when our C-47 came in.

"Wrecked gliders were scattered all over the countryside. The troops were fighting only three miles away and we could hear land mines exploding around us. I was told to stay inside the plane, since all German snipers had not been cleared out and were taking occasional shots across the landing mat.

"About sundown we went back to the beach and picked up our patients, 16 litters and two ambulatory cases. This was a clearing station where men were brought in ambulances from where they had been wounded.

"I had my first contact with new invasion casualties when the loading teams brought my patients aboard. Most of them were badly wounded. They were dirty, right out of the foxholes. Many of them were suffering, but I had not one murmur of complaint from any of them. It was hot and dusty, but they were calm and asked for nothing except water. Each time I gave a man a drink he smiled, or tried to, and thanked me as if I had done something very heroic and wonderful."

Lieutenant Sandstrom's plane landed at a holding station in England and her patients were taken off by an unloading team. Watching her men taken off the plane, she saw that they were handled gently and assured them that the next hop would land them in a general hospital.

"The men all looked back from their litters and said goodbye," she said. "The biggest thrill I ever got was when one corporal, badly wounded, looked me in the eye and said, 'Nurse, I want you to know how much I appreciate this. I've never had such consideration before.' "

Nor is the corporal alone in his gratitude. Men in every theater know these women by now. Seventy-two hours after U. S. forces landed on Tarawa, flight nurses were there too, helping to evacuate the wounded from that bloody beachhead to hospitals in Hawaii and the finest medical care a man could get.

Her plane loaded with wounded military personnel, Lt. Bernice Harrington climbs aboard with her parachute, all set for trip from Guadalcanal to United States.

They were at Bougainville, at Sicily, Salerno, Anzio. The Burma front—and the south of France. Name any big push; flight nurses were on the scene within a matter of hours after our troops moved in. They were the first white women on Munda, Guadalcanal and the other South Pacific islands since war began; they were the first U. S. Army nurses to reach China.

They get around in a global way, but that's only part of the story. They also have had to pay a price for choosing this duty—the soldier's price. Several of them have given their lives in this service since war began, others have been shot down. Thirteen landed in enemy-held territory and spent months escaping. A few have had to "hit the silk." Many others have had brushes with the enemy—and too close for comfort, they will admit. Nurses flying Southwest Pacific routes have often arrived at a field to find it on Condition Red. Others have spent many long hours in Guadalcanal's foxholes during bombings—15 raids in 5½ hours was the experience of one nurse.

To the South Pacific went some of the first flight nurses graduated from Bowman Field's School of Air Evacuation. This was early 1943. Men who were in that theater can add some chapters of their own about the valor of these women. They saw them put up with everything men had to face—scorching suns, torrential rains, swarms of mosquitoes everywhere, the presence of malaria and dengue fever, inadequate quarters, chow out of mess kits while standing ankle deep in mud.

If women ever had a chance to prove they could take the rough with the smooth, this was it. There were no quarters for them on Guadalcanal at first, so the overnight stop on the long trip from New Caledonian headquarters was generally Espiritu Santo. Up at 0100, takeoff at 0300, arrival at Henderson Field at 0730 to pick up battle casualties sent down from the fierce fighting up New Britain way. When

the plane landed, a jeep would drive up with coffee and sandwiches which would be gulped down between swatting the flies away. As a matter of fact, K rations eaten aloft constituted the chief bill of fare for these commuting nurses. There was never time for a square meal for days at a stretch.

Things picked up considerably with the construction of Guadalcanal's "Hotel de Gink," a hostelry in name only, which did at least provide a screened-in messhall of comparative luxury to nurses stopping for brief periods between flights.

The first landings which flight nurses made on that battle-torn island, incidentally, are not likely to be forgotten. Most of the men stationed there had not seen a white woman for more than a year. Word that a woman had landed spread quickly throughout the field, was as quickly denied by GI wiseacres who knew it couldn't be possible. Nevertheless, hundreds crowded around just to witness the miracle. Soldiers too far away from the runway used binoculars. And no matter how many times nurses have flown in since, there continue to be astonished cries of "Good Lord, there's a woman!"

"Just as I was stepping out of a jeep to enter the Hotel de Gink once, a boy ran up to me and shook me hard, as though he couldn't believe I was actually human," Nurse Gerda Bouwhuis related. " 'Are you the real McCoy?' he shouted. 'I haven't seen a white woman since I said goodbye to my wife 18 months ago. I'm going to write home and tell her I've finally seen an American girl and that it was almost as good as seeing her.' "

Flight nurses are real people, not given to any pretenses. Of course they get their share of attention wherever they are, but they claim this is because they are merely symbols, that they only serve to remind a man of the wife or sweetheart he left behind. And they're frank enough to admit that upon occasion this can be slightly annoying, too. "One night at a party in New Caledonia," reported Lt. Seraphine Petrocelli, "there were about a hundred fellows around and I was the only girl. Sure, it was wonderful. A lieutenant and I walked down to the beach and sat on a rock and looked at the moon. But, do you know what he did? He spent the entire evening telling me about his girl back home!"

The nurses' dates, by the way, took on an aspect rather more practical than romantic in that theater. Nurses could afford to be independent—and admitted it. They accepted invitations with considerable foresight. During those first

(Continued on Page 62)

As a medium for the exchange of ideas, AIR FORCE presents these answers to its Question of the Month. Replies are those of personnel recently returned from combat duty in the areas indicated.

THE QUESTION: If you had to change your classification, what would you want to do?

Lt. Morris Silberman, navigator, Italy: "I'd still like to be a navigator. You get a kick out of leading a flight over and finding the target, then hitting it right on the nose. That thrill can't be duplicated anywhere in the AAF. You are working all the time, keeping busy, and there isn't much time to worry about what might happen. I'm completely sold on the importance of a navigator to the success of his mission and I'd just as soon keep the same job I have now. It's all teamwork, with everybody depending upon everybody else, but I feel the navigator is one of the key men."

Sgt. Joseph Vanek, gunner, Southwest Pacific: "I'd put in for the job of fighter pilot. The bomber pilots have to worry about how good the other fellows in their crews are, while a fighter pilot can depend upon himself entirely. If he thinks it wise to go into a fight, he goes in; if he thinks not, he hangs back for awhile. It's that feeling of independence that appeals to me. I've been in B-24s, 25s and 26s, but give me a single place ship everytime. The fighter pilots seem to know how to take care of themselves regardless of what the conditions may be."

S/Sgt. William Wright, gunner, England: "I'd like to be a radio operator on a C-54. I've always liked to play around with radios and I think the job of a radio operator has a good future in it if you follow it through. I have picked the Skymaster because, in my opinion, that's the type of plane we're going to have when the war's over. I've seen most of England and our missions have taken us over a great part of Continental Europe, but I still would like to do some more traveling. I think they ought to change that certain slogan to read, 'Join the AFC and see the world.'

S/Sgt. Edward Walters, gunner, CBI: "I would want to go to school to become an aeronautical engineer. I think that would mean a real future after the war. A lot of new planes will be coming out and I'd like to get in on the designing and constructing of them. Now that I have had some experience, I think I have an idea of what should be expected of our planes. Some day soon, everybody will be traveling around in those family airplanes and I want to get in on the ground floor now. In the future, jet propulsion will be a big thing and I want to learn something about it, too."

S/Sgt. Dennison Whitford, gunner, Italy: "I'd want to be a mechanic. That would give me something useful to do after the war. A mech's job is the most important in the air forces. Ordinarily, he works 24 hours a day but when things get rough, he puts in 25 hours. Everybody who flies really appreciates the work of the ground crews. Those boys are in there pitching all the time. Being an aircraft mechanic gives a man an opportunity to learn a trade for the postwar world. I think it would be a good idea to know something about engines for a job after the war is over."

Lt. Michael Senkow, navigator, Southwest Pacific: "The fighter planes for me. You're out there alone with nobody to bother you and nobody to depend on you. That makes it much less of a nervous strain. A bomber pilot in a B-24 has nine other men in his crew. That's all right, but I want to live and die by my own judgment. Then, too, the fighter pilot has a feeling of individuality when he is flying alone. I'd pick the P-38 for my plane. This famous fighter has range, speed, firepower and versatility. The two engines of the Lightning give you an added safety advantage."

THE PHILIPPINES

Their day of liberation is not far off

PREPARED BY THE ARCTIC, DESERT AND TROPIC INFORMATION CENTER, AAFTAC

A scarred, weather-beaten B-25 coughed its way off the dusty runway and almost brushed the jungle growth at the end of the strip as its nose turned toward Australia. The Mitchell's insides fairly bulged with its overload of bedraggled officers and men. Scores of others were left behind on that little Mindanao airfield to await their fate at the hands of the victorious Jap. The last evacuation plane had left the Philippines.

That was 30 long months ago.

Now, we are on the way back. The Jap long since has reversed his field, and his position on those islands that stand like rocks astride his supply line to the south is becoming more and more shaky. Early in September, our long-range B-24s already were pounding Jap shipping in the lower islands, particularly around Mindanao, and blasting the airdromes of Davao in a slowly tightening air blockade.

In many respects, the Philippines are an inner-door key to the ultimate defeat of the Japanese. When we recapture the islands, we will have more than a plug with which to stop the vital flow of enemy raw materials from the rich East Indies. We will have another platform for land-based air power to strike directly at Jap strongholds in China, Formosa, French Indo-China and the enemy's home islands. And among other tangible military benefits, we will have many fine anchorages for our Navy.

On the less material side of the ledger will be the psychological factor of coming back, avenging Bataan, Corregidor, Clark, Nichols and keeping a promise- independence for the Philippines.

A few of our airmen who fought a losing battle there nearly three years ago may be going back to the Philippines, but for every one of them there will be thousands who will be seeing the islands for the first time.

What will be the operating conditions?

How is the weather?

What will be the maintenance problems?

What about the natives? Health conditions?

What is the terrain?

How are the communications?

From the viewpoint of AAF personnel, perhaps the most important operational factor in the Philippines is the weather.

Heavy cumulus and strato-cumulus with bases at an average of 1,500 to 2,000 feet are characteristic of the area in all seasons. Over most of the islands, two-thirds to three-fourths of the sky is cloud-covered and complete overcast is frequent.

Topography causes great local variation in cloudiness. Areas exposed to the northeast have heaviest cloud formation in winter. Those exposed to the southwest have heaviest cloud formation in summer. Over the entire area, the clearest months are April and May.

Turbulence is severe in cumulo-nimbus clouds and is extreme in well-developed typhoons. Flyers may best avoid turbulence in CBs by approaching them either at an altitude in excess of 20,000 feet or by flying through the rain squalls below the base.

Wind speeds generally are light to moderate, their direction varying greatly with local topography. Horizontal visibility generally is good but occasionally it is restricted because of fog, cloud, mist, haze or rain. Fogs rarely last long after sunrise. Clouds are the greatest hazard and are extremely bad on mountain slopes during all seasons.

Temperatures in the Philippines are uniformly high with high relative humidity. However, changes in the predominant wind pattern and variations in local topography produce marked differences in the weather of various parts of the islands.

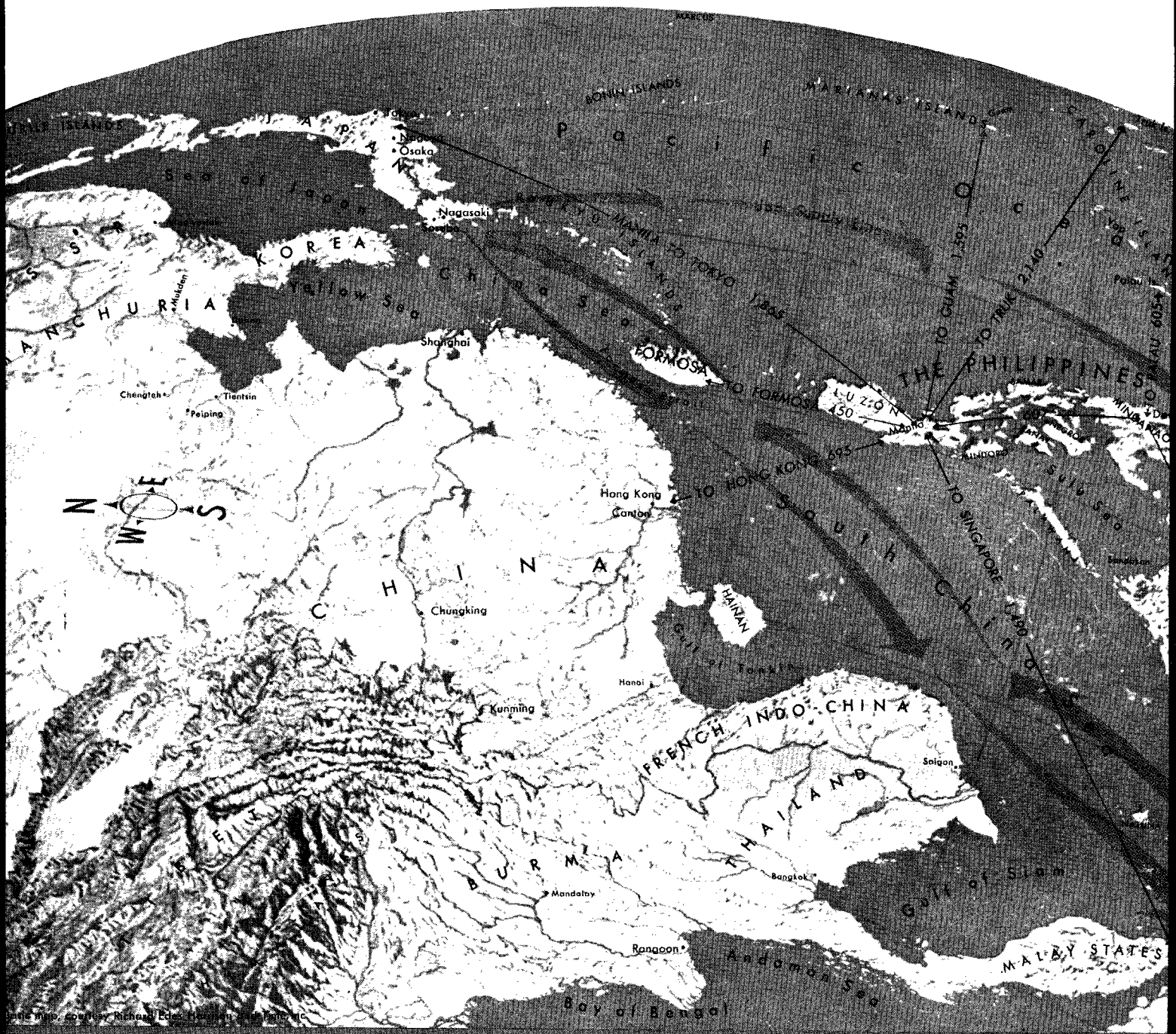
In all seasons, temperatures normally range between 70 to 75 degrees in the early morning to 85 or 90 in the afternoon. Average temperatures are lower in the highlands, with a decrease of three to four degrees per 1,000 feet increase in elevation. Relative humidity averages 75 to 85 percent during the entire year.

Rainfall is heavy throughout the islands. Most places receive an average of 50 to 150 inches a year. There is comparatively small seasonal variation in rainfall. Areas exposed to the northeast generally are wet in all seasons but have the heaviest rainfall in the winter. Areas exposed to the southwest are relatively dry in winter and spring, with heavy rainfall in the summer and fall. Over most of the Philippines, rain normally falls 125 to 225 days per year, usually in the form of intense showers.

Typhoons, the small but spectacular storms of the tropics, hit only the northern and central islands of the Philippines. The Sulu archipelago and Mindanao, which have an equatorial climate, are out of the typhoon belt. Extremely hazardous to flying, typhoons may hit in any month but are most frequent during the period from July to November. Depending on how close they come, they may mean bad

THE PHILIPPINES

DISTANCES SHOWN IN STATUTE MILES



PHILIPPINE FACTS

Number of Islands: 7083 (2441 named, 4642 unnamed)

Population: 17,000,000

Total Area: 114,830 square miles (Only 462 islands are more than 1 square mile).

Eleven islands account for 94 percent of total area.

LARGER ISLANDS	(Square Miles)
Luzon	40,814
Mindanao	36,906
Samar	5,124
Negros	4,904
Panay	4,445
Palawan	4,500
Mindoro	3,794
Leyte	2,800
Bohol	1,554
Masbate	1,255
Cebu	1,695

POPULATION LARGER CITIES	
Manila*	623,500
Cebu	146,820
Iloilo	90,480
Legaspi	41,470

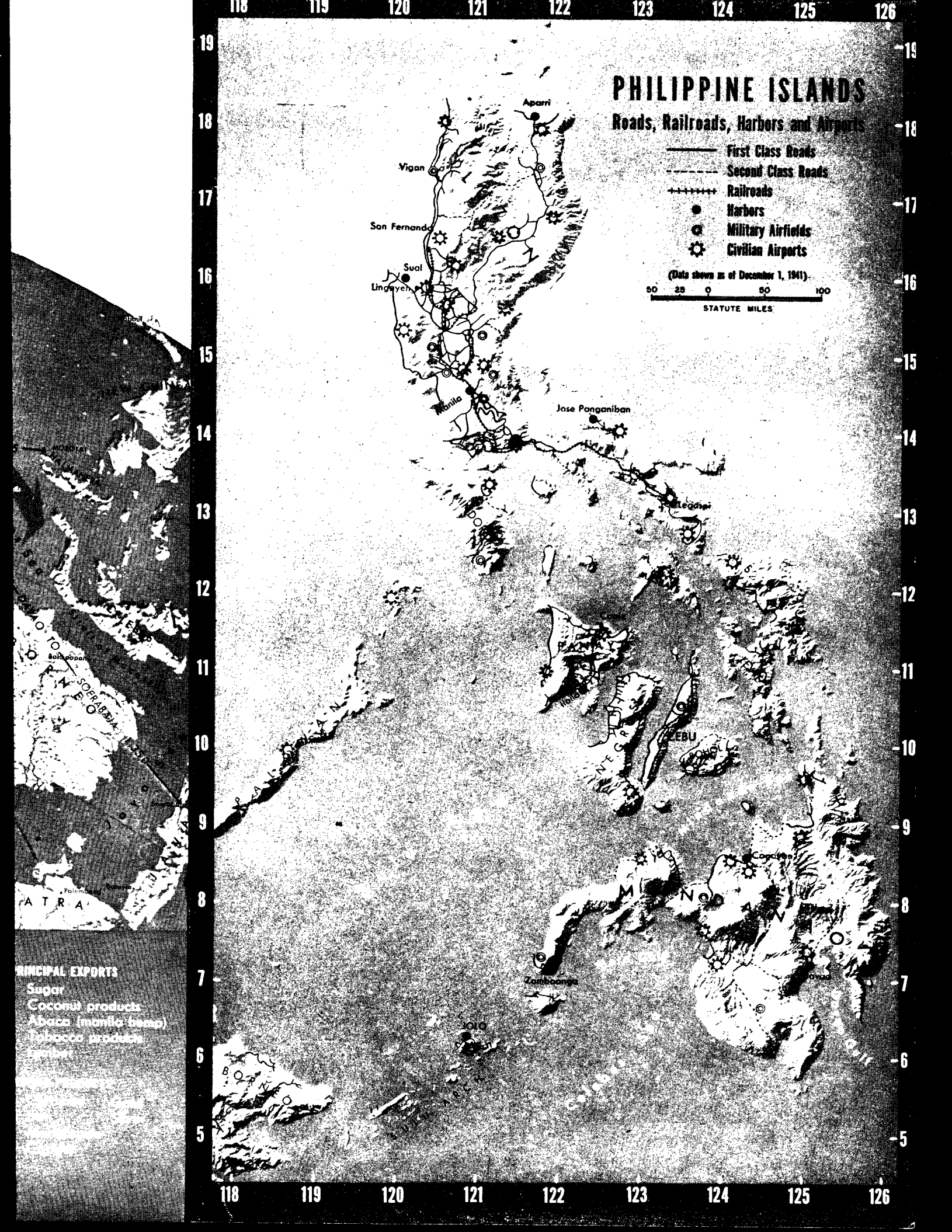
COMPARATIVE POPULATIONS PER SQUARE MILE	
Philippines	143
Java	800
Borneo	9
U. S.	45

*Excluding suburbs

FOREIGN GROUPS	
Americans	8,700
Chinese	117,500
Japanese	29,000
Spanish	4,600

RELIGIOUS GROUPS	
Roman Catholic	12,603,300
Aglipayan*	1,573,000
Mohammedan	677,900
Protestant	378,300
Pagan	680,000

*Independent Philippine Catholic


PHILIPPINE ISLANDS
Roads, Railroads, Harbors and Airports
First Class Roads
Second Class Roads
Railroads
Harbors
Military Airfields
Civilian Airports
(Data shown as of December 1, 1941)
50 25 0 50 100
STATUTE MILES
Aparri
Vigan
San Fernando
Sual
Lingayen
Manila
Jose Panganiban
Legaspi
CEBU
Cagayan
Zamboanga
JOLO
PRINCIPAL EXPORTS
Sugar
Coconut products
Abaca (manila hemp)
Tobacco products
Gold
118
119
120
121
122
123
124
125
126
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weather for periods of from two to seven days.

The tropical climate of the Philippines poses serious problems in the maintenance of aircraft, airfields and other equipment. Failures are caused by condensation, rust and other forms of corrosion which are by-products of the high humidity and fairly high temperatures. The action of living organisms, such as bacteria, fungus and insects, is likewise accelerated. Organic acids in the damp soil cause corrosion and are responsible for the destructive "corrosion fatigue" of metals. In some areas dust forms quickly between rains and affects the operation of engines. Preventive maintenance procedures employed in other tropical theaters apply equally in the Philippines.

Comparative size of the islands.

The population of the Philippines, 17,000,000 according to 1941 census figures, is unevenly distributed among the islands. Luzon accounted for almost half of the number and Mindanao, the second largest island, nearly one-eighth. Panay, Negros and Cebu are the only other islands with more than 1,000,000 inhabitants. In 1941 Manila, the largest city in the Philippines, had a population of 684,000, including suburbs.

The majority of Filipinos are Indonesians of southeast Asiatic origin. The Christian Filipinos, numbering 90 percent of the population (79 percent Catholic), are divided geographically into groups whose chief difference is language. The most numerous groups are the Tagalogs (3,325,000) who live in central Luzon, the Visayans (7,100,000) who live in the central and southern islands, and the Ilocanos of northern Luzon. The people of the island of Mindanao and the Sulu archipelago are Moros who are Mohammedans. They number between 500,000 and 600,000. In the mountainous regions of Luzon and Mindanao and the Sulu archipelago are found the Pagan tribes who number 300,000 and 400,000. Negritos are still fairly numerous in mountainous areas.

At the outbreak of this war, the Philippine population also included about 8,000 American civilians, 120,000 Chinese and 30,000 Japanese. The Chinese were mostly small shopkeepers; the Japanese, many of whom lived near Davao, were farmers, craftsmen and fishermen. Among the foreign population were also about 4,000 Spaniards, a thousand Germans, and other European nationals.

Eight distinct languages and 87 native dialects are spoken in the islands. Approximately 27 percent of the population knows some English. Spanish is spoken by three percent. Tagalog, the official native language of the Philippines, is spoken by over 4,000,000 people. Bisayan is used by about 45 percent of the population but it lacks official recognition partly because it is not spoken in the Manila area.

Literacy is relatively high in the Philippines. About half of the natives can read and write at least a little of one or more of the leading languages. Many magazines and periodicals written in English were circulated prior to the Jap occupation. At the time of the invasion, there were 32,000 radio receiving sets in the islands.

The majority of the native Filipinos leads a simple agricultural life. Three-fourths of the Filipino males are farmers. They eat a simple diet of rice, fish and vegetables and live in primitive huts made of nipa palm and bamboo. They have few possessions and their farming implements are crude. The carabao, or water buffalo, is the national beast of burden. Only five percent of the Filipinos are employed in industry, much of which is concentrated in and around Manila.

Class distinctions in the islands are very marked. The great masses of farmers belong to the lower class. The upper class is composed largely of landowners and wealthy merchants who own modern homes and live in comparative luxury.

Although usually calm and friendly, the Filipino is subject to emotional outbreaks. As a general rule he is law-abiding and passive. However, local violence has occurred when upper class landowners oppressed their tenants. The Filipino has much personal pride. It is a mistake to speak harshly to Filipino laborers or to ridicule them in front of others. The tropical environment has made the Filipino easy-going and he often shows a lassitude which Americans may mistake for laziness. However, Filipinos make good workers when properly supervised and employed at an agreed price for a given job.

The Mohammedan Moro is fanatical in his religion and extremely independent. Often military intervention has been necessary to put down Moro rebellions. The Moros have no use for the Christian Filipinos, but they respect American Christians because the latter have stood up and fought them in the past.

The Pagans are a proud people who have resisted christianizing. Through schooling and police supervision the head-hunters among them have been discouraged from their old practice. The Pagans have proved to be the most stalwart of the Filipinos and have carried on active guerrilla warfare against the Jap since organized resistance ceased.

Under American supervision and administration, health conditions in the Philippines improved to a point where they were better than in most other tropical areas. Cholera and bubonic plague were practically wiped out and smallpox was greatly reduced. However, the risk from disease in the islands is much greater than in the United States, and since the Jap occupation, outbreaks of cholera and other epidemics have been reported. Most of the diseases which are present can be avoided by common sense application of certain precautions that must be observed by AAF units and individuals.

Mosquito-borne diseases are the most prevalent. Malaria is present on every island, and Jap radio reports indicate that it is more common now than before the war. It was widespread among American and Filipino forces on Bataan and proved an important factor in their ultimate defeat. Malaria is confined to the hilly regions under 2,000 feet elevation. The flat plains and coastal areas are not malarious. The disease is most common during the rainy season. Of less prevalence are two other mosquito-borne diseases, dengue and filariasis, although the type of filariasis common among the natives of the Philippines is unlikely to affect AAF personnel.

Standard precautions against mosquitoes should be rigidly observed in the islands.

The islands have a plentiful supply of water from surface streams and artesian wells. However, all water should be disinfected or boiled before use because of the prevalence of diarrhea and dysentery, and the recurrence of cholera. Men should not swim in ponds or streams not certified by a medical officer; the danger from blood flukes (schistosomiasis) is great.

Native fruits and vegetables are dangerous. Usually they grow in soil contaminated by human wastes or are washed in polluted water. All fruits and vegetables must be boiled to prevent them from transmitting intestinal diseases.

Because it is difficult to keep clean and dry in the tropical climate of the Philippines, minor wounds, such as cuts, scratches, insect bites and leech bites, become infected easily. Even the smallest wound should be cleaned, disinfected and covered with adhesive.

The economic system of the Philippines in peacetime was based on a simple agricultural life. Most of the cultivated area, about 15 percent of the total land area, was devoted to food crops, principally rice. Methods of cultivation were primitive, although the Ifugao rice terraces in northern Luzon were considered one of the great engineering feats of the world. Corn, coconuts, sugar, hemp and tobacco also were grown in quantity.

Little manufacturing, as we know it, existed in the Philippines before the war. What there was consisted mainly in the processing of export crops, and handicrafts such as embroidering, hat-making, cigar-making and clothing production for home consumption. Other industries included mining, lumbering and a little fishing.

Forest covers about 64 percent of the Philippine land area. Still present in much of the rough, uninhabited terrain is primeval rain forest which generally is made up of tall trees with a dense overhead canopy 100 to 140 feet high. This foliage shuts out the sun and makes the forest floor dark and damp.

In many sections, second-growth jungle of varying height and density or grass covers territory once under cultivation or cut over by the natives. At altitudes above 3,500 feet may be found moss forest which is dense and generally dripping wet. On the higher mountain slopes, however, particularly in northern Luzon, there often are pure stands of pine.

Mangrove swamps are located along protected coasts which have low muddy flat lands. A network of narrow, fairly deep water channels frequently interlaces the swamp areas. Nipa palm swamps may be found in the drier, less salty areas beyond mangrove swamps. Large areas of floating grasses and sedges appear in the interior of Mindanao, while extensive natural grasslands cover the areas of lesser rainfall on that island.

The common type of Philippine grass is called "cogon." Very coarse and dense, it may be anywhere from three to eight feet high. Wheels-up emergency landings may be made in cogon grass.

There are no large and dangerous wild animals in the forests of the Philippines. Largest of the native species is the small buffalo, the timaru, confined to the island of Mindoro. Other beasts include wild pigs, shrews, lemurs, skunks, otters, civet cats, squirrels, small wildcats, rodents, tarsiers, monkeys, deer, dugongs, porcupines and anteaters.

Among the birds of the Philippines are ducks, coots, gallinules, rails, shorebirds, doves, pigeons, hornbills and snipes. Although the island snake population generally is harmless, some of the snakes are deadly. Chief among the latter is the cobra, found mostly in rice fields and on the edges of forests. Crocodiles often are found in deep rivers and creeks inside mangrove forests.

Many smaller forest pests are to be avoided. They include black widow spiders, tarantulas, scorpions, centipedes, ants, wasps, land leeches and various biting bugs.

Philippine waters, both fresh and salt, are rich fishing grounds. Common varieties include rays, sawfish, eels, mullet, snappers, pompanos, catfish, carp and sharks.

The 7,083 islands comprising the Philippines have coastlines totaling about 12,000 miles, nearly twice that of the United States. Before the Jap occupation, there were 11 official ports of entry in the islands. Manila was the leading port, and Iloilo next in importance.

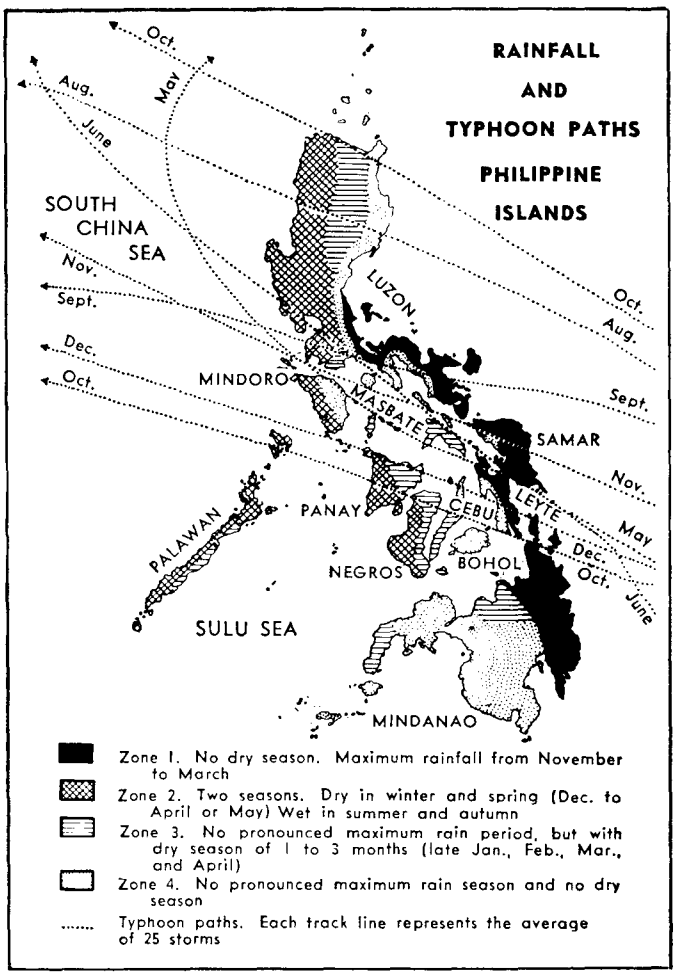
Principal railroad lines of the Philippines are on the islands of Luzon, Panay and Cebu. The main line of the railroad on Luzon extends 459 miles from San Fernando in La Union Province to Legaspi in Albay Province. The line on Panay connects Iloilo and Capiz; that on Cebu connects Argao and Danao.

The main Philippine highways, built by the Insular Government, form no network as those in the United States because the Philippines are not industrialized and because much of the island population is concentrated on the coasts where water travel is convenient. There were 14,200 miles of roads in 1940, of which 7,500 miles were designated first class, 4,600 second class and 2,100 third class. Two-thirds of the total mileage of good roads were on Luzon, centering around Manila.

As of September, 1941, the Philippines had more than 85 airports and landing fields. Three-fourths of them were operated by the Commonwealth Government. Although most of the airfields were commercial, the number of military air installations was increasing shortly before the fall of the Philippines. It is reasonable to assume many additional facilities have been constructed by the Japs since their occupation.

The conquest of the Philippines by the Japanese provided one more chapter in the lively and chaotic history of the islands. Although they have been a melting pot of various races and cultures for many centuries, the white man had been continuously influential since the 16th century in shaping their destiny. The islands were discovered by Magellan in 1521, colonized by Spain in 1565 and ceded to the United States in 1898 following the Spanish-American war.

Schooled in democracy under our government, the Philippines were well on the way to gaining their complete independence when the Japs stepped in and halted the process. In our compact with the Philippines, we had set 1946 as the year in which they would take their place in the family of free nations. Destruction of the Jap and his power to wage war will make good that promise. ☆



OUR PIGEON

"SQUAB on toast," the rather derisive cry which crew members customarily made when someone put a crate of pigeons in their airplane, is no longer considered funny in the AAF. "I would just as soon eat broiled navigator," claims a pilot lately rescued from a Central American swamp after a pigeon had carried out his appeal for help.

The AAF's homing pigeons bail out into a 350-mile-an-hour slipstream from 35,000 feet, fight wind and cold over hundreds of miles of ocean and get home with messages that often mean the saving of men's lives.

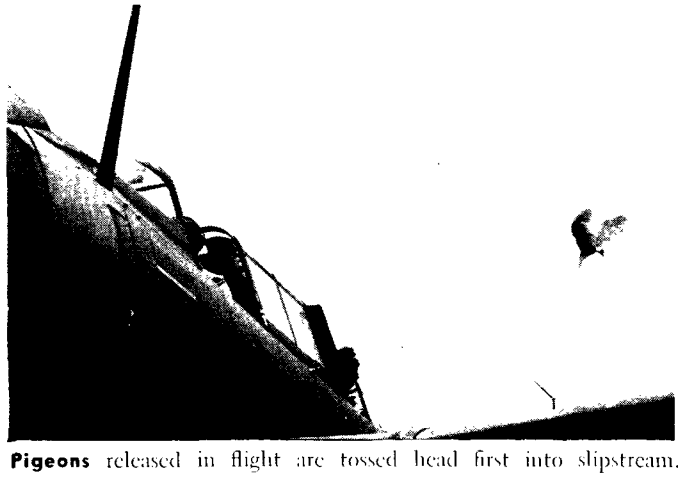
Pigeons are being used by the AAF to supplement other forms of communication. They carry messages during emergencies when radios fail or can't be used. Crash landings often wreck radios, and a pigeon can carry word to an aircraft's base of the exact location of the crash, the condition of the crew, and whether medical aid is needed. As a silent, dependable means of communication, they are useful in many phases of combat operations. In airfield to airfield communication, they carry messages between main bases and satellite fields. Over isolated territory they are used for intercommunication, from island to island, or from one airbase to another over enemy territory. Pigeons come in handy when the enemy jams the radio. Isolated forces can be supplied with birds by parachute drop-containers, thus enabling them to communicate without giving away their position.

Pigeons in this and other wars have maintained fine records. In the first World War, nearly 1,000,000 pigeons carried messages, and statistics show that more than 90 percent of all missives were delivered. The record is even better in this war even though many of the routes flown by the sturdy birds have been over water.

Right now there are more than 20,000 trained pigeons in the AAF Pigeon Service. Activated February 15, 1943, it has done what many persons considered impossible—changed the return addresses of homing pigeons. This agency has taken adult pigeons, moved them thousands of miles and taught them to home on their new base instead of their old. Until this war, few even dreamed that homing pigeons could be trained to home distances of 500 miles on a new location within a few weeks. Another major achievement has been the training of "two-way" birds, which fly to a point 75 miles away and then return.

Pigeon units are organized into companies, each company being divided into four platoons of six sections each. The sections are divided into three-man detachments, each handling from 120 to 240 birds. One detachment is normally sufficient for an airfield, and the men are known as pigeoneers. The radio operator is in charge of the birds in his plane.

Maj. Thomas MacClure, an ex-prospector who used pigeon messengers in times of peace to take his claim records from mine locations in the wilderness to registration offices in the towns, is chief of the Pigeon Service.



Pigeons released in flight are tossed head first into slipstream.

How to release a pigeon: *If you run into trouble and have a set of two pigeons on board, take map and message paper from the top of the pigeon compartment, plot your position on the map, write details in the message. Roll them up, place them in the message holder and tape it on the front of a pigeon's leg. If there is a paper sack in the pigeon container, slit it and wrap the pigeon in it. Face him head toward the engines, and toss him out. If there is no sack, fold his wings against his body and follow same procedure. The second bird can be released after a crash landing or ditching. In case there is not time to attach messages, release pigeons anyway. They have numbered leg bands, and the AAF Pigeon Service knows which birds are on your aircraft. When the birds return to their loft, a record of your trip will be sent.*

Pigeons for airplanes are carried in special containers which have room for two, four or more birds. Each container has a top section holding a message book, map overlays, message holders, pencils and bird food. The message holder can carry a map overlay on paper nine by nine inches and 1/1000th of an inch thick, a duplicate of a previous message and an original message. The holder is strapped to the front of the bird's leg so as not to interfere with the pigeon's walking, in case it gets tired of flying—sometimes one does—or with tucking its legs under the body while in flight. Each bird carries a numbered leg-band, and in case there is not time to attach a message, release of the bird will indicate to the home base that the airplane is in trouble.

The usual procedure, if there is time, is to release one pigeon while in flight, and another after a crash landing or ditching. It is a considerable shock to a 13- or 14-ounce bird to be tossed out into the slipstream of a four-engine plane going some 300 mph, but the birds are able to weather it. Usually the pigeon is wrapped in a split paper sack and released, head facing the engines to give him the benefit of his natural streamlining as he bucks the wind. Pressure

The AAF's homing pigeons are recognized as soldiers, and good ones, with guts, endurance and a high record of performance when the going is tough

AIR FORCE

of the slipstream holds his wings close to his body until the slip is gone. Then the bird fights his way out of the bag, spirals down to his favorite ceiling of from 300 to 400 feet and sets out for home. Pigeons can be released without the paper sack, but it is better for them to have protection. Oddly, the lack of oxygen and the intense minus-50-degree cold at 35,000 feet doesn't seem to bother the birds. The average speed of a homing pigeon is from 35 to 40 mph.

The Caribbean Wing, an AAF bird installation, has lofts at each of the bases along the route from Miami to Natal, and any plane setting out for any distance from Miami will carry aboard two sets of pigeons. One set—a set consists of two birds—will home on Miami and the other will home on the destination. In case the plane runs into trouble less than the halfway mark on its route, the radio operator will release the Miami birds with messages which give location, time, identity of plane and any pertinent information such as injuries or nature of trouble. In case the plane is nearer the other base, it will release the alternate set. In a forced landing, all birds will be turned loose.

The pigeons get about the same training as a combat crew—basic, orientation, relocating, staging, more relocating and orientation, and plenty of advanced training. The instruction must be conducted carefully because a pigeon not relocated will go "over the hill" to its old base in a hurry. This applies especially to full-grown pigeons, which before the war never would settle for more than one home. For example, a South Bend pigeon, when loose, would always head for South Bend, and so up to a few years ago the only method of getting a pigeon which would return to Miami was to bring in a few breeders and raise their squabs. These young birds would look upon Miami as home. The Pigeon Service, however, has developed a resettling system which will cause a South Bend pigeon to look upon Miami as wistfully as upon his birthplace.

One bird has this on its service record:

Training: Conditioned to fly 300 and 400 miles at 1307th Signal Pigeon Company, Aviation, Lake Charles, La.

3 Mar 44: Shipped to Caribbean Wing Detachment, Miami, Fla.

21 Mar 44: Resettled, given seven short exercising, conditioning and orientation flights.

8 Apr 44: Homed from the 300-mile station in 8 hours, 58 minutes, at 33.55 mph.

29 Apr 44: Homed from the 400-mile station in 8 hours, 43 minutes, at 45.95 mph. Weather conditions good.

10 May 44: Homed from the 500-mile station in 16 hours, 4 minutes, at 30.67 mph. Weather stormy and wet.

There are times, however, when a pigeon isn't quite resettled. One of the most noted of such birds is a husky, nostalgic pigeon which was in the process of being taught to consider St. Lucia Island in the lower Caribbean as home. He got loose one day and turned up five days later at the place he liked—Morrison Field, some 1,750 miles away. This trip, over water, is considered something of a record. The longest flight on the books was an authorized one of 7,200 miles covered in 21 days.

Occasionally, the birds are the victims of hawks. Once an attempt was made to have them carry whistles which would be blown by the rush of wind as the birds flew thereby scaring hawks away. The plan didn't work because of the added weight. Hawks and accidents account for a few pigeons, but they have an excellent record of duty performed. They're game and tough, and they will fly on and on as long as there's a heartbeat and a breath left in their bodies. They will get along without water for 24 hours, without food for twice that long. They'll handle up to one-third of their own weight packed on their backs, and more than once they have flown in from an advanced post with photographic negatives in a back cylinder. They have fluttered in to fall and die of exhaustion after bringing their message home; they have come through with severe wounds from enemy gunfire, and several have received official citations for outstanding and courageous service. ☆

Pigeons are invaluable in carrying messages from persons adrift.

ILLUSTRATIONS BY CPL. LOUIS S. GLANZMAN

Bulldozers and Bullets

By MAJ. HERBERT O. JOHANSEN
AIR FORCE Overseas Staff

ONE night, while the ground fighting for Saipan was still in progress, a lieutenant in the aviation engineers drove his jeep to the end of an airstrip and spotted one of our planes burning. Two enemy snipers had fired it. As the Japs sprinted toward the safety of a canefield, the lieutenant grabbed his carbine, but the gun jammed. The Japs were nearing cover, so he stepped on the jeep's throttle and lit after them. He caught up with one of the Japs and slapped the jeep into him. The Jap went sprawling, but jumped to his feet and kept on running. The jeep whirled around and slammed into him again. The Jap was buried the next morning.

When the aviation engineers of the 7th Air Force Service Command landed on Saipan on June 30, D-day plus 5, their job was to build airstrips. In order to do that job, they had to fight Japs, dodge artillery fire from nearby Tinian and withstand three strafing attacks. The situation was so tense they encircled their tent area with .50 caliber machine guns. No surveying party went to work without an accompanying band of engineer-riflemen. Engineers in half tracks maintained a constant patrol. For a short time, the engineers' guns were the field's only antiaircraft defenses and their half tracks provided the only close-in ground defenses. When they started surveying a fighter strip on the southeast end of the island, a tank battle was raging in full view half a mile away. The actual front line was just one mile to the north.

Saipan is no longer news. It is now a full-scale operational airbase. The aviation engineers did not get in on the battle headlines, but they built the airfields that bring us closer to the headline of headlines: Japan's defeat.

The battle for airbases is always news, and the capture of an island is only half that battle. Operational airbases such as we are now using on Saipan and dozens of similar islands in the Pacific are not captured. They are built—often under enemy fire, always against unbelievable obstacles, with inadequate equipment, by men fighting time, nature and the enemy.

The job of Saipan was done by five battalions of the 7th AAF Service Command engineers. When their work was finished, our bombers and fighters started using the fields to continue their operations along the airways to Tokyo.

A natural question is, "What about the Japanese airfields we captured? True, they were pretty well bomb-battered in the process, but why not just fill the craters, move in our aircraft and start operations?" That's a natural question, only don't put it to the aviation engineers who were there. If

Our aviation engineers had to fight the Japs, dodge artillery fire and withstand strafing attacks to construct airbases on Saipan

rehabilitation of captured airbases were their only problem, life would have been easy for them.

Unfortunately, Jap airfields are rarely suitable for our type of operations. Not only must bomb damage be repaired, but also existing facilities must be adapted to our requirements. Then, to accommodate the increasingly heavier and more intensive land-based air operations in the Central Pacific, the aviation engineers must make two or three airfields grow where the Japs had planted but one.

Aslito airfield on Saipan is an example. Although it was planned in advance that Aslito should be a bomber base for our operations, the first job was to put it in shape for the immediate use of land-based fighter planes, especially the fast-landing, heavy Thunderbolts that had done yeoman service in the original assault as bombers, strafers and rocket-firing hellions.

To make Aslito reasonably adequate meant filling in some 600 holes, ranging in size from small ruts to gaping bomb craters. That was accomplished in the first week. From adequate to safe meant tacking an additional strip of runway with shoulders on each side to the 3,900-foot Jap strip. This operation involved moving 10,000 cubic yards of dirt. The job was finished in four days.

Next came the building of a mile-long B-24 runway. Some 66,000 cubic yards of earth were excavated, 27,000 cubic yards were filled in, and 80,000 cubic yards of coral topping were transposed to finish the job.

Ingenuity plus hard work is the formula used by the aviation engineers. When they found that 24-hour shifts and their own excellent equipment weren't enough, they adapted to their use what the Japs had left behind, salvaging machine and hand tools, generators, pumps, lumber, rolling stock, wiring and pipes. Jap pumps drove salt water to wet down the runways. Jap generators provided lights for the tents. An old Jap concrete mixer was turned into a washing machine, running obligingly on captured Jap gas.

Aslito was an example of adaptation of known requirements to existing conditions with whatever compromises were necessary. Lt. Col. Harry A. Hall, 33-year old commanding officer of one of the battalions, summed it up as follows:

"If we know the number and general type of the planes to be accommodated, we know pretty well what sort of field to build. We know the runway should be headed into the prevailing wind and that approaches to the runway at either end should be as clear as possible. We know that we should have a reasonably level site—just how level the site will be dependent upon how much time we have to build the strip.

"If it's a rush job, we can't be cutting down hills and filling up ravines. We find the site that seems best suited to the requirements. If we head the runway directly into the prevailing wind, there may be a hill that the planes can't clear on a take-off. Or it may be a hill in the way of landings. So we swing the runway a little away from the prevailing wind. That's not a perfect lineup for a runway, but planes can come in and get off—and that's the important thing. If the requirements can be adapted to the conditions, we go in with surveyors. The bulldozers come right behind the transit. The surveyor looks through his transit, turns to the man on the 'dozer, and says, 'Plow ahead.' We build the field as we are planning and laying it out."

Thirty days after the engineers landed, Aslito was handling what was probably the greatest volume of Army, Navy and Marine air traffic in the Central Pacific. Hundreds of take-offs and landings every day: 7th Air Force Thunderbolts to bomb, strafe and vent their rockets on Tinian, Rota, Pagan and other Jap targets; 7th Air Force and Navy bombers to paste the then unconquered Guam and more distant installations; Marine cubs to spot artillery fire; 7th Air Force photo-reconnaissance planes streaking away after their pictures; transient bombers, cargo and transport planes.

Adaptation of existing airfields is not always feasible, and the aviation engineers often have to start from scratch. At Saipan, the intention was to use a Japanese strip on the west coast of the island for a fighter field. However, an inspection showed that the strip was not suitable for our operations, so a new site was selected on an elevated tableland overlooking Magacienne Bay.

The advance party of the aviation engineer battalion assigned to build the fighter strip began preliminary surveys to the rattle of machine guns. At night, they were able to read from the light of American and Japanese flares. The remainder of the battalion arrived a few days later with com-

plete equipment and the heavy work was started. They drove some 90 trucks and jeeps and 80 pieces of heavy equipment such as bulldozers, graders, shovels and rollers over seven miles of torn up, winding roads clogged with ammunition and supply caravans bound for the front and ambulances headed for the rear. Slow moving cats and 'dozers of the engineers would lumber forward for a few minutes, then pull off the road to let faster moving traffic go through.

Meanwhile work was under way in the level canefields covering the site. Bulldozers worked only a few feet behind the surveyors, clearing the cane, knocking down scattered Jap shacks and uprooting the lines of a small Jap railroad. The entire area was littered with dud shells, unexploded grenades and fuzed artillery ammunition.

Actual construction began on July 2. Fourteen days later a made-to-order fighter runway was ready. During that period about 50,000 cubic yards of earth and coral had been moved. Machinery had put in 7,800 operational hours, figuring 20 hours per machine per day, with only four hours lost through repair and maintenance.

But runways, however excellent, hardly make an airbase operational. There are dozens of "accessories" that the aviation engineers know only too well because they have to build them. On Saipan these included an emergency "ready av gas system" of large tanks with drum dumping stand and overhead dispenser. A "ready av gas system" is a series of gasoline storage tanks at the edge of a runway where gas is pumped into tank trucks which in turn service the planes. Other tasks included the reconstruction of a Jap deep well and the accompanying pumps, and directing the flow of water into a purification plant; the erection of a tank for servicing Jap aviation gasoline to American trucks, and the construction of a control tower and a bomb storage area.

While carrying on their airfield construction and rehabilitation work, the engineers set up their own living quarters in a tent area, built screened-in kitchens and latrines, erected showers, dug foxholes, set up repair shops and maintained all equipment. In addition, the engineers served regular guard duty and performed KP and other routine jobs. Any free hours squeezed out of their schedule were spent in such relaxing activities as building washing machines.

The story of AAF aviation engineers on Saipan is more or less the story behind all of our operational bases through the Pacific. It is one of the many stories behind the headlines heralding our aerial assault toward Tokyo. ☆

TO THE RESCUE

Better to Ditch

A B-17 was in sight of its home island when the gasoline gauge on the last tank flickered to empty. The pilot ordered the crew to bail out, and he and the copilot stayed with the plane and ditched fairly close to shore. It was a good ditching and they had plenty of time to inflate one of the dinghies. They paddled to shore without any difficulty since there were no coral reefs or other dangerous obstacles.

The rest of the men were not so fortunate. Two of them were picked up by a rescue boat after a diligent search. The others never were found.

The pilot of this B-17 acted with the best intentions. He thought a ditching would be dangerous and that the men would have a better chance of survival if they floated down to sea in their parachutes. This pilot simply was not up to date in his knowledge of emergency rescue. Before ditching procedure was refined to the smallest detail, before rescue equipment was designed and supplied to meet every emergency, a bail-out probably would have been preferable to a ditching, but today if a crew knows its ditching procedure and if the pilot knows how to ditch there should be little danger. Even if a plane floats only a minute, airmen have found that they have time to get outside and inflate their dinghies.

When an airman leaves his plane on the water he can take all of the emergency equipment with him. He has the assistance and advice of the other men to aid him. He will be afloat in a dinghy instead of a vest, and this will add to his safety, his comfort and his chances of rescue.

All this is true, of course, only for multiplace aircraft. A ditching is not advisable for a fighter pilot, although some successful ditchings have been made in the P-38. A fighter pilot has his rescue equipment with him—even his dinghy—when he bails out, and ditch or bail he is going to be alone when he hits the water.

When in Trouble—Sound Off

If rescue agencies know the location of a survivor, the task of picking him up is relatively simple unless he is in enemy territory or unless the weather is extremely unfavorable. Communications, therefore, may be the major factor in effecting a rescue.

The first communications task is to let someone know you are in trouble and give your position. This should be done as soon as you know something is wrong. If the trouble clears up you can let the ground station know. If it does not clear up, DF stations will be alerted to take fixes on your position and rescue agencies will be ready to start their search. Turn on your "emergency switch." Transmit an SOS on W/T or Mayday on R/T. Use your normally assigned air-ground frequency first but if you can not get through, switch to one of the emergency frequencies. It is important to send your position, your course and your plans while you are in the air. Your altitude and the superior equipment will afford more range than you can hope to get from a dinghy.

The second communications task will be to help the search party find you once you have ditched or landed. Set up and operate the Gibson Girl for five out of every fifteen minutes. When planes or surface craft are seen or heard, operate your Gibson Girl continuously.

In addition, use your visual signals. Pyrotechnics will attract either a boat or a plane. The sea marker can be seen by aircraft more easily than by boats, but if a dinghy has trailed a sea marker for two or three hours the boat might intercept and follow the trail. The signal mirror is very effective in sunlight. In fog or darkness the whistle should be blown.

If you have lost your signalling equipment, use the back of your watch to reflect the sun's rays. Splash the water. Wave your tarpaulin. You will be a very small visual target, and a plane might fly right over your head without seeing you unless you signal it by the best means you have.

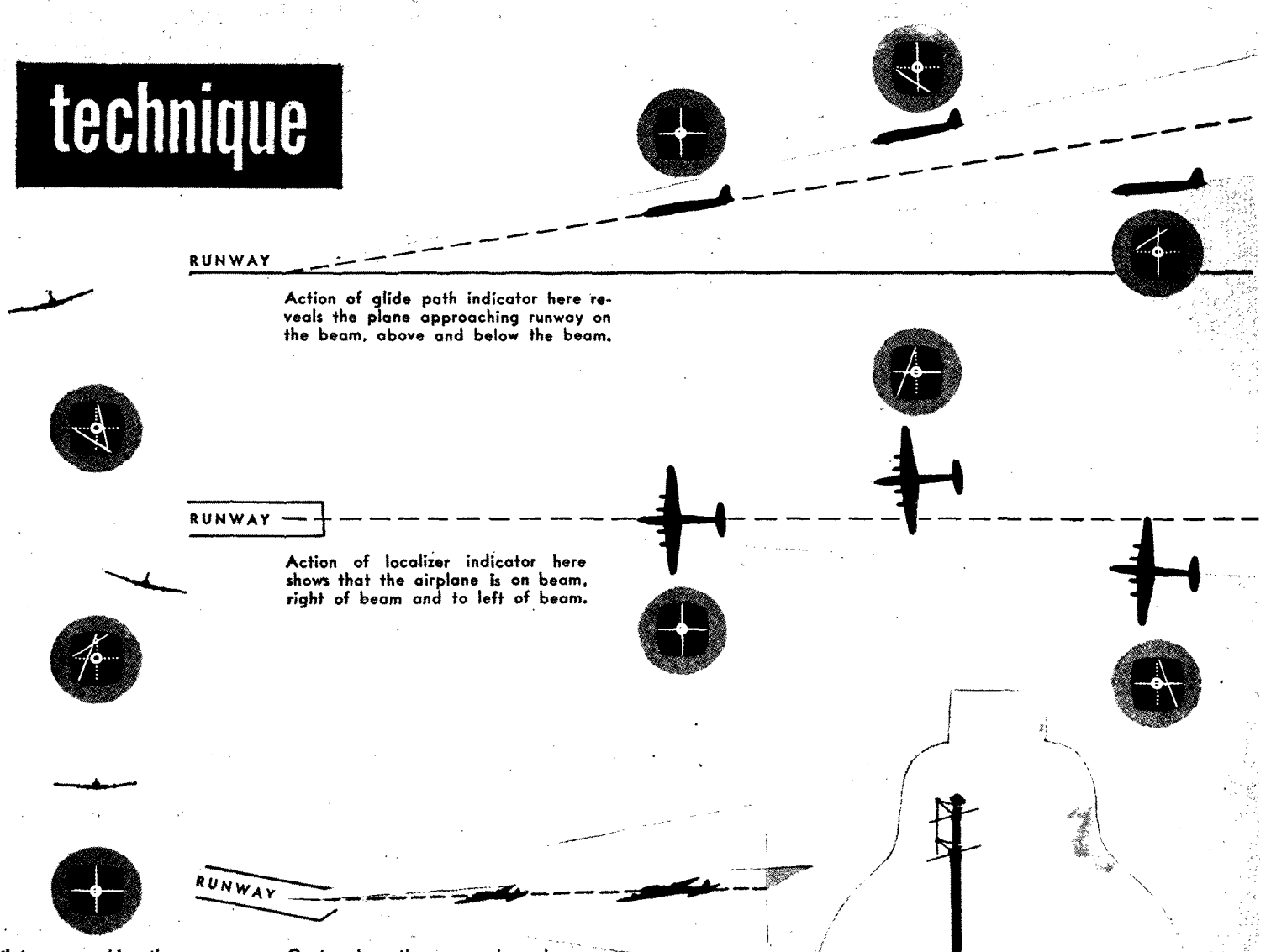
New Survival Manual

A revised edition of the AAF manual, "Survival," which came off the press in July, is now available for distribution.

The new volume was prepared exclusively for use at the scene of an emergency. When you settle down in your dinghy with "Survival" to find out what to do next, you won't be confronted with advice about what you should have done before you ditched your plane. All briefing and training instructions have been deleted. The new manual is arranged and indexed so that wherever you are or whatever your problem you can find the information you need immediately.

The new "Survival," like the old, is divided into two sections: survival on land—jungle, desert and arctic—and survival at sea. Sub-divisions of these sections, however, have been rearranged to prevent duplication and to give the most important information first. The first page of each section gives instructions for "immediate action," followed by "first aid."

"Survival" will be distributed by the Training Aids Division, One Park Avenue, New York. ☆



Action of glide path indicator here reveals the plane approaching runway on the beam, above and below the beam.

Action of localizer indicator here shows that the airplane is on beam, right of beam and to left of beam.

Pilots approaching the runway are able to determine their positions from the horizontal and vertical lines on the dial. The position of plane and how indicated is shown in the three graphic drawings above.

Centered on the runway by a beam from the localizer transmitter and guided down through the overcast by a glide path indicator, a pilot is able to come in for a safe landing.

Shooting Landings by Radio

By Lt. Col. F. L. Moseley

Aircraft Radio Laboratory, Wright Field

If a pilot has to make a landing on a field closed over by a low-hanging overcast, he wants to know three things: When he is lined up with the unseen runway, his distance from the airfield, and the rate of descent that will bring him out a few feet above the end of the runway. And these are the three things the AAF's new instrument approach system tells the pilot—by radio.

The new system picks the pilot up about 15 miles from the airfield at 3,000 feet and leads him down through overcast to a safe landing on the runway.

After many years of development, the present system was standardized following its successful demonstration at the Pittsburgh airport in the fall of 1942. At Bryan, Texas, one system has approximately 4,000 hours of successful operation to its credit.

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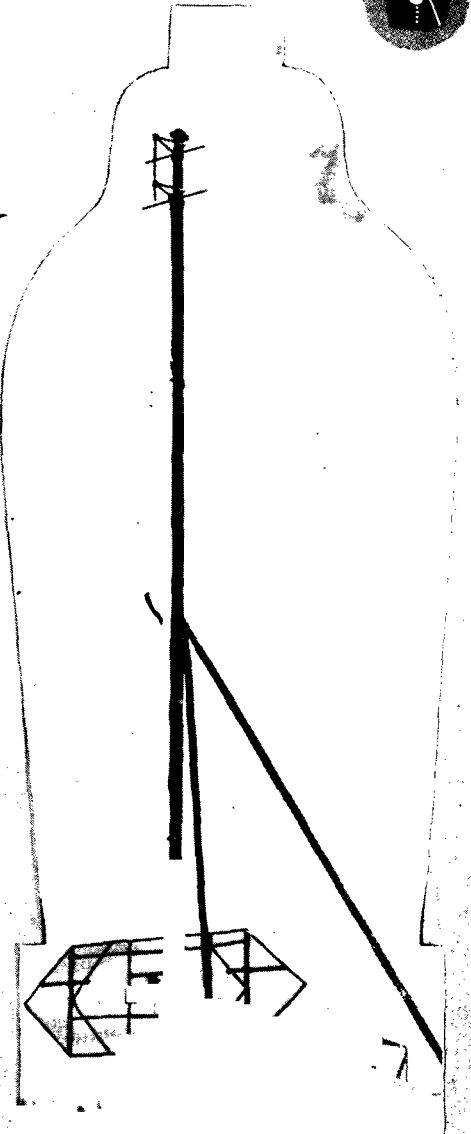

The localizer transmitter, used in the AAF's new instrument approach system, is placed about 1,000 feet from the upwind end of the runway. Mounted on a truck, it can be moved quickly when the wind changes.

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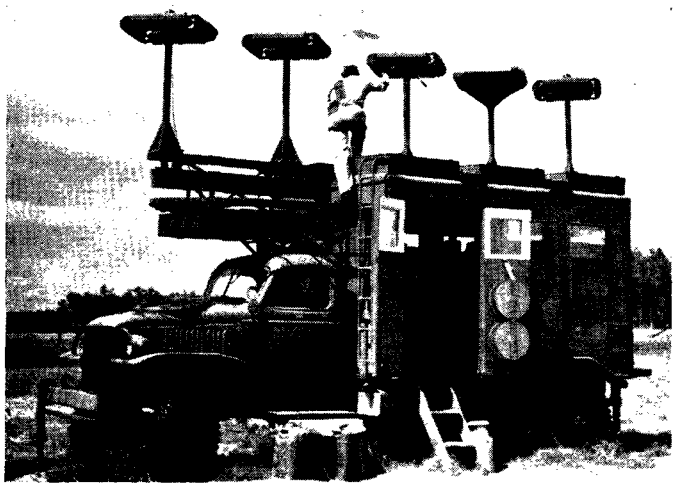

Portable radio equipment, which transmits the glide-path signals for the instrument landing system, is placed about 750 feet upwind from the runway's approach end and about 400 feet to one side.

Because the equipment that has made successful instrument landings possible is strictly a radio system, a description of the component parts and their operation necessarily must be semi-technical.

Fundamentally, the system includes a localizer to bring the plane in line with the runway, a glide path transmitter to guide the plane down at the proper rate of descent, and markers or check points over which the pilot gets a radio fix including distance from end of runway.

The localizer is similar to an ordinary radio range. It differs in two respects in that it indicates the course line to the pilot visually (on instrument panel) rather than aurally and it operates at ultra-high frequencies where it is out of the range of ordinary static.

The localizer projects two tone-modulated radio patterns which intersect as a line or plane in space, thereby providing the pilot with a center-line to the middle of the runway from as far away as 75 miles at 8,000 feet.

On the instrument panel is a cross pointer meter that indicates the position of the airplane in relation to the localizer line, whether it is to the left or to the right.

One side of the instrument is yellow, the other blue. At all times, irrespective of heading, the localizer indicates the color of the sector in which the airplane is flying. However, the localizer needle points toward the course line when the aircraft is approaching the runway from the proper direction. When the aircraft is flying in the opposite direction, the needle points away from the course line.

Since the localizer is a special form of radio beam or range, it must be flown by "bracketing." With the aid of the directional gyro, heading corrections of only a few degrees need be made because of the sharpness of the localizer course. So sensitive is the indicator needle that a deviation of 3° from the course line will be indicated by a complete swing of the needle to its scale maximum. This sensitivity is essential to assure proper alignment of the airplane with the center of the runway.

Three markers, 75-megacycle transmitters, are placed along the localizer course, one at 4½ miles from the field (flashing two dashes per second), one at one mile from the field (flashing six dashes per second) and the boundary marker approximately 200 feet from the end of the runway (projecting a constant light).

The third component is the glide path, a precise radio beam that descends at a low angle to the runway. As seen by the pilot, it starts from the landing point on the runway at an angle of 2½° and projects to a distance of 15 miles or more. A cross-pointer instrument on the panel indicates whether the plane is above or below the glide path; when the two needles intersect, the plane is on the proper flight path.

The 2½° glide path angle represents a rate of descent of approximately 400 feet per minute at a ground speed of 100 mph. The glide path also may be used for rough indications of distance from the runway since each 200 feet of altitude approximates one mile in distance from the field. If the pilot's altimeter reads 1,000 feet when he is descending on the glide path, he is approximately five miles from the end of the runway.

Ground equipment includes the localizer transmitter which is installed in a truck about 1,000 feet from the upwind end of the runway. Glide path transmitter is mounted in a small trailer approximately 400 feet to the side and 750 feet from the approach end of the runway. Marker transmitters are transported in jeeps to their locations.

Equipment in the airplane receives the impulses from these transmitters. Localizer and glide path receivers pick up the signals on a combination antenna or on two separate antennae, depending upon the type of airplane. A small control box enables the pilot to select any one of six receiving channels for the localizer and any of three channels for the glide path.

To fly in on this system, the pilot approaches the field on the radio range, by his automatic radio compass or by other radio navigation methods. When within 20 miles of the field, he switches on the proper channel for making a landing at this particular field. Then he brackets the localizer and flies along it until the glide path is intersected. At an altitude of 2,500 feet, he intersects the glide path about 13 miles from the field. At this point he starts his descent along the glide path, lowering wheels and flaps, reducing power and increasing rpm as the plane nears the field. On breaking out of the overcast, he is able to continue his descent onto the runway. From flight experience, it has been proved that a skilled pilot can make a complete blind landing on the runway, but initially the system is being used simply as an aid to low approach.

Further refinements include use of the C-1 automatic pilot. The localizer and glide path signals would actuate a special receiver that, in turn, would transmit adjustments to the auto-pilot which would fly the plane down to the runway. The pilot, of course, would have to make power adjustments, lower the gear and flaps.

Extensive tests of the system have been made by Wright Field, the AAF Board and AAFTAC at Orlando. Service tests are being conducted by Air Transport Command and the Instrument Instructors' School at Bryan, Texas. One of the production models was taken to England by the author for joint tests with the RAF and the 7th Air Force.

Such problems as traffic control over a closed-in field are being tackled by airdromes with the equipment. In England, we successfully brought in as many as six planes in succession without difficulty and, with establishment of suitable traffic control procedures, this number can be increased greatly.

Historically, the AAF instrument approach system is the outgrowth of many years of work by numerous agencies. Lt. Gen. James H. Doolittle was a pioneer in the field. Sharing in the development were the Bureau of Standards, the Army and Navy, commercial airlines and others. The present AAF system combines and refines many ideas, old and new, into a complete practical system that promises to eliminate most of the weather hazard of landing planes through overcast.

High Intensity Controlled Lighting for Airdromes

Concentrated incandescent lights with enough candlepower to penetrate through several hundred feet of ground fog, haze, snow and other weather hazards that hamper final instrument approaches and radio let-downs are being used by the AAF in its newest runway lighting system. These lights enable incoming pilots to see the outline of the field approach and the runway at the critical time when proximity of the ground is likely to disturb the accuracy of instrument readings.

This equipment, developed by the lighting unit of Wright Field's Equipment Laboratory and tested in cooperation with the Navy Department Bureau of Aeronautics, is in use at more than a score of Army-Navy installations in the Aleutians, Newfoundland and the European Theater of Operations. It also has been approved for use at permanent stations on runways having instrument approach facilities.

The individual lights are dome-shaped units with two lenses. One concentrates the light in a vertical beam, the other directs a high-intensity beam approximately parallel to the runway in the angles of approach. A reflector strengthens the main beam by redirecting rays that otherwise would be lost. Reflections from fog or water particles that might prevent the pilot from seeing other lights farther along the rows are greatly lessened by restricting stray light to a minimum.

Runway, approach and caution light markers have color screens between the inner and outer lenses that retain color clarity when viewed through the halo of other colored lights.

Five brightness settings permit intensification of the light when visibility decreases,

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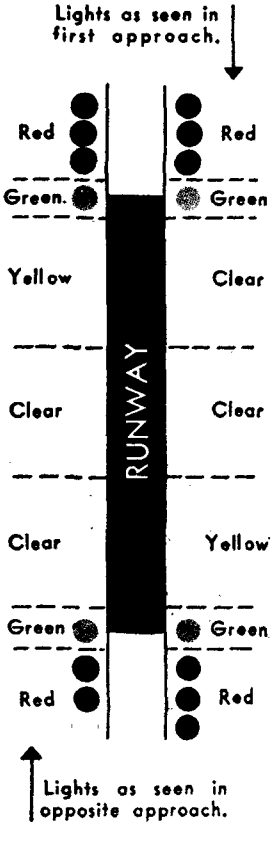
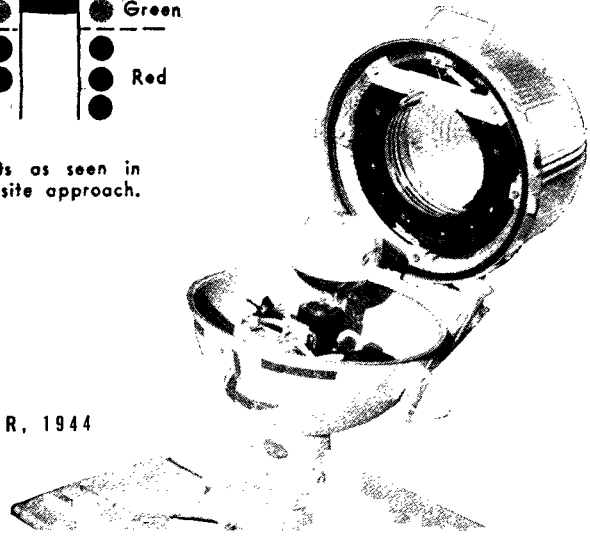


Installation plan (left) for new lights which mark runway and its approaches when visibility is low.

Inner and outer lenses of lamp unit (below) direct light beams vertically and at approach angle.



TECH TALK

A tow release indicator is being tested for glider tow-planes. It tells the pilot if tow release mechanism is properly locked, indicates when the tow rope has been dropped. . . . A light steel cable with a special safety link hook for attachment may be used to pull heavy gliders. . . . All-wood, DH-Mosquitoes, built in Canada, are being designated F-8 photo ships for the AAF. Camera equipment consists of two K-17 or K-22 aerial cameras with 12-inch special lens . . . K-10 aerial cameras have been modified for night photography to include an electric winding mechanism with a two-second cycle, a 12-inch shutter taken from a K-17 camera, a seven-and-one-half-inch, f/2.5 lens and a K-19B camera photo-electric system for shutter operation. Cameras are to be used for night photography.

To speed up feed and ejection operations on the 20 mm cannon, a link loader has been adapted to T-14 feed mechanisms. The loader has separate guides for 11 links and 10 cartridges, a loading bar and handle. . . . Work is in progress to reduce vibration in gun camera mounts of fighters eliminating blurred photos. . . . Redesigned D-6, D-7 and D-8 bomb shackles provide for caution release, even when bomb tail fuzes are attached only by a single wire, a condition which previously resulted in a hazardous operation to release the bomb completely from the airplane.

In P-51D airplanes the pyrotechnic flare container has been changed to eliminate the possibility of detonation by the pilot's foot when entering the cockpit. . . . Versatility of wing and fuselage tanks was initiated by installing small seal-tight doors, making it possible to carry baggage and supplies in lieu of gasoline. . . . A tougher, harder liquid coating is being applied to external auxiliary tanks made of plastic materials to help make them puncture proof against flying pebbles or stones kicked up by the aircraft wheels during taxiing.

Being built for test purposes are a gigantic static and dynamic test laboratory capable of testing aircraft in the 200,000-pound category, new high-altitude pressure chambers that simulate cold temperatures as well as low pressures and a pressurized, cold-temperature 10-foot wind-tunnel, the first of its kind in the world. . . . A new flight analyzer for flight tests makes a permanent record of altitude, air speed and vertical acceleration; may replace the old barographs as pilot checkers. An electric spark passing between a recording stylus and a metallic backed paper chart, burns a black line to indicate an aircraft's various maneuvers during a test. . . . Aviation goggles are being improved for wear with A-14 oxygen masks and the three service gas masks. . . . Antenna masts made of plastic materials are under study and may replace some of the light metal masts now in use.

A new, tougher, braided fishing line may go into emergency kits carried by men forced down at sea. . . . Sample blackout shades made of satin have been installed on some aircraft. . . . Back type parachutes may get a new form-fitting flexible back stiffener to defeat complaints that present types lose their stiffness. . . . An ice grip casing has been tested and approved for 27" airplane tires permitting improved take-off and landing characteristics on icy surfaces. Of metal, grips are glued to rubber casing by a new method of adhesion.

New electrically retractable landing lights with improved slidings contact and cover assembly are being fitted for bombers. . . . A direct reading gasoline gauge of the metal float type may be installed in B-24 bomb bay tanks to replace intricate "second-hand" indicators. . . . Dropped as no longer needed, have been experiments with various mock-ups used for ditching trainers.

thereby protecting the pilot from excessive glare when visibility is good. Beam angles (toe-in and elevation) and light intensity are controllable. Full intensity is used when visibility is restricted during the day and when visibility conditions at night are extremely poor. Low intensity is used for normal night operations under contact weather conditions. A small fan prevents condensation of moisture over the lens.

A complete installation consists of two rows of lights marking the runway approaches and edges. Individual lights in each row are spaced about 200 feet apart. An approach path of approximately 2,400 feet is lighted at each end.

Approach zones are lighted red, ends of the runway green, first portion of the runway white and last 1,500 of runway yellow. This standardized color arrangement has been adopted by the Army, Navy and Civil Aeronautics Administration for use at all installations under their jurisdiction.

As a pilot approaches a field with this lighting system, he lets down on one leg of a radio range station or on the radio beam of an instrument landing system. When at approximately 200 feet, he holds this minimum altitude until he locates the runway visually before completing the landing. When weather is unusually bad, he may make several passes before lining up his plane for a final let-down.

Under development since 1937, the high-intensity controlled lighting system was first used in 1939 at Indianapolis. Three years later, improved units were installed at Geiger Field for use with instrument approach landing systems.

The lamp assembly of the system can be used only on a 6.6 ampere series circuit and it must be connected to the secondary circuit of a transformer or other device for producing constant current. In emergency installations, power is supplied for each circuit from a 9.3 KVA generator, AAF Type B-6. A brightness control regulator must be used with the B-6 power plant to supply constant current to the series circuit, and the total load must not exceed six kilowatts.

Supersonic Wind Tunnel

A narrow-throat wind tunnel capable of producing wind velocities more than twice the speed of sound is being constructed at Wright Field to test airfoil sections and small aircraft models at supersonic speeds. It will be the largest supersonic tunnel for aeronautical research in the world.

Expected to attain a maximum airspeed that would correspond to about 2,000 mph at sea level conditions, the tunnel is only one-fourth the length of the 20-foot, 450-mile-an-hour tunnel, now the AAF's largest, but it is over four times as fast. Effects of compressibility peculiar to our newest models of high-speed aircraft designs will be studied in the tunnel's small test chamber.

Built of all steel framework, the tunnel is rectangular in shape and lies with its axis in a vertical plane. In cross-section it tapers in diameter from eight feet to less than a foot at the flexible throat aperture. This section in which tests will be conducted is rectangular with a cross-sectional area of four square feet. Wind tunnel airspeeds are increased by reducing the size of the aperture in the nozzle-like throat which constricts the air, then allows it to expand and flow smoothly through the tunnel with jet-like force.

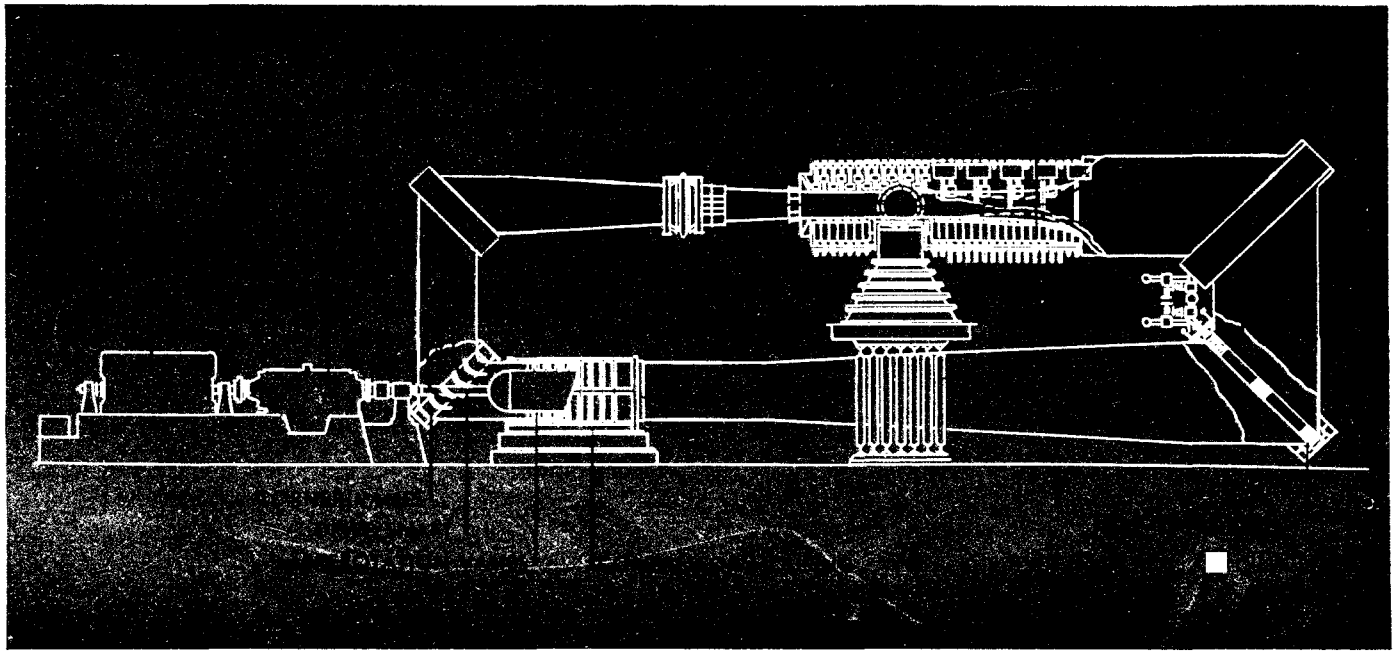
The compressor is a unit with eight three-foot diameter hubs. Forty small cambered blades are set in each hub in spoke-like pattern to draw the air through the tunnel. Each blade is 4½ inches wide and 7½ inches long. A 5,000-horsepower electric motor turns the compressor at a top speed of 3,600 rpm to create an airflow with a 2.5 mach number, or 1,825 mph at the temperature prevailing in the test section.

Internal cooling coils use calcium chloride brine to counteract the heat from compressor blade friction and air compression and maintain the tunnel at sub-zero temperatures for specific tests. Drying devices prevent icing of air particles.

The test section of the tunnel is fitted with a galaxy of scales, gauges and other measuring devices which record lift, drag, side force, rolling, yawing and pitching moments of any airfoil under test. The tunnel also is to be equipped with two accurately ground concave mirrors, 36 inches in diameter, for making Schlieren process photographs which snap pictures of the "invisible" shock waves that form at high speeds.

Oxygen Want Indicator

A new device for warning when the oxygen content of a flyer's blood drops to a critical level at high altitude has been perfected in coordination with the Materiel Command at Wright Field. Known as the oximeter-colorimeter, the in-



Attached to a flyer's ear, the Oximeter-Colorimeter (right) detects a critical lack of oxygen content in blood and activates warning indicator (above) on the plane's instrument panel.

strument is attached to the airman's ear as a built-in part of the flying helmet.

Employing a photo-electric cell, the appliance is designed so that a red light or a warning horn is activated when a dangerous lack of oxygen exists. The device is connected to an indicator placed in convenient view of the airman.

The color of blood changes from bright red to dark purple as oxygen content decreases. This change can readily be detected in the thin tissue of the ear by the colorimeter. Four small lamps on one side of the ear shine through the ear tissue to generate a photo-electric cell plate on the opposite side of the ear.

As oxygen content decreases, the blood darkens, permitting less light to pass through the ear. Activation of the photo-electric cell is thereby decreased until the deficiency is indicated on the warning indicator in adequate time for an airman to correctly adjust his oxygen supply.

Operation and adjustment of the device is simple. Before take-off, the ear cup unit is placed in position. Current to the lamps is turned on by a knob on the front of the indicator.

After about ten minutes, either before or after take-off, when blood-flow through the ear has been stimulated by the warmth of the attached lamps, the indicator is ready for adjustment.

With the blood fully saturated with oxygen, the indicator knob is turned until a blue or green light will show until oxygen saturation of the subject's blood drops under 85 percent. Below this point, a red light appears to warn the airman that protective measures must be taken. Imminent collapse occurs when oxygen saturation of blood drops to 55 to 65 percent.

The oximeter-colorimeter is particularly useful during high altitude flight tests. It can be used also to indicate whether wounded air evacuees are receiving an adequate oxygen supply.

The ear unit has proved practicable for anticipating blackouts by the decreased flow of blood through the ear under the Gs resulting from violent aerial maneuvers of centrifuge tests.

An automatic valve, which will increase the flow of oxygen into the mask when the indicator detects an oxygen deficiency, is being perfected to supplement the warning system. ☆

technique

Pressure Breathing Equipment—To increase efficiency and sa of pilots and crew members at altitudes of 40,000 feet, a pressure oxygen mask, A-13, and a new Pressure-Demand Regulator, Type A-14, have been developed by the Aero-I Laboratory at Wright Field. This oxygen system mixtures of air and oxygen at all altitudes up to 35,000 pressurizes the oxygen at higher altitudes to force it into of airmen who otherwise could not inhale enough to Usable with any standard demand system, the mask is designed to seal more tightly to the face as positive pressure face mask-piece is increased. Mask, goggles and helmet fitted as a unit prior to each flight to insure a 100 per cent sure seal. A cheek flap protects the wearer against extreme cold and flash burns. The A-14 regulator is similar to the A-12 except for an added variable spring weighted diaphragm for pressure breathing. A dial control is manually operated at altitudes of 40,000 feet to increase oxygen pressure as outside altitude is increased. The pressure breathing equipment can be used when an airplane cabin is not pressurized.

Skids for Gliders—Glider crash skids that protect the nose and underside of the fuselage have been developed to shorten a glider's landing run on soft or uneven ground. Made of six-ply mahogany, the three skids are attached to a welded steel tubing sub-frame bolted to the glider nose superstructure. The skids keep the wings in near level flight attitude during a landing. When the nose hits, they force the tail down and put more lift into the wings. A cushion landing results, with glider planing to a stop like a speed boat over rough water. The installations are a product of Pope Field Army Air Base.

Double-Header Jeeps—The ubiquitous jeep, with a tandem hitch, now can be used in pairs or sets of three to tow airplanes along taxiways. The hitch, which is being distributed in kits by ASC to all squadrons (two each except heavy and troop carrier which are allotted three each) on a requisition basis, enables two jeeps to do many of the prime moving jobs for which the 2½-ton truck is designed.

Tests indicate the jeeps, in addition to other duties, now can tow planes on concrete or hard-surface taxiways. When the ground is uneven or wet, an extra jeep usually is needed in the procession. The hitch replaces the bumper and becomes a permanent part of the jeep. When not in use, it can be folded back and fastened to a bracket on the radiator grill.

Semi-Quick Release Harness—New AAF parachutes incorporate a semi-quick release harness using the Irving quick-release box and an entirely new harness strap arrangement. The harness, weighing six pounds, is applicable to A-4, B-9 and S-5 parachutes and is designed for water landings. Suspension straps which form a sling for the wearer are connected to the release box from shoulder points. The wearer after pressing the release is free from the harness but he remains sitting in the sling. On landing, he simply slips out of the sling and devotes his attention to his emergency life raft or Mae West.

Adjustable Safety Belts—Lap safety belts, incorporating a metal knurled roller which allows slippage in one direction but not in the reverse direction, permit quick, easy adjustments by means of pull tabs. The fastened belt will withstand loads up to 3,500 pounds. Developed by Wright Field's Personal Equipment Laboratory and designated the Type-B-14, it is adaptable to both bucket and bench seats.

NOTES ON Women's Activities

Needle-and-Thread Assembly Line

Some time ago, a group of officers' wives at Hamilton Field, Calif., became aware that their husbands were not the only ones on the base whose shirts, socks and trousers required frequent mending—so they set out to do something about it.

The volunteers secured a building, installed sewing machines, long tables, needles and thread, and insured the daily presence of sewing experts from their own ranks. From their Women's Club funds, they purchased the necessary equipment and began sewing and mending for enlisted personnel as well as transient officers.

With assembly-line efficiency, the mending rooms now operate six days a week from 0930 to 1700. Duplicate tickets are made for each article of clothing at the "issue" table, one remaining with the garment, the other going to the "customer." From here the garment goes to a pinning table, then to a large sewing table for machine or hand-sewing, and, finally, back to the original issue table where it is hung on a rack for quick identification and ready access.

There is no charge for this bring-it-in-and-get-it-back-today service, and a booming business is evidenced by tables piled high with shirts, slacks, field jackets, overcoats, fatigues, socks and caps. Twelve hundred articles a month is about the average volume. In their spare time, the women volunteers also put the finishing touches on baseball uniforms for post teams and make curtains for dayrooms.

W. V. S. Pins

The Officers' Wives Club of the 4th Air Force has devised a card system to record the number of hours its members devote each week to volunteer work in post projects, Army Air Forces Aid Society, personal affairs division, Red Cross and the like. Members who qualify with at least 100 hours are entitled to wear an official Women's Volunteer Services pin, on which is engraved the 4th Air Force insignia, with bars below indicating the number of hours served.

Pens by the Bushel

Hundreds of old and discarded fountain pens collected by AAF women volunteers in the San Angelo, Texas, Spotters' Club have been repaired and sent overseas in recent months. The San Angelo group launched a country-wide campaign to round up the pens, and at the end of the drive they had collected, with the help of the country's school children, 965 whole pens and 1,131 "half" pens.

Inspiration for the pen collection came from Emerson McCord, a Houston invalid who repairs pens as a hobby. He started the project on a small scale by asking friends for their discarded fountain pens. Houston stores and civic organizations began collection campaigns and soon other drives were begun in New Orleans, Dallas and Birmingham. An Ohio rubber company contributes the rubber sacks used by McCord in his repair work. McCord's proposal that the reconditioned pens be distributed overseas by Army chaplains was quickly approved by the Army.

Twenty CFTC Clubs in NAAFW

Leading in the number of member women's clubs affiliated with the National Association of Air Forces Women is the Central Flying Training Command, with 20 groups listed at NAAFW headquarters in Washington. The 3rd Air Force, with 16 clubs in the national organization, is runner-up.

CFTC member clubs are signed up from these fields: South Plains, Lubbock, Texas; AAF Base Unit, Sikeston, Mo.; Selman Field, La.; San Angelo Army Air Base, Texas; Pampa Army Air Field, Texas; Majors Field, Texas; Independence Army Air Field, Kan.; Hondo Army Air Field, Texas; Grider Field, Ark.; Goodfellow Field, Texas; Garden City Army Air Field, Kan.; Foster Field, Texas; Fort Worth Army Air Field, Texas; Dodge City Army Air Field, Kan.; Coffeyville Army Air Field, Kan.; Bryan Army Air Field, Texas; Bruce Field, Texas; Blackland Army Air Field, Texas; Avenger Field, Texas, and Altus Army Air Field, Okla. ☆

Rendezvous

(Continued from Page 1)

is a tough mission. My 100th mission didn't seem to bother me any more—nor was it any easier—than the first, the fifth or the twenty-fifth. I look on each one as an individual job having no bearing on longevity. There may be such a thing as percentages in baseball, but not in combat flying. When those wheels hit the runway and you feel the skipper giving her the brakes, you can just file another one in the books, because that indefinable thing called luck doesn't run out like hydraulic fluid from a leaking line. . . .

T/Sgt. Paul E. Mathis, 9th Bomber Command, England

We doubt that many combat flyers will agree with the Sergeant. How about it? Ed.

Why Warrant Officers?

Dear Editor:

. . . I would like very much to have you answer some questions pertaining to Warrant Officers. I have been a Warrant Officer (J.G.) for 17 months and many times I have had the question asked me, "Why does the Army have Warrant Officers?" This I cannot truthfully answer. I have asked several officers of field grade, and they cannot answer this question either. . . .

W/O Donald W. Mendenhall, APO 520, New York

See question and answer column on page 52. Ed.

Men 40 — Horses 8

Dear Editor:

. . . With regard to your recent editorial entitled "No More Box Cars," let me assure you that all the box car trouble was not ended by the armistice of 1918. To a good many of the flying personnel here in the Mediterranean Theater the 40 & 8 ride from Casablanca to Bizerte is a never-to-be-forgotten experience. Not that it was a rougher trip than the ones our Dads took, but it certainly was a lot longer. Since the wheel castings were dated 1886, many of us believe the *quarante hommes et huit chevaux* is here to stay.

1st Lt. T. V. Murphy, Corsica

B-29

Dear Editor:

. . . In the July edition of AIR FORCE there is an article by Col. Donald L. Putt entitled THE B-29 SUPERFORTRESS. In the first paragraph, page 7, the Colonel states that "it was not until September, 1943, that the first ship again took to the air."

This statement is incorrect as I was stationed at the Boeing factory, 6600 Ellis Avenue, Seattle, Washington, during May-June, 1943, and while there saw test hops made by the B-29. . . .

Cpl. A. W. Punt, Chanute Field, Ill.

The second B-29 to be flight tested crashed. The first did not take to the air again until September, 1943. In the meantime, other planes had been built and were flight tested during this period. Ed.

TRAINING AIDS

Automatic Pilot Trainer—A new trainer has been designed to aid in teaching pilots and bombardiers the functions and operation of the automatic pilot and to provide maintenance mechanics with practice in servicing the robot steering device and other flight control equipment.

Designated Automatic Pilot Trainer, Type H-2, it consists of an instrument trainer fuselage, capable of simulating climb, dive and bank movements, and a Type C-1 automatic pilot with mechanisms, controls, linkages and instruments necessary for its operation.

Functioning in the trainer with the same degree of precision and sensitivity it attains in a plane, the automatic pilot "flies" the trainer in a straight course or maneuvers it in response to controls.

On the trainer's instrument board, in addition to the automatic pilot control panel, are an artificial horizon, a turn and bank indicator, a volt-ammeter, an altimeter and a pilot director indicator.

A space approximately 12′ long, 12′ wide and 9′ high is needed for installation of the automatic pilot trainer. The power requirement is 110 volts, 60 cycles and 30 amps.

Maintenance procedures for standard instrument trainers and for automatic pilots in aircraft apply also to the Type H-2 trainer.

'Handbook for Recovery'—Proving of great value to the AAF convalescent training program is the new AF Manual No. 23, "Handbook for Recovery," which was produced by TAD for the Office of the Air Surgeon.

The book deals with physio-therapy and corrective exercises for casualties who are on the mend and who eventually will return to duty. It is written in a light vein and illustrated with many cartoons depicting the humorous side of a patient's routine.

Distributed to convalescents in AAF hospitals, the manual offers a simplified course in anatomy and outlines methods by which a patient may strengthen and regain use of a disabled part of his body.

Gun Camera Manual—Data, previously obtained only by searching through scores of TOs and other AAF publications, has been consolidated and augmented in AF Manual No. 25, "Gun Camera Manual for Flexible Gunnery Training."

The book provides standardized procedures for every operation from initial installation of the gun camera to assessment of the gunner's accuracy, and it should prove valuable to gunnery instructors and officers, operations and photo officers, power turret specialists and armorers.

Prepared by the Central School for Flexible Gunnery, the manual was published and is being distributed in the usual manner by TAD.

Gunnery Teaching Technique—To make flexible gunnery classes more interesting and to aid in the effective presentation of subject matter, AF Manual No. 16, "Teaching Methods for Flexible Gunnery Instructors," has been published by the Training Aids Division.

The 32-page, two-color booklet was prepared with the assistance of Ohio State University's educational research department following a survey by the Flexible Gunnery Instructors School, Laredo, Texas.

Covering lectures, demonstrations, discussions, tests, individual conferences, classroom aids and other phases of pedagogy, the manual also provides a coordinated program for the use of training publications, films and other devices.

The booklet is now being distributed to flexible gunnery schools and instructors. In general content, it may prove valuable to teachers of other Army subjects, and a limited number of copies are available to them and other persons concerned upon application through channels.

'Fighter Gunnery' — Basic principles of fighter gunnery are explained in a new manual, prepared by the Training Command and the Fixed Gunnery Instructors School.

Titled "Fighter Gunnery," the book includes data on optical sight, limits of effective range, harmonization, range estimation, deflection allowance, curves of pursuit, synthetic training devices, gun camera, firing practice and other related subjects.

The manual is being distributed by TAD.

Gunnery Posters—Firing accuracy, gained by fighter pilots only through a complete knowledge of the physical principles involved in fixed gunnery, is the theme of a new instructional poster series distributed by TAD.

Consisting of 21 posters assembled in the standard TAD binder, the series is labeled "Fighter Pilot Gunnery." Each poster is 30″ x 40″ in size and is lithographed in three colors. For the convenience of instructors, explanatory matter for each poster appears on the back of the preceding one.

Training Films—Emergency landing techniques, camouflage, fuel tank fires and aircraft recognition are subjects covered in five recently released training films.

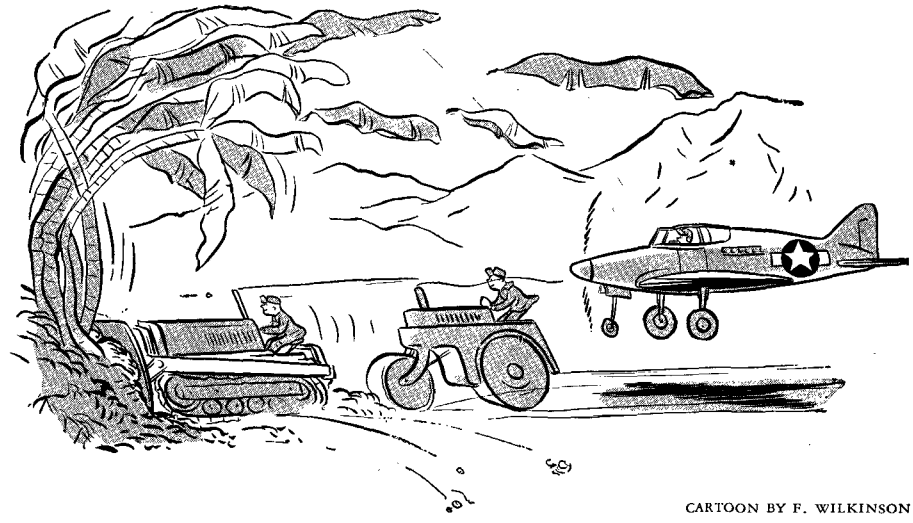
Crash Landings in Unfavorable Terrain (TF 1-3331) demonstrates, by means of model planes and sand tables, the basic procedure for setting down bombers and fighters on unsuitable ground. The film also tells the story of a B-25 crew which survived a crash landing only because each member was well drilled in his emergency duties. Running time: 35 minutes.

Flying the Hurdle Stage (TF 1-3344) describes the proper method for making a short field landing over obstacles. Forced by a low fuel supply to attempt such a landing, a P-38 pilot is "talked down" by an officer skilled in hurdle approaches. Later, the pair discuss the reasons for each step taken. Running time: 15 minutes.

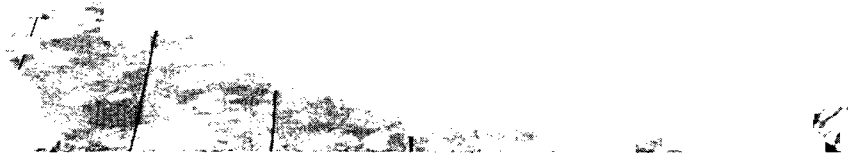
Camouflage Cartoon (TF 1-3351) is a non-technical film intended to impress personnel with the importance of visual deception. It emphasizes the necessity of thinking of camouflage in terms of the airview. Running time: 30 minutes. ☆

WHERE TO GO

Information on the availability of training films and film strips, aircraft recognition materials, training devices and training publications may be obtained from the Chief, Training Aids Division, Army Air Forces, 1 Park Avenue, New York 16, N. Y., upon request through channels. AAF Regulation No. 50-19 explains fully the functions of the Training Aids Division.



CARTOON BY F. WILKINSON



1 Captured after their medium bomber crashes, AAF crew members are transported in a lorry to Dulag Luft, a Nazi transient prison camp.

AMERICAN flyers, who would withstand torture and threats of death without revealing military secrets to the enemy, fall for psychological tricks at a German prison camp in the new training film, "Resisting Enemy Interrogation" (1 33360). Intended to warn AAF men to be wary of the Nazi artifice of friendliness, the picture repeatedly hits home the theme: "Give your name, rank and serial number and nothing more." The film opens with the crash of an AAF bomber in enemy territory and the capture of the crew by Germans. Taken to Dulag Luft, a transient prison camp established for the purpose of obtaining information from Allied captives, the Americans are puzzled when there is no obvious attempt to interrogate them. But the Nazi prison staff, already armed with a wealth of knowledge gleaned from various sources, needs only bits of data to complete its intelligence files on certain projected Allied operations. Deceived by the prison officers' pretended spirit of camaraderie and by a smoothly-working stool pigeon system, the Americans unknowingly disclose information which permits the enemy to thwart an AAF attack on Munich. The film, produced by the 18th AAF Base Unit (Motion Picture Unit), Culver City, Calif., is distributed by AAFTAD, 1 Park Ave., New York City.

2 Ready to receive the prisoners are Nazi intelligence officers who, by psychological methods, hope to dupe the Americans into revealing bits of information which can be pieced together and used to advantage against the AAF.

3 **Surprised by the friendliness** of their captors, the flyers are lulled into a false sense of security. When a pretty nurse treats him kindly, the wounded gunner tells her his base in Italy is planning a big mission for the near future.

4 **Posing as an Allied sympathizer,** one of the Germans invites the AAF copilot to drink with him. Two other Nazis join them and, in the conviviality that follows, the American reveals more about the projected mission.

5 **Deceived by the AAF uniform** worn by his bunkmate, who is a Nazi in disguise, the radio operator explains that only a few hours earlier his flight commander had been relieved from assignment to the next day's big mission.

6 **Given a good meal** in a Nazi officer's quarters, the tail-gunner drops word that his group has stocked up on incendiaries. Unwittingly, he has tipped-off the enemy that the slated target is of a highly-combustible nature.

7 **The jig-saw of information** scraps is completed when the AAF pilot, dining with Luftwaffe men, intimates a cold might keep a flyer from making a high-altitude mission. The Nazis tie that hint with the radioman's statement.

8 **Determining that Munich** is the only combustible target that must be reached by high-altitude flying from Italy over the Alps, the Nazis summon full fighter strength. Intercepted, the attacking bombers suffer heavy losses.

OCTOBER IN THE AAF

. . . BEFORE DECEMBER 7, 1941

1909, OCT. 26: First Army man to solo the Army's first plane is Lt. F. E. Humphreys after three hours' pilot instruction by Wilbur Wright.

1911, OCT. 10: Riley E. Scott bombsight and dropping device tested.

1911, OCT. 14: Air strength: 6 officers, 5 airplanes, 3 captive balloons.

1912, OCT 9: First competition for Mackay Trophy is won by Lt. H. H. Arnold.

1914, OCT. 8: Official American one-man altitude record of 16,798 feet is set by Capt. H. LeR. Muller.

1916, OCT 27: For fiscal year 1918, Chief Signal Officer asks for enlisted strength of 3,320 for 10 aero squadrons, 6 observation balloon companies, a proving ground and necessary schools.

1917, OCT. 21: 12-cylinder Liberty engine first flown.

1918, OCT 9: 32 tons of bombs dropped during Meuse-Argonne offensive in record concentration of air forces to date. More than 250 bombers and 100 pursuit planes participate.

1918, OCT. 12: Oxygen tanks ordered carried on all American flights over enemy lines. American Air Service engages in its first night fighting.

1919, OCT. 4: Official world 2-man altitude record of 31,821 feet is established by Maj. "Shorty" Schroeder and Lt. G. E. Elfrey.

1922, OCT. 6: Unofficial world duration record is established by Lts. Macready and Kelly. Established time: 35:18:30.

1922, OCT 13: Liberty Engine Trophy Race is won by Lt. T. J. Koenig. Speed: 128.8 mph over 257.7-mile course.

1922, OCT 14: Pulitzer Trophy Race is won by Lt. R. L. Maughan. Speed: 205.8 mph, 250 km course.

1922, OCT. 18: World's speed record of 222.96 mph for 1 km is set by Brig. Gen. Wm. E. Mitchell.

1923, OCT 3-6: William Mitchell Trophy Race won by Capt. B. E. Skeel. Speed: 146.44 mph.

1924, OCT. 2-4: John L. Mitchell Trophy Race won by Lt. C. Bettis. Speed: 175.41 mph, 200 km course.

1925, OCT. 8-10: New world speed records of 249.342 mph for 100 km, and 248.975 mph for 200 km set.

1927, OCT. 12: Wright Field formally dedicated.

1928, OCT. 19: Six-man machine gun team parachutes from 6-airplane formation, sets up in 3 minutes.

1938, OCT. 26: 350 mph average speed achieved by new Army pursuit plane. Lt. B. S. Kelsey, pilot.

1940, OCT. 25: Maj. Gen. H. H. Arnold designated Acting Deputy Chief of Staff for Air.

1941, OCT. 23: Increase in AAF expansion program from 54 to 84 combat groups is announced.

1941, OCT. 30: B-24 carrying members of Harriman Mission circles globe. 24,700 miles in elapsed time of 17 days.

AIR FORCE each month will present in this section new titles on aviation subjects which are available to AAF personnel through the AAF Field Technical Library Service, which provides for technical libraries at all major installations. These book lists, compiled by AAF Headquarters Library, supplement the Selected Bibliography of Aviation appearing in The Official Guide to the Army Air Forces.

Aircraft Yearbook. N. Y., Aeronautical Chamber of Commerce of America, 1944. Vol. 26. The latest volume of the oldest yearbook in the field of aeronautics.

AYLING, KEITH. *Bombardment Aviation.* Harrisburg, Pa., Military Service, 1944. An account of the basic theory of air warfare.

AYLING, KEITH. *Bombers.* N. Y., Crowell, 1944. An analysis of classes and types of bombers, both Allied and enemy, of this war.

BOND, DONALD S. *Radio Direction Finders.* N. Y., McGraw-Hill, 1944. A guidebook to this special field.

CARLISLE, NORMAN V. *Illustrated Aviation Encyclopedia.* N. Y., New Home Library, 1944. A popular, encyclopedic presentation of simple aeronautical facts.

FLIGHT PREPARATION TRAINING SERIES. *Air Navigation, Part Four, Navigation Instruments.* N. Y., McGraw-Hill, 1944. Another in the series of navigation texts prepared under the supervision of the Aviation Training Division, Office of the Chief of Naval Operations.

GOODWIN, HAL. *Aerial Warfare, the Story of the Aeroplane as a Weapon.* N. Y., New Home Library, 1943. Tactics and techniques of today's air war.

GRIFFITHS, HAROLD. *Mathematics for Aircraft Engine Mechanics.* N. Y., McGraw-Hill, 1944. Practical aviation mathematics organized and presented through everyday jobs.

HARRISON, RICHARD D. *Look at the World, the Fortune Atlas for World Strategy.* N. Y., Knopf, 1944. An air minded atlas with full-color, large-scale maps.

HOUGH, DONALD. *Captain Retread.* N. Y., Norton, 1944. The personal narrative of an AAF officer of two wars.

LANGEWIESCHE, WOLFGANG. *Stick and Rudder, an Explanation of the Art of Flying.* N. Y., Whittlesey House, 1944. A textbook aimed at those who will be interested in learning how to operate their own light planes after the war.

LEY, WILLY. *Rockets, the Future of Travel beyond the Stratosphere.* N. Y., Viking, 1944. A prediction of what rocket ships may make possible in solar exploration.

MACAULEY, C. B. F. *The Helicopters Are Coming.* N. Y., Whittlesey House, 1944. The potentialities of rotary aircraft.

MANN, CARL. *Air Heraldry.* N. Y., Robert McBride, 1944. The rapidly expanding wealth of AAF insignia.

MCINTOSH, COLIN H. *Long-Range Flight.* N. Y., McGraw-Hill, 1944. A pioneer title in a field of increasing importance.

MIKSCHE, FERDINAND O. *Is Bombing Decisive?, a Study in the Organization and Tactical Employment of Modern Air Fleets.* N. Y., Norton, 1943. An English publication which has recently been made available in this country.

NAIDICH, JAMES, and SCHOR, HARRY. *Air Navigation Made Easy.* N. Y., McGraw-Hill, 1944. The basic elements of air piloting and dead reckoning navigation.

RAISZ, ERWIN. *Atlas of Global Geography.* N. Y., Harper, 1944. World maps supplemented by geographical facts.

SMITH, G. GEOFFREY. *Gas Turbines and Jet Propulsion for Aircraft.* N. Y., Aerosphere, 1944. First published in London, this presents the historical development of jet propulsion.

THOMAS, ROWAN T. *Born in Battle, Round the World Adventures of the 513th Bombardment Squadron.* Philadelphia, Winston, 1944. The colorful record of this squadron's varied experiences.

WILKINSON, PAUL H. *Aircraft Engines of the World.* N. Y., Paul H. Wilkinson, 1944. The revised edition of a basic aircraft engine encyclopedia.

WYNN, EDGAR J. *Bombers Across.* N. Y., Dutton, 1944. A narrative presentation of the work of the ATC in speeding planes and supplies to the combat areas. ☆

ON THE ALERT!

TIMELY ADVICE FROM THE AIR INSPECTOR ★ Administration ★ Supply and Maintenance ★ Operations and Training

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

Confidence:

Essential in all flying, confidence is particularly necessary in night fighting. Inspectors can help a pilot gain self-assurance by ascertaining that he is familiar with all his night-flying equipment. The importance of the pilot's knowing the procedure to follow if his radio fails cannot be overemphasized.

Driver's Trip Ticket:

Proper completion of a driver's trip ticket works to the advantage of both the driver and the vehicle user. The speedometer reading, the date and the time of release should be inserted by the passenger and not by the driver.

Stored Vehicles:

Proper care should be taken to preserve and maintain stored vehicles awaiting repairs.

'Shotgun' Plane Inspections:

Maintenance crews who are giving planes "shotgun" or general inspections, no matter whether a 50, 100 or 200 hour check-up is required, should discontinue that practice. To make the proper examination at the right time, crews must use a guide as directed by TO 00-20A-2.

Ingenuity in War Orientation:

American ingenuity is proving to be a major factor in the success of the AAF War Orientation Program.

Examples of this ingenuity noted at Training Command stations are passed along here by the Air Inspector for the benefit of other personnel concerned with war orientation.

Two dummies in Nazi uniform, having a meal outside a tent, added realism to a display of German equipment at Roswell Field, N. M.

Two GI's in Nazi and Jap uniforms toured Deming Field, N. M. They were "under guard" for obvious reasons.

The Orientation Advisory Committee, composed of 12 enlisted men who have seen overseas service in various theaters of operations, is the backbone of the program at Stockton Field, Calif.

The average GI wonders what a coral atoll is like. Laughlin Field, Texas, has the answer in a colorful and informative sand box display in its war room.

A weekly combat forum is conducted at Laredo Field, Texas. Men returned from combat answer student gunners' practical questions about life in theaters of operations.

Clothing and Equipment:

The condition of clothing and equipment of personnel going overseas should never be taken for granted, but should be determined by inspections.

Parachute Check-up:

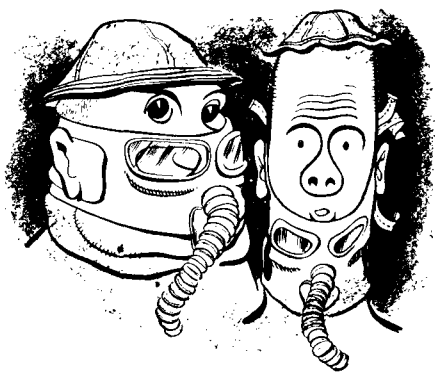
"Jumping out of an airplane with a parachute is nothing to get all het up about. It is simply the occasion which you have long anticipated and for which you are fully prepared. . . . Now, we'll assume that the harness is correctly fitted and equipment is all in order. If you haven't seen to that before, it's too late to do it now. . . ." These remarks from a British Training Memorandum should start flying personnel thinking, whether in the RAF or AAF. Is your parachute harness correctly fitted and is your equipment in order?

Keeping Informed:

Communications personnel should acquaint themselves with all changes affecting combined communications procedures and cryptographic security. They should see AR 380-5 and the radio and Cryptographic Bulletin issued by the Air Communications Officer. All new AR's, WD Circulars and AAF Regulations should be checked for directives applicable to communications, and AAF Reg. 100-1 should be kept up-to-date.

Gas Masks:

Inspections should be made frequently to see that gas masks fit personnel to whom they have been issued.



Tire Hazards:

Runways must be kept clean. Bolts, valve stems, pieces of tin and other loose material are tire hazards which may result in accidents. (TO 04-10-2)

Mark It Now:

Labeling of clothing and equipment should be a day-to-day process, instead of a rush job just before a unit is ordered overseas. The marking should be done as soon as the clothing and equipment are received.

Photo Refrigeration:

TO 24-1-3 contains a color chart which may be used to determine the proper relative humidity for the storage of sensitized photographic materials as outlined in TO 10-5-1.

Q AND A

Q. *Is the pilot responsible for conducting bail-out drills?*

A. It is the direct responsibility of the pilot to drill his crew in a standard bail-out procedure, including warning and exit signals. Crews, wearing full equipment, should practice making exits while the plane is on the ground. (Pilots' Information File 8-4-2, revised 1 March 1944.)

Q. *Is it necessary to have served a whole year before 7 December 1941 to be eligible to wear the American Defense Service ribbon?*

A. No. The reference to 12 months' service in WD Cir. 27, 1944, as amended by WD Cir. 129, 1944, does not mean that a person must have had 12 months' service between 8 September 1939 and 7 December 1941, but must have entered upon a period of active service for 12 months or longer during that period.

Q. *Prior to July 1943, identification tags were stamped with the name and address of the person to be notified in case of emergency. If the person or address is changed, should the tags be replaced?*

A. No. Metals from which the tags are fabricated are of a critical nature and must be conserved. Sec. V, WD Cir. 223, 1944, provides that tags in the possession of military personnel will not be replaced for the reason cited above, or because a change in Army Regulations has eliminated the former requirement that the tags bear the name and address of the person to be notified.

Q. *Is the name of the emergency addressee still required to be entered on Page 2 of the Soldier's Individual Pay Record (WD AGO Form 24)?*

A. Yes. Relative to Form 24, it also should be noted that under no circumstances will typewritten name, signature, grade or arm of service of any officer appear in the booklet.

Q. *May a pilot use a special check-list instead of the standard list for his plane?*

A. When desired, commanders of air forces, commands, or other AAF activities to which aircraft are assigned may issue supplementary or amplifying check lists containing such additional material as may be deemed advisable. This is not to be interpreted as authorizing the removal of the standard check list which must be carried in aircraft at all times. (Par. 7, AAF Reg. 62-2, as amended by AAF Reg. 62-2B, 3 July 1944.

Q. *What disposition is made of files of numbered general orders, bulletins, circulars and memorandums issued by various headquarters in the AAF?*

A. At the completion of a series, normally at the end of a calendar year, one copy of each series, securely bound, will be forwarded to the Adjutant General, attention

of Demobilized Personnel Records Branch, High Point, N. C. (See AR 310-50, as amended by Ch. 8, and WD Cir. 231 1944, for a list of commands required to forward these files.)

Q. *If a command is appropriate to the command of a general officer, should official mail to that command be addressed to the "Commanding General," even though the commander is not a general officer?*

A. To the Commanding General. AAF Reg. 10-2, 31 July 1944, states that "an official communication to an activity is addressed to the 'Commanding Officer' when the commander is below the grade of Brigadier General; otherwise, 'Commanding General' is used." Reference is to the rank of the commander normally in command as established by Tables of Organization, Manning Tables, etc., not to rank of the particular officer who is in command.

Q. *Why does the Army have Warrant Officers?*

A. There have been Warrant Officers in the American naval service since the Revolutionary War, but Warrant Officers did not appear in the Army until 9 July 1918, when they were authorized in the Army Mine Planter Service.

They were authorized in the Army at large 4 June 1920.

Purpose was to render more economical and efficient administration of the larger tactical units in the field by furnishing a class of officers who would be able to perform many of the subaltern duties otherwise performed by commissioned officers, and to provide a means of recognizing the services of enlisted men who had served creditably as commissioned officers in World War I, but who were ineligible for commissioned grades in the Regular Army. Further, Army Field Clerks, civilians with military status who performed much of the clerical work of the Army in World War I, were eliminated by appointing them Warrant Officers.

Warrant Officers are addressed by the title "Mister," they receive the salute and are extended the courtesies due commissioned officers. They may perform those duties normally assigned to junior commissioned officers, for the purpose of relieving commissioned officers of considerable administrative and technical detail. When Warrant Officers are legally assigned to duties normally performed by commissioned officers they are vested with all the powers usually exercised by commissioned officers in the performance of such duties. Some duties that may be performed by Warrant Officers are command of a station, unit, or detachment, when such command does not include commissioned officers eligible to command; Officer of the Day, Prison Officer, Mess and Supply Officer and Adjutant.

Warrant officers may not serve on a court martial, military commission, or court of inquiry; on any board of officers where the conduct, status, liability or rights of a commissioned officer are in issue; as a Claims Officer or Investigating Officer within the purview of AW 70; as Adjutant General, Inspector General, or Judge Advocate of any command. (AR 610-5, and WD Cir. 164, 1943.) ☆

ASSIGNMENT-HOME

(Continued from Page 3)

is still on, and it does not make sense, when the need is great, to waste your training.

What happens if I cannot continue in my MOS? The Classification Section of the Redistribution Station will determine your new MOS. Your civilian background is carefully considered. You will be tested and examined as if you had just joined the service. When your qualifications are determined, you will be sent where you can be best employed or further trained in the job for which you are best qualified.

Can a single engine pilot apply for multi-engine training? A man who expresses a desire to change equipment types may be sent to the Training Command, which is informed of his qualifications and wishes. After careful examination and a thorough study, the Training Command makes the final determination. Changes from single engine pilot to multi-engine training, or vice versa, are infrequent because of the time and energy demanded in the transition and because the man's combat experience does not always apply if he changes from bombers to fighters, or vice versa.

Can a bombardier or navigator apply for pilot training? Yes, if he is not above the grade of captain and is under 27 years of age at the time such training begins.

Can a combat crew member become a pilot? Yes, a combat crew man is given preference in applying for Air Crew Training as pilot, bombardier or navigator. He can put in for it at the Redistribution Station. If he passes his physical examination and medical investigation, and if classification approves, he goes right before a board at the station and is sent out for Air Crew Training.

Can enlisted men put in for OCS? Yes, but AAFPDC, having its own limited quota, cannot send them. However, it can and does pass on recommendations to the next command to which the man is assigned.

Can officers put in for further training? Yes, returnees can apply for higher schools such as the Intelligence School at Orlando, Fla., and the Command and General Staff School at Fort Leavenworth, Kan. Selection depends on your qualifications and vacancies available.

How long do I stay in the Personnel Distribution Command? Ordinarily between one and two weeks. AAFPDC is the clearing house of the AAF. It knows where men with a specific MOS are needed and it knows what manpower is available. In some instances, of course, a man might be permanently assigned to AAFPDC, for like every other Command and Air Force in the United States, AAFPDC is carrying out the War Department's rotation policy and eventually will be completely staffed with returnees.

Will I be immediately returned overseas? Ordinarily, no. AAF policy is that men returned from combat will remain in domestic Commands and Air Forces for a minimum of three months. In the vast majority of cases it has been longer than six months, as it depends largely upon the current military situation.

Where will I be assigned from the Redistribution Station? To one of the four Air Forces in the United States or one of the Commands in this country.

Do I have any choice as to where I am assigned? Military necessity determines assignments. However, returnees are requested to state their preferences. If the demands of the service coincide with the wishes of the returnees, it is often possible to work out an assignment which fulfills AAF requirements and also meets the returnee's wishes.

Are there any exceptions to this choice of station in the U. S.? Yes, there are certain War Department and AAF policies that sometimes make it impossible to fulfill a man's request. For example, a P-38 pilot cannot be stationed on the East Coast since all the Lightnings are now under the command of the 4th Air Force on the West Coast.

Do I immediately take over the job assigned me when I return to my new post? The AAFPDC assigns men to continental Commands and Air Forces according to their MOS. The exact job assignment will be determined by the commanding officer at your new installation. While the AAF recognizes your contribution in combat and the value of your experience, a returnee cannot expect to step into a going concern and immediately take over a key position. As in every other department of life, your attitude, your continuing sense of responsibility, and your willingness to cooperate will be factors in determining your future.

Why must I face the possibility of return to combat? Because the war is still on. You are not finished with combat or with serving your country when you have completed a tour of operational duty. You are returned home to rest, to be rehabilitated, to help in the training of new personnel, and to re-train yourself for continuing, if necessary, the fight against the enemy.

What is expected of the returnee? The highest standards of military deportment and conduct, and a continuing sense of responsibility. It cannot be all take and no give. Returnees more than anyone else in military service are in the public eye. They must live up to the best traditions of the service. They must conduct themselves with the full knowledge that they are an example of the more than eleven million men who are now in uniform.

What would sum up the whole attitude of the AAF? Above everything the Army Air Forces and this Command guarantees the returnee a square deal when he gets home. It will do everything in its power to see that any maladjustments are corrected. Everything possible will be done to get a man a proper assignment. The goal is to place each returnee where he is best fitted to help win the war. ☆

OUR NEW HELICOPTERS

SINCE the AAF accepted delivery of its first successful helicopter, the Sikorsky XR-4, in the spring of 1943, three new models have been added to our whirligig family.

The most unusual design among the newcomers is that of the Platt-LePage XR-1, a twin-rotor craft weighing 4,800 pounds. Far from being ready to appear in quantity, the XR-1 is just coming out of the experimental stage. Its conventionally shaped fuselage has tandem seats with sliding canopies and the bottom of the compartments is of transparent plastic. The high stabilizer and rudder empennage of the tail are similar to those of the normal airplane tail assembly. There are no elevators.

At each end of the pylons, which project from the fuselage like wings, is a three-bladed rotor, each blade approximately 15 feet long. These rotors neutralize torque by rotating in opposite directions, thereby eliminating the need for the tail rotor used on the Sikorsky-type helicopters.

A 450-hp Pratt and Whitney radial engine powers the XR-1. Although ordered earlier than the first experimental R-4, the XR-1 was not successfully flight tested until the summer of 1943.

An improved version of the original R-4 helicopter has been designated the R-6. The "Six" looks like an oversized squash gourd with rotors and wheels. The square corners of the R-4 have been eliminated in its successor. A small nose-wheel protects the plexiglas nose of the craft. Other new materials used in the R-6 include a paper-based cowling that encloses the engine and rotor shaft. The cabin is constructed of plastic impregnated glass fiber cloth. The slender tail cone has a covering of tough magnesium skin.

Powered with a 245-hp Franklin six-cylinder horizontally-opposed engine, the R-5 has a top speed in excess of 100 mph, a normal useful load capacity of approximately half a ton and can climb to 5,900 feet in less than seven minutes. Evacuation litters can be installed on each side of the fuselage. Pilots and observer sit side-by-side.

The R-5 helicopter is the big brother of the "Six." In configuration the craft resembles the R-6 and R-4 helicopters, having one main three-bladed rotor and a vertical tail rotor. The main rotor is the largest ever built, measuring 48 feet across the disc. The R-5's nine-cylinder air-cooled Pratt and Whitney engine develops 450-hp.

Fuselage of the R-5 measures approximately 40 feet from nose to tail. It is built in three sections. The center section, supporting the engine, is made of welded steel tubing, cowled with plastic-impregnated molded plywood. The tail section is a wooden monocoque cone to support the tail rotor. A long shaft atop the cone's exterior is geared to the engine for turning the solid wood, seven-foot blades of the vertical rotor. The nose section is an aluminum alloy channel superstructure mounted on an aluminum monocoque floor. This forward section houses the plexiglas-enclosed cabin.

The R-5 has a conventional landing gear. The observer sits in the nose with the pilot directly behind him. Stick and rudder controls are dual. Space is available for cameras, radio accessories and other auxiliary equipment in cockpits. Four litters, two on a side, can be carried by the R-5. ☆

ON THE LINE

A MAINTENANCE ROUNDUP PREPARED IN COLL[illegible] AIR SERVICE COMMAND AND TECHNICAL INSPECTION DIVISION, AIR INSPECTOR'S OFFICE

The Straight and Narrow: The clop-clop-clop of GI shoes on wing to fuselage fillet will bring about cracking of fillet or elongation to attaching holes. Men performing maintenance will contribute to plane's aerodynamic cleanliness by staying on the walkway. According to URs, damage is especially noted on P-40s, P-47s and P-39s. In the case of P-38s, walking willy-nilly on fillets instead of staying on walkways will cause damage that results in severe buffeting of tail surfaces at high speed.

B-17 Goes 124 Missions: Because a crew chief just wouldn't give up, a B-17 of the 15th Air Force completed 124 combat missions and even then, instead of being retired to the boneyard, was put out to pasture, performing training flights.

The plane was "Bachelors' Delight" and the persistent crew chief was Sgt. Waino W. Matilainen of Gardner, Mass.

"It's just Matilainen's pigheadedness that's keeping that 17 in the air," a fellow crew chief remarked after "Bachelors' Delight" returned with two engines shot out from the 123rd mission.

The ground crew worked night and day changing those two engines and when the battle order was announced for the July 19 raid on an ordnance depot at Munich old "Bachelors' Delight" was on the list. And she roared down the runway and soared into the air like a co-ed instead of an old lady with 1,010 combat flying hours.

That afternoon the plane came back, apparently in the best of health, and settled gracefully on the end of the runway. Then, just as it looked as if it was a cinch for mission No. 125, her landing gear folded and the plane skidded on her belly to a stop.

Sergeant Matilainen was sad but philosophical; he had wanted the 17 to do 150 missions. Although the plane had probably set a record in the AAF he wasn't going to see her dumped into a salvage yard to become parts for, in his opinion, less worthy aircraft. By next day he had surveyed all the damage and obtained a favorable decision: after two new engines and two new props, as well as some patches on the underside, she would fly away to honorable retirement in training flights.

"'Bachelors' Delight' is one of the best any aircrew ever flew," Matilainen allows. "She only turned back three times during the first 105 missions. I'll bet there's not another plane in the AAF that can top that. Sort of a shame to think she won't go sailing through those flak puffs anymore with her machine guns chattering away at enemy fighters."

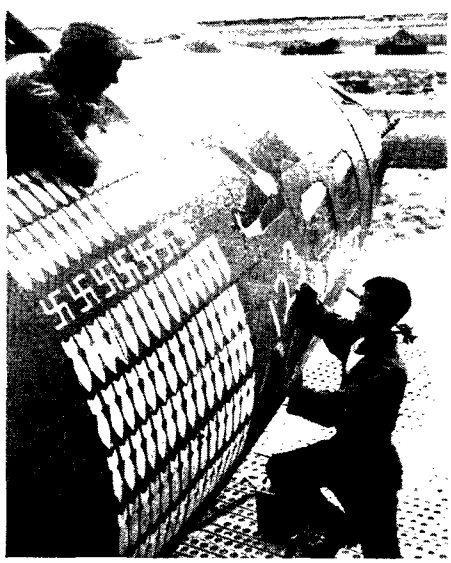
Sergeant Matilainen praises the airplane. But the Group engineering officers all agree it was the crew chief's superior maintenance that guided "Bachelors' Delight" into the ranks of airplane greats.

Sweat and Sand: This is the story of 18 mechs and an officer who look back from where their heavy bombardment squadron is now stationed in Italy to an ordeal during the Tunisian campaign.

The episode began when orders came to their squadron sending all available aircraft and flying crews to man them to a landing strip deep in the sandy wastes. Two ground men were assigned each airplane to keep the nine B-24s in flying condition during operations, which were to be for 72 hours.

Operations began and within a very few hours the big bombers started their attacks on enemy-occupied Greece and Crete. Maintenance men began their work when the Liberators returned from the first mission, and a heart-breaking routine of replacing parts, repairing damages and servicing with gasoline, oil and oxygen got underway. The work went on all night with flashlights, causing eyestrain and severe headaches, as the only illumination. The men stood on ladders far into the night until their legs and feet became numb—but still the work went on.

When the heavies took off in the early morning, the grimy mechs and Capt. E. A. Peterson, Logan, Utah, would drop where they stood, sleeping the few precious hours the bombers were gone. Those whose planes were grounded for repairs would work on.



After "Bachelors' Delight" *had completed 123 missions over enemy territory, Sgt. Waino W. Matilainen, chief, watches as Sgt. Yue Lee, waist gunner from San Francisco, paints a big 123 on this 15th Air Force Fortress.*

This, then, was their schedule for the expected three days, and at the end of this period the men eagerly expected to return to their established base. Reluctantly, Captain Peterson told them operations were not yet complete and they must remain for a few days more.

So the weary mechs kept up the pace for eight days—and nights. And on the ninth morning the good news came. They were to return to their base. Six missions had been flown in the eight days.

Hats off to these eighteen mechs of the AAF for their remarkable job: M/Sgts. Robert J. Otis, Jr., George T. Wiston, Lawrence W. Wall, Victor J. Renzi, Warren P. White, Chester L. Swisher, William M. Gray, Mims M. Windham, Edward S. Galosky, William W. Winter and Henry D. Albright; T/Sgts. Arthur E. Lustenberger, Rupert J. Reed and Abraham Tabankin; and Sgts. Charles L. Rambo, Guy E. Hilderbrand, Robert M. Gohl and Elwood C. Diehl.

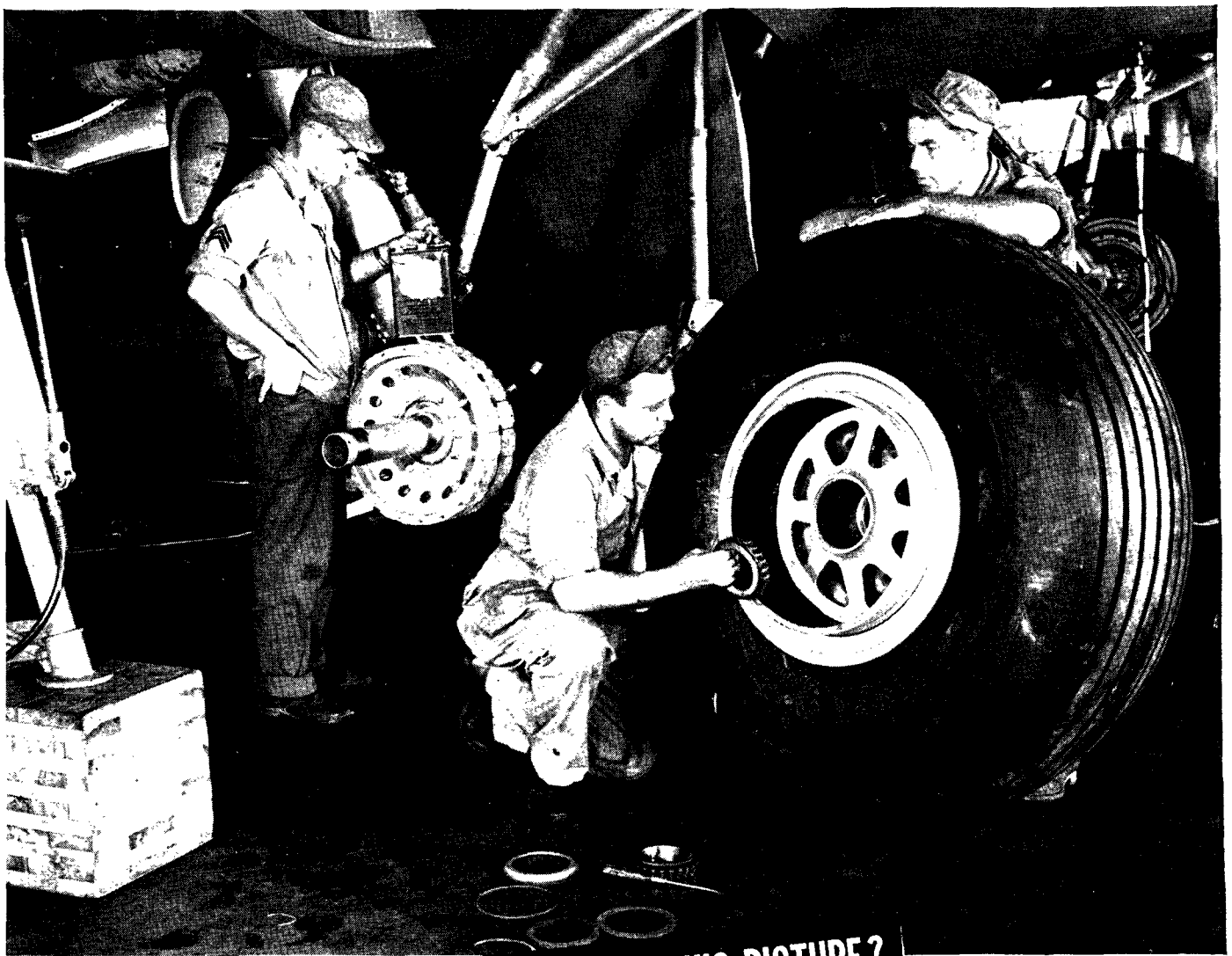
Ingenuity in the South Pacific: Compressed air has so many uses on an aircraft fighter repair line in the combat zone that men of a 13th Air Force Fighter Command P-39 squadron got tired of running compressor units up and down the line—not because the mechs and engineers were lazy but just because a lot of time was wasted. So American ingenuity went to work.

Two DeVilbiss compressors were hooked together with a Briggs and Stratton four-cycle gasoline engine salvaged from a burned out C1B generator for the power drive. Instead of using a hand-starter with a rope operating off a pulley, an aircraft engine starter energizer with a foot pedal starter attachment was hooked on.

Not having a double pulley for driving both compressors, or any pulleys with the proper size outside diameter or one to fit the engine shaft, one was made by taking cast aluminum fittings from wrecked planes, melting them and pouring the aluminum into a handmade mold built from a one-gallon paint can; the pulley was then machined on a shop lathe, even to cutting in a keyway.

Using old hydraulic and oxygen line tubing from salvaged aircraft, more than 150 feet of air tubing were installed from the compressor to the six shops on the line. Pressure to all points in the line can be maintained at from 90 to 125 pounds.

T/Sgt. Robert E. Hooper, Scottsville, N. Y., formerly an American Airlines engineer, devised this centralized air compression system which has saved many hours on the combat line. The ingenious pulley was made by T/Sgt. Frank Miko, South Bend, Ind., an ex-machinist with Bantam Bearings.



WHAT'S WRONG WITH THIS PICTURE?

When properly installed on airplanes, the wheels, like music, go round and round. But if maintenance procedures were off base, and a loose nut falls from the brake shoe when the pilot comes in for a landing, the airplane is likely to go into a ground loop when pressure is applied to the brakes. It means Joe On-the-line slipped up on his job. The correct way to install a wheel is directed in AN 03-25B-1. The men who lent a hand to posing the boners this month are (left to right) Sgt. Frank R. Flaherty of 4100 AAF Base Unit and Sgt. R. E. Weaver and S/Sgt. C. W. Colegrove of 4000 Base Unit, Patterson Field, Ohio. They can point out seven boners. Do you find more?

TURN THIS PAGE UPSIDE-DOWN FOR THE ANSWERS

1. You on the left, Buddy, appear rather concerned. Could it be that you know it's poor practice to set that can of oil on the brake block? If it gets oily, the block will have to be changed. Installing the drum on an oil-soaked block means that unsatisfactory brake operation with chattering and seizing will result. The brake block will slip until it gets warm, then it becomes gummy.

2. Next on this wheel examination, the bolts on the brake shoe assembly are in backwards. If the cotter keys come out (and, incidentally, we don't see any), the nuts become loose, fall into the wheel and bolts fall from the brake frame. A nut rolling around in the wheel may wedge a brake. These bolts require checking at 25, 50 and 100-hour inspections. Bounce the bonces shown here by following T.O 01-20EF-2 and AN 03-25B-9.

3. It's a good idea to cover the threads on the axle when installing the wheel; the bearing race may damage the axle threads. FASC has devised a metal cap, which gives necessary protection to the threads. Use of tape or other approved methods will suffice.

4. Grease on the floor is a give-away on bad maintenance. It will deteriorate the rubber when contacting the tire; in addition, it is a slippery hazard for men working. Check T.Os 04-5-10 and 04-10-2.

5. Bearings and rings on the floor are liable to pick up dirt. Lay parts on a clean surface, preferably a parts truck. T.O 29-1-3 will tell you all about it.

6. The brake drum is not properly cleaned. If that is paint still on the drum—and it looks like paint—it must be removed before the wheel is installed. Otherwise, when the wheel rotates, the paint will gum, and the brakes will lock when pressure is applied, possibly causing the airplane to swerve dangerously. Check T.O 03-25B-9.

7. The man behind the tire is really giving it goldbricking support. His position is insecure and that goes for the tire, too. The wheel should be placed against a solid object; the man is exposing himself to rupture should the wheel overbalance. When available, cradles should be used to bring the wheel to the axle for installation.

Coconut Bombing

By Lt. Col. Howard S. Ellmore

CO of a Light Bombardment Group in the Southwest Pacific

WHAT is coconut bombing, you'd like to know? Well, just strap yourself to a fast-moving A-20 and we'll see if you get the idea. All set? Let's go.

We take off and proceed to the target—anywhere from zero to 500 feet. Five hundred feet is just about the beginning of the stratosphere as far as attack bombing is concerned. We buzz toward the enemy at speeds varying from 250 to 300 miles per hour. The objective in this case is an area target on Awar Point. We come in, three or six planes abreast, and at a thousand yards we cut loose with our .50 caliber guns. As we go across the target, a two-ton bomb load drops from the bomb bay. Seconds later we are speeding away from the target, closing bomb bay doors and looking back to see smoke and debris mushrooming into the air. That's all there is to it. The whole attack lasted perhaps half a minute.

What did you see? Well, you saw exactly what you might expect to see while moving at a speed of 300 miles an hour right on the deck. You saw the tops of a lot of coconut trees. That's all. Hence the term "coconut knocking."

Did we do any real damage? Photographs taken from the airplane at split-second shutter speeds reveal much the human eye cannot see. They show overturned vehicles, scattered supplies, an occasional three-inch gun, here and there a smashed Jap hutment. However, the wily Japs are past masters at concealing supplies under the trees, and even the camera misses a large part of the damage done.

Coconut bombing is a type of attack which has not been particularly popular with combat crews because they cannot see what they are shooting and bombing. The question naturally came up as to how much damage this type of bombing was actually doing. Finally the chance came to settle the matter once and for all. Ground troops had occupied the area around Hansa Bay, where our Bomb Group had flown about a thousand sorties, expending a million and a half rounds of ammunition, dropping a thousand tons of bombs. This was the chance we had been waiting for. A picked staff of intelligence officers, consisting of Capts. Jerome A. Adams, George M. Green, Felix D. Lewis and 1st Lt. Roy R. Woods, were dispatched to the Hansa Bay area by PT boat the day after it had been occupied. Their mission was to assess the actual damage done in this area. Let Captain Adams, who headed the intelligence officers, tell you the story.

"We left our base at noon and headed for Hansa Bay and a new phase of air force intelligence. During the trip up the coast, the skipper of the PT was very congenial, and in no time at all we were swapping tales of recent exploits. He even permitted each of us to take a turn at the wheel, which was pretty broad-minded of him.

"We landed just before dark near a bombed jetty in Hansa Bay. As we stepped ashore, we were aware of a putrefying odor which is difficult to describe. The stench of decomposed flesh, decayed food, and rotten supplies permeated the entire area. Shoes, sneakers, clothes, and medical supplies were strewn all over the place. We contacted an Australian intelligence officer, and he informed us that the American Naval intelligence officer, who had been one of the first intelligence officers on the scene, was camped about one mile inland.

"It was getting dark fast, and we were worried about a place to sleep. The Naval I.O. said that he could give us a shack, and suggested that we hunt through some of the Jap huts down the road for a mosquito net, as the insects were unbearable. With the aid of a flashlight, we crawled through filthy huts littered with debris until we found a net that wasn't torn. I might add that a Jap mosquito net is a huge square, capable of sheltering eight to ten men. We headed back for camp, but on the way someone remarked that there would be no sleeping under such a dirty thing, and without further ado, we threw the net away.

"We found the Naval I.O. and six men getting ready to turn in for the night, and they suggested that we set up some Jap stretchers that were lying around to use as beds. Setting up a Jap stretcher is a feat in itself, and I imagine that the most wounded Japs 'kick the bucket' before they

ILLUSTRATED BY
CAPT. RAYMOND CREEKMORE

ever arrive at a first aid station. That night we slept on the stretchers raised about three inches above the floor and fought bugs all night, to say nothing of the rats, which had grown fat eating unburied Jap corpses.

"The next morning we rose early and headed for Condor Strip, where we saw tons of food which had been shot up by the strafing. Boxes of medical supplies of every description and huge stacks of rice were strewn throughout the area. Every hut presented the same sight. Debris scattered in every direction. As for food, there were case after case of canned fish, tubs of dried fruit (similar to our dried apricots), mountainous tins of tea, cocoa and biscuits, which looked very much like dog biscuits. These piles were shattered by bomb bursts and holed by machine gun fire to such a degree that they were entirely unusable. Not a case—not a tin can could be found without one or more .50 caliber bullet holes in it. In front of one shack we found the strut and tire of a B-24 and an American parachute that had been perforated by machine gun fire.

"Everywhere was desolation and destruction. Around the edge of the strip and in revetments we found one Tony, two Helens, one Oscar and five unidentified planes, all of which were literally bombed and shot to pieces.

"Throughout the area we inspected many underground shelters that were extremely well built. Some had as many as five logs piled one on the other and covered by vines that made observation from the air virtually impossible.

"Cutting back to Awar Plantation, we saw bomb craters filled with equipment and supplies. The Japs use this method of destroying much of their equipment when they are forced to vacate an area. The bomb craters usually have stagnant water and filth in the bottom of them. When forced to retreat the Japs throw equipment, which cannot be taken with them, into the bomb craters to prevent use by the Allies. One crater in particular held at least 100 balls of thick rope, bales of barbed wire and at least fifty kegs of nails. This sight was prevalent throughout the entire inspection. Being a native of the Hoosier State, I was surprised to find not a few lawnmowers stamped 'Made in Indiana.'

"Making our way back to our base, we met five natives, four of them youngsters in their early teens. Captain Evanson, who spoke Pidgin very well and had spent the last 15 years on the island, asked them a few questions. What they told him confirmed previous estimates of the Japs' condition prior to their withdrawal. They had been bombed and strafed until they could no longer eat, although apparently plenty of food was in the area. They couldn't bury their dead; they dared not come out of their holes.

"One little native boy in his very best Pidgin gave a description of the strafing and bombing attacks. 'Pella b'long bird he come along now. Rat-tat-tat-tat! Boom-boom-boom!' Then in pantomime he illustrated how he lost no time crawling for the bush.

"Nothing in the entire area escaped destruction. Even two Geisha girls—one middle-aged, one young—had been victims of the relentless attacks. One had a leg blown off and the other had been killed by a .50 caliber bullet. They had been given a decent burial by Allied troops.

"Of more than 100 trucks found, only two appeared serviceable. In addition to many unburied Japs, a graveyard of over 400 was found, their deaths undoubtedly caused by our strafing attacks.

"We were glad to learn that the propaganda leaflets we had dropped had served their purpose. Very few of the natives in the area had aided the Japs and most of them had moved out of the coastal area and back into the hills.

"It is difficult to estimate with pencil and paper the damage done by the coconut attacks we carried out against the enemy. His nerves shattered by constant bombing and strafing, unable to eat, sleep, work or cope with our repeated raids, he had to give up his Hansa Bay position.

"He was forced to do this without pressure from the ground forces, which made it truly an air force show. This damage was wrought with a loss of very few airplanes and combat crewmen."

It all adds up to one inescapable conclusion. Coconut knockers pay off well and will continue to pay off well in the Pacific theater. ☆

A ground reconnaissance party checks up on what low-level bombing and strafing do to a Japanese Southwest Pacific base

FLYING SAFETY

Suggestions from the Office of Flying Safety, Headquarters, Army Air Forces, in the interest of accident reduction

These items are for educational purposes and are not to be construed as directives.

Look Twice Before You Leap—A pilot and his crew of 10 bailed out of a B-17G near Sioux City, Iowa, one night recently when they thought the No. 3 engine was on fire.

While the crew members were having a tough time of it on the ground—seven of them were injured when they landed on the rough terrain—the bomber flew on automatic pilot for more than 100 miles and made a neat belly landing on the side of a hill.

Investigation failed to reveal any evidence of fire around the engine or any other part of the plane. It developed that the pilot, acting on the copilot's word, had ordered the crew to jump without taking a look for himself. When the fire was first reported, the pilot had just applied full power to climb away from another plane that was dangerously close. What appeared to be fire was probably the turbo torching after the sudden application of boost.

The pilot's face was redder by far than the No. 3 engine.

Removing a Tow-Target Hazard—Standard parachute riser webbing has been used successfully by 3rd Fighter Command as a substitute for steel cables in an effort to eliminate the dangers resulting from severed cables in tow-target practice.

In one test 35 missions were flown using the webbing as a cable. No breaks occurred although 42 holes were shot in the webbing. Any one direct hit probably would have severed a steel tow cable. At installations where the webbing was used, pilots had no fear of running into free targets, and they were assured of a count on their hits because the targets were returned intact.

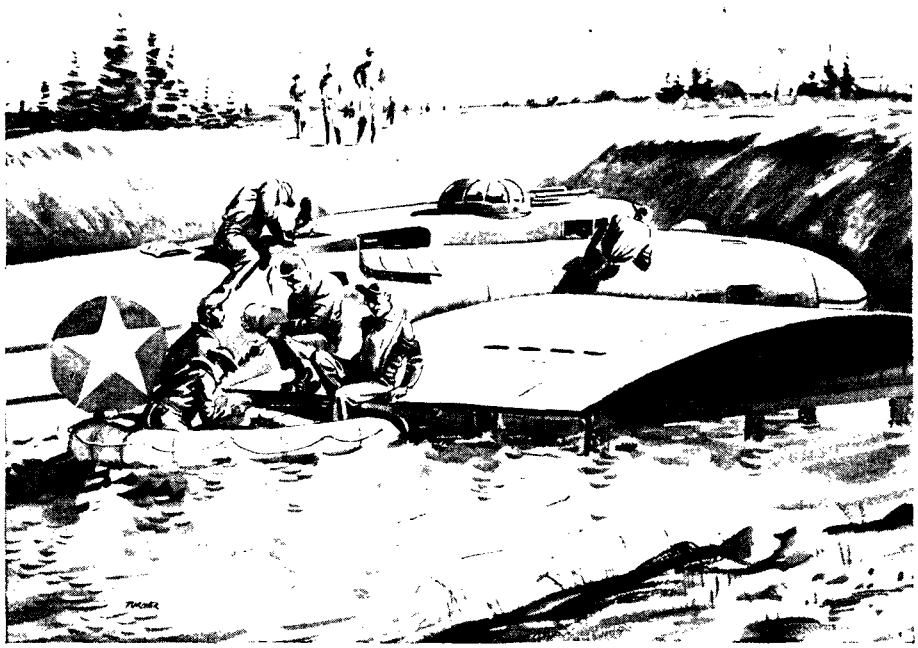
The Air Service Command is preparing a Tech Order on the use of webbing for this purpose.

Blocking the Glare in AT-6s—To eliminate glare from cockpit enclosure frames and panels which has been a constant headache to AT-6 pilots, Air Service Command recommends that the surfaces be painted with black camouflage enamel, color No. 604, specification AN-E-7. No TO will be issued but the manufacturer is making the change on late models.

Shot in the Arm—If instructor pilots in the B-17 school at Hobbs (N. M.) Army Air Field grow lax in latest teaching techniques, they must attend a 12-day refresher course to bring them back to par.

The base has established a standardization squadron made up of the six best instructors on the field, all graduates of the Bryan (Texas) Instrument School. Each expert instructor handles two instructor-students.

All phases of four-engine training and teaching habits are covered. The classes have improved efficiency of both instructors and trainees.



Mock-up for practice ditching sessions closely duplicates conditions of actual water landings.

Practice Ditching! Realizing the vital importance of constant drill in proper ditching procedure, many airbases have constructed ditching stages and mock-ups for practice sessions. In a number of instances scrap materials and ingenuity are being combined to good advantage in developing practice facilities.

At the Dyersburg (Tenn.) Army Air Field, for example, a stripped B-17 fuselage has been installed in a water-filled revetment so that training crews receive ditching instruction under conditions closely approximating those encountered in actual water landings.

Barksdale Field, La., has mounted a junked B-26 on an underwater platform placed in an artificial pond. A mock-up of a B-17 fuselage has been the practice stage for ditching drills at the AAF Tactical Center for some time. The mock-up was installed in a small lake.

At many bases where such facilities are not available, drills are conducted on dry land with regular airplanes and raft techniques are practiced in swimming pools or convenient ponds.

Airplane commanders, who are responsible for teaching ditching procedure to their crews, are being constantly reminded that good ditching habits are an investment in safety insurance.

Flying Status Flags—Colored flags mounted on B-24s in the 15th Bombardment Operational Training Wing indicate the flying status of individual airplanes. The 10 x 10-inch banners are placed in the pyrotechnical pistol mount in front of the top turret. A red flag indicates that the plane is out of commission, yellow shows that the plane is OK but needs servicing and no flag tells the pilot that the plane is in commission, fully serviced and ready to fly.

Brakes Versus Torque—Regional safety officers at a midwestern training field using P-47s found that many tire failures on take-off were caused by students riding the right brake to correct for torque. Tubes were blowing out because of excess heat generated in the brake drums. The situation was corrected when trainees were taught to use rudder instead of brakes to keep their take-off runs straight.

Cockpit Comfort—A sun shield to protect the heads of ferry pilots of fighter aircraft has proved to be an effective weapon against heat exhaustion, dizziness, nausea and headache. Pilots found that long range flights under a hot sun raised cockpit temperatures to a highly uncomfortable degree. Many of them have made sun shields of cardboard,

painted on the outside with silver paint and on the inside with green. The shield is attached to the inside of the canopy, over the pilot's head, with masking tape.

Training Stimulant—A clever communications device is in use at Westover Field, Mass., to ease the monotony of a Morse code refresher course. A mural depicts a life boat at sea with a rescuing airplane flying overhead. Arranged on the life boat and plane are lights which flash dot and dash messages during practice sessions for radiomen to maintain their speed and accuracy.

Safety Reminder—As a constant reminder to line and flying personnel at Minter Field, Calif., three flags are used to advertise the field's daily flying safety status. A red flag flown on the flight line indicates a fatal accident, yellow a non-fatal accident, and green signifies a 24-hour accident-free period.

Survival Training—Idle hours are turned into valuable safety indoctrination time at Mather Field, Calif. The personal equipment officer demonstrates proper ocean survival technique to convalescent patients from the station hospital. Using the post swimming pool as a theater, the PEO shows men how the one-man life raft, Mae West and other emergency equipment should be used by survivors when airplanes have to be abandoned over water.

Tower Noises—Tower operators at a southern training base had difficulty understanding voice communications because engine tests and run-ups were conducted on the apron at the base of the control tower. This hazard to safe operations was removed when the CO ordered such activities to be performed a safe distance away. ☆

Answers to Quiz on Page 18

1. (C) Eastern Air Command
2. (D) 141.7 feet
3. (C) Nearest to his home
4. (A) True. AR 605-115, 1 June 1944
5. (A) June 2
6. (B) General Henry H. Arnold
7. (A) C-47s 8. (D) 1,500
9. (C) Radiator shutters
10. (C) A life boat dropped for rescue purposes
11. (D) Six 12. (C) Guadalcanal
13. (A) B-26 14. (C) $4,000
15. (B) 90-100 mph
16. (A) Five
17. (C) The Marianas and Japan
18. Liaison planes.
19. (C) Adak 20. P-63

PICTURE CREDITS

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OFS SAYS:

(Safety officers of the Office of Flying Safety are veteran flyers. These reports include comments by these veterans on recent accidents. Read and heed.)

CORNING, IOWA—A C-47, with the pilot, copilot and two passengers aboard, clipped the side of a hill and slithered to a stop on its belly after the pilot buzzed his home town. Four people received minor injuries and the airplane burned.
OFS COMMENT: Although no one was killed in this crash, it wasn't the pilot's fault. His infractions of regulations and common sense: He had left local flying area on a local clearance, flown over a town at less than 1,000 feet, buzzed his father's barn at less than 200 feet and maneuvered his plane dangerously at a low altitude. Obviously the pilot had little regard for the safety of his own life or those of his passengers. If this type of accident is to be stopped, perhaps even stiffer penalties for violations of regulations must be imposed.

SANTA MARIA, Calif.—Both engines on a P-38 became overheated and lost power. The plane burned after the pilot made a wheels up landing.
OFS COMMENT: The engines overheated because coolant flaps were closed. When the automatic coolant control fails to work, the pilot must use the manual control to bring engine temperatures back to normal. Although this pilot had more than 35 hours' instruction in P-38s he admitted he didn't know where the manual coolant flap controls were located. On top of that, he had plenty of time to make a normal landing on the runway if he had called for an emergency. Instead, he flew until the engines became too hot to produce power. If pilots are to fly safely, they must know their equipment, then exercise good judgment while using it.

ESTRELLA, CALIF.—A P-70 pilot brought his airplane in so hot that he ran out of runway, washed out the gear on an embankment and left just enough of the plane intact to be surveyed.
OFS COMMENT: It's the same old story. A hot pilot with too much vanity to go around and make another attempt. The cost: A perfectly good night fighter forever lost to the AAF.

HILLSBOROUGH, FLA.—A P-51 towing a target for other P-51s had to have its wing replaced after it was hit by a .50 caliber slug from a fighter making a pass at the target.
OFS COMMENT: The pilot making the pass was entirely responsible for this near-disaster. His pass was made at about 10 degrees from the track of the target, and he was so close that he had to shove the stick forward to avoid hitting it. At that point, the shot was fired inadvertently. Passes made at less than 20 degrees from the target's path can be plenty dangerous to the tow-target plane, almost as dangerous as a loose trigger finger on a pilot who has no intention of shooting.

MINTER FIELD, CALIF.—Both engines of a UC-78 quit at the same time. The pilot was forced to make an emergency, wheels up landing causing major damage to the airplane.
OFS COMMENT: This candidate for entrance into pilot's heaven was obviously thinking about everything except flying his airplane. After the landing, it developed that he had turned his fuel selector valve to "OFF" instead of to "LEFT" as he had intended. Never trust your sense of touch when changing controls. Make a visual check and be safe.

VICTORIA, KAN.—The landing gear on a P-40 retracted on the landing roll causing major damage to the propeller, fuselage and gear.
OFS COMMENT: On his approach, the pilot extended the gear and made the usual visual check of the pop-ups on the wings. He did not check with the hand hydraulic pump to make sure the wheels were locked. Pop-ups only indicate that wheels are down. The hand pump test is the only way to be certain that wheels are locked. It is worth the trouble to check.

FARMINGDALE, N. Y.—A pilot on take-off detected puffs of white smoke coming from under the cowl flaps of his P-47 and turned back to the field for an emergency landing. Leveling off about 20 feet over the runway, the plane dropped in for a hard landing. The landing gear, fuselage and wings received major damage.
OFS COMMENT: Previous and subsequent flights in P-47s proved that the pilot's ability to handle the ship was excellent under normal conditions. However, under the stress of an emergency the pilot's technique went to pot. A bit of clear, rational thinking would have saved many dollars and man-hours of repair work.

GAUSE LANDING, N. C.—A P-47 pilot on a gunnery mission made a belly landing on the beach after his engine failed. The airplane was a complete loss because salt water covered it before it could be moved to high ground.
OFS COMMENT: Flying on his auxiliary tank, the pilot cut the throttle to keep his place in formation. When he gave it the gun again there was no response.

After the crash he checked his tanks and found the auxiliary dry, but the main tank contained plenty of fuel. At the first indication of engine trouble, No. 1 check should be to see if the engine is getting gasoline. ☆

CROSS COUNTRY

THE War Department plan for partial demobilization following the end of the war in Europe calls for: selection of men to be released as individuals rather than by units; priority of release to enlisted men on a basis of time in service, overseas duty, combat record and dependents; release of officers on a basis of military necessity; movement of AAF combat groups and supporting ground units from all over the world to Pacific areas; release by the AAF to be slower at first than by the Ground Forces; as replacements become available from the Ground Forces and from new inductees, release by the AAF proportionate to the Ground Forces.

The demobilization plan is deliberately complex to achieve maximum fairness. The above is merely a sketch of the plan.

☆

The AAF is making a study of all its present officers to determine who are best qualified to hold commissions, either Regular Army or ORC, in the postwar air force and to learn which ones are interested in continuing in service after the war. Pending decision on the strength of the postwar Army, this survey will enable the AAF to commission the number of officers authorized to it without the confusion that would result from unplanned and hurried selection.

☆

The first military helicopter training school has been established by the AAF at Freeman Field, Ind.

☆

Establishment of the Air Technical Service Command (the redesignation of the recently created AAF Materiel and Services), with Lt. Gen. William S. Knudsen as director, combines under one administrative unit all activities and operations formerly assigned to the Materiel and Air Service Commands. Its functions are grouped under these general headings: material and production facility resources; research and development engineering; production, quality control and modifications; procurement; contract termination and property disposal; traffic and transportation; supply; maintenance training of tactical service units.

☆

The special Balkan air force established to arm, feed and give combat support to patriotic resistance groups in the Balkans is based in Italy under administrative command of MAAF and includes American, British, Polish, Italian, Yugoslav and Greek flyers.

☆

Recent transfers of general officers include the following command assignments: Lt. Gen. Millard F. Harmon, commander of Army Air Forces in Pacific Ocean Areas; Lt. Gen. Lewis H. Brereton, commanding general of the First Allied Airborne Army; Maj. Gen. Hoyt S. Vandenberg, commanding general of the 9th Air Force; Lt. Gen. Delos Emmons, commanding general of the Alaskan Command; Maj. Gen. R. LeG. Walsh, commanding general of Eastern Headquarters, USSAFE; Maj. Gen. Curtis E. LeMay, commanding general of the 20th Bomber Command; Brig. Gen. William D. Old, commanding general of the I Troop Carrier Command; Brig. Gen. Lauris Norstad, chief of staff of the 20th Air Force; Maj. Gen. J. P. Hodges, Assistant Chief of Air Staff, Intelligence; Brig. Gen. F. H. Smith, Jr., a Deputy Chief of Air Staff.

☆

American factories are producing heavy bombers at the rate of about 1,500 a month, according to figures recently released.

☆

Medals of Honor have been awarded the following: 1st Lt. William R. Lawley, Jr., pilot, of Leeds, Ala.; 2nd Lt. Walter E. Truemper, navigator, of Aurora, Ill.; T/Sgt. Forrest L. Vosler, radio operator, of Livonia, N. Y., and Sgt. Archibald Mathies, gunner, of Finleyville, Pa., all of the 8th Air Force. The awards for Lieutenant Truemper and Sergeant Mathies, members of the same B-17 crew, were made posthumously.

☆

Presidential citations have been awarded the following AAF units for operations against the enemy covering actions from April, 1943, to July, 1944. The units, dates and actions:

301st Bombardment Group	April 6, 1943	Bizerte
44th Bombardment Group and Headquarters 66th, 67th and 606th Bombardment Squadrons	May 14, 1943	Kiel
99th Bombardment Group	July 5, 1943	Gerbini airfield, Italy
325th Fighter Group	July 30, 1943	Sardinia
82d Fighter Group	August 25, 1943	Foggia
1st Fighter Group	August 25, 1943	Foggia
82d Fighter Group	September 2, 1943	Cancello marshalling yards
1st Bombardment Division	January 11, 1944	Central Germany
325th Fighter Group	January 30, 1944	Villaorba airdromes
2d Bombardment Group	February 24, 1944	Steyr, Austria
97th Bombardment Group	February 24, 1944	Steyr, Austria
301st Bombardment Group	February 25, 1944	Regensburg
451st Bombardment Group	February 25, 1944	Regensburg
307th Bombardment Group	March 29, 1944	Truk
14th Fighter Group	April 2, 1944	Ballbearing works in Austria
96th Bombardment Group	April 9, 1944	Poznan, Poland
31st Fighter Group	April 21, 1944	Ploesti-Bucharest area

CHINA COMBAT

(Continued from Page 25)

part of Changsha was reduced to rubble in a series of heavy assaults by Liberators and a score of other towns, used as storage centers and garrison billets, were leveled.

The second prong of the gigantic Jap pincers, moving north up the railroad bed from Canton, was given the same treatment of dive-bombing and strafing.

With the coming of good weather the Japanese air force reappeared over the front. In air battles over Hunan and low-level attacks on Japanese fields, 141 enemy aircraft were destroyed during July and early August, with 65 probably destroyed. While the American fighters tangled with the Oscars and Tojos by day, Mitchells ran nightly low-level missions to the Jap fields at Pailochi, Hankow, Wuchang and Canton.

By the middle of August the main enemy effort in Hunan was devoted to clearing the clogged supply lines. Fighter sweeps by day and Mitchells prowling by night had finally made the river route too costly. In an attempt to offset this, the Japanese put thousands of engineer troops and conscripted coolies to work repairing the roads in their rear, and turning the old railroad into a motor highway. Bridges were repaired and many new pontoon spans were hastily thrown up, but Mitchells bombed the new bridges and fighters strafed and bombed truck columns moving down the new roads from Yochow to Hengyang. When the Japs confined their movements to the hours of darkness, a pathfinder Mitchell leading flights of fighters would drop flares to illuminate the roads for fighter attacks on the truck convoys.

As a result of this action, the Japanese advance remained bogged down for some time in the rice fields outside Hengyang while the drive north from Canton, which was nearing Kubong, ebbed back toward the south. Jap plans for a quick junction of their northern and southern armies had been interrupted by American bombs and designs for closing the railroad gap and driving the 14th Air Force from its eastern bases were at least temporarily delayed.

In the Honan campaign, along the Yellow River front, the Japanese relied on the speed and weight of their armor and the lack of American airbases within range of the front for quick success. This plan was based on quick, deep penetrations across the flat wheat fields, cutting up the Chinese army into segments for annihilation, then pushing on west after the Hankow-Peiping railroad had been taken, to capture Sian and drive a wedge between Communist and Nationalist China.

By a miracle of movement and yeoman service by Lt. Col. John W. Williamson's battered transports, advance units of the Chinese-American Wing were established at Chinese Air Force bases by the time the Japs swarmed across the Yellow River in April. American and Chinese pilots of Colonel Morse's command have been in action against them continuously during the spring and summer despite bad weather, meager supplies and poor base facilities.

In the north their targets were motor pools, truck parks, columns of scout cars,

tanks and truck-borne infantry and artillery. There again, rockets and 75s were effective in knocking out tanks, half tracks and artillery positions. Frag bombing and low-level strafing stalled many a motorized thrust racing across the plains. But the Japs, unrelenting, regrouped their forces and pushed on.

In both the Hunan and Honan campaigns the Japanese achieved their first objectives—occupation of Changsha and Hengyang and closing the gap in the Hankow-Peiping railroad—despite heavy losses inflicted by the 14th Air Force. In their ultimate goal of closing the Hankow-Canton railroad, occupying American airbases in east China and driving a wedge between the Communists and Nationalists, the enemy is making determined progress despite valiant Chinese resistance and available air support. In both campaigns air attack has reduced the speed of Japanese drives and given demoralized Chinese troops the confidence to attempt stabilization of the fronts.

In southern Yunnan, the third campaign, American air support has enabled Chinese troops to execute their first successful offensive since the beginning of the Sino-Japanese war. The Japanese in southwestern China have been thrown back from their positions along the Salween River, from which they menaced American airbases in western China and the vital air supply route from India, and have been driven back to the border of northern Burma.

Air action also has been responsible for keeping the Chinese advance supplied with food and ammunition and denying some of the entrenched Japs access to their own supplies. Transports have dropped hundreds of tons of supplies to advance Chinese units which otherwise would be dependent upon the trickle of coolie-borne supplies over almost impassable trails. In attacking the enemy supply lines, Mitchells have bombed and burned many important Japanese supply bases in northern Burma, started landslides along the important Burma Road that closed it to truck and mule traffic for weeks at a time, while fighters have bombed and strafed supply columns from Lashio to the front.

Since the start of the Salween offensive, the one bright spot in the total scene, Chinese forces have narrowed the gap between the Yunnan forces and the Chinese under General Stilwell at Myitkyina to less than 40 miles, and secured territory vital to the opening of the Ledo Road from India to China.

Yet, with all our supporting attacks and localized victories, the conflict in China remained tilted in favor of the Japanese. On September 5, the Japs had resumed one of their most decisive offensives, and it appeared that if they succeeded in driving to Kweilin and Liuchow, they would eliminate our bases at these points and Lingling. If they continued to French Indo-China they would lop off the entire eastern section of China.

All factors considered, the war for the Chinese was brightened only by the prospects that eventually enough Allied strength would be brought up to throw the enemy out, and by the long view that ultimate victory was beyond doubt. ☆

In This Issue

Lt. Frances L. Sandstrom, 24, a flight nurse from Opportunity, Wash., is the girl on our cover this month. Heaven sent her to us, via ATC. Assigned to the trans-Atlantic air evacuation run, Lieutenant Sandstrom happened to be in New York City for a day of sightseeing after making five flights into France and thirteen Atlantic crossings since D-day. We were looking for somebody very pretty, as usual, and when we saw Nurse Sandstrom walking toward a telephone booth in the Hotel Commodore lobby we did a tight lufberry around her until she agreed to be photographed and tell her story. Our photographer, T/Sgt. Roger Coster, was on furlough, but we snatched him back by phone. The lieutenant was modestly without her ribbons at the time, so we borrowed a European one from a major in the editorial department and sent a staff artist speeding out to buy an American ribbon. Coster then began firing long bursts on his Rolleiflex, murmuring "ees wonderful. Boy! ees wonderful." (He's a Parisian. Did 19 months in the French Army.) After the usual studio shots, the photographer decided to make one outdoors. That is the picture used on the cover, taken on the roof of 101 Park Avenue, home of AIR FORCE.

☆

Five members of our staff in recent weeks have left for parts known and unknown as overseas correspondents for AIR FORCE, and you will be reading their stuff as we go along. Somewhere in France with advanced AAF units we have S/Sgt. Mark Murphy, who before the war was on the staff of NEW YORKER magazine, now working to keep us up to date on developments of what at press time was the fastest moving war theater. Covering USSTAF operations from Britain (by the time you read this probably from France) is Maj. Charles Frazer, back to the ETO on his second tour of overseas duty for us. Slated for a stop-off visit with the Mediterranean Allied Air Forces in Italy is Capt. Larry Bachmann, not long removed from a seven-month tour in the Pacific, who will move on to the China-Burma-India theater. In the Pacific we have Maj. Herb Johansen and Capt. Manford Susman. For some last minute cabled dispatches from our overseas men see Pages 4, 12 and 38.

☆

Capt. Bob Hotz, author of the article on 14th Air Force operations, page 24, is a former member of our staff and of the staff of the old Air Forces News Letter, which preceded AIR FORCE. Not long ago he helped bring a B-25 back to a China base after its pilot had been shot up during a low-level attack. Hotz, an intelligence officer, was serving as gunner on the mission. Although not a rated pilot (he had once fooled around with Cubs and Link trainers), Hotz climbed into the cockpit (there was no copilot on the mission) and did a lot of flying on instruments with the plane all shot up, until the pilot could again take over. More recently, he was a member of a crew which had been shot up during a low-level attack, had to bail out from 14,000 feet at night.

☆

Returning in an early issue will be the cartoon page of Capt. (you knew him only as Lt.) William T. Lent. The page was held up this month for revisions which should give it more prominence.

☆

New features this month include "Rendezvous" on Page 1, which gives every one of you the chance to become a contributor to AIR FORCE through your letters. Space limits us somewhat, but we'll try to print all letters which appear to be of general interest. As we have reminded you on our back cover message this month, how about sending in your comments, criticisms and ideas?

☆

Another new feature is "The Library" on Page 53. Here each month, through the cooperation of the AAF Technical Library Service, we will keep you posted on the new books on air subjects which are available through the Service.

☆

In this and forthcoming issues "Shooting the Breeze" will be found on the page facing the inside back cover. This feature is meant to be everything the name implies—a kind of tall story club with branches all over the globe. Many of the tales are gospel truth, others make us wince a bit. We appreciate the items that are being sent in for "Breeze" and urge the rest of you to jot down those stories you tell and hear and send them in. We think they deserve to be told through AIR FORCE so everyone in the AAF can hear them.

☆

Thanks to Lt. Winsor H. Watson, Jr., writer, and S/Sgt. Ray Scheiber, photographer, both of the PRO, 36th Street Airport, ATC, Miami, Fla., for preparing the feature "Pearly Gates," Page 21, to S/Sgt. Hoite Agey of the same unit for his contributions to the article "Our Pigeon Air Force," Page 36, and again to Sergeant Scheiber for his photos accompanying that article.

☆

Lt. Col. F. L. Moseley, author of the radio landings article, Page 41, was largely responsible for perfecting and putting into operational use the type of equipment covered in his article. He accompanied the first experimental sets to Britain and conducted demonstrations so successful that they led to the adoption of the equipment by the AAF and RAF in Britain.

☆

Incidentally, boys, those two lovelies you observed in the PASS IT ON "advertisement" on page 63 of the September issue were, seated from left to right, Miss Jean Welch and Miss Frances Westcott, both of the John Robert Powers agency, N. Y. C. ☆

Pretty Lt. Bernie Manning who is, of course, from Hollywood, makes life as pleasant as life can be in Assam, India. GIs refer to this area as "Panty Alley." Reading right to left: panty girdle, stockings, GI panties, Lt. Manning, long underwear pants.

FLIGHT NURSE (Continued from Page 30)

months a flatiron in a man's house gave him a better line than etchings ever did.

"We would go on ironing dates," the girls explained. "Keeping our clothes neat was our toughest problem at first. We had water three times a day—for a couple of minutes each time—and that was all. We could always wash our clothes in the river but we couldn't iron them because we didn't have electricity at that time. The fellows did, so we'd take our clothes over to their place and spend a quiet, domestic evening at the ironing board. Oh, no, they didn't mind—too much. Said it lent a homey touch to the place."

Nurses in most of the Pacific theaters fly an average of about 80 hours a month. One month a girl spent 118 hours aloft in her evacuation plane. Flights usually average four to eight hours' flying time. And the long over-water hops are not made easier by the turbulent atmosphere usually encountered in that area, or by the possibilities of enemy attack on a heavily loaded, unarmed plane.

One thing impossible, however, is to get any flight nurse to admit there's anything heroic—or even difficult—about the job she's chosen. In the first place, she'd say there isn't time to think about herself and on evacuation missions this is literally true. Looking after 24 men whose care has been entirely entrusted to one woman is a full-time job. It permits no thought of comforts left behind.

Always her patients come first. It's up to the nurse to care for them, make them comfortable and see that they arrive at the destination in as good physical condition as expert nursing care can assure. And where air travel is concerned, that means being prepared to cope with the unexpected. Several months ago, the plane on which Lt. Dorothy Shikoski was flight nurse was forced down at sea. In the crash Nurse Shikoski's back was seriously injured. Yet, with no thought for her own comfort, she helped her patients into life rafts, cared for their wounds and attended them constantly until they were picked up.

Once an evacuation plane is airborne, the cabin becomes literally a hospital ward with the nurse in charge. "Routine nursing care," it is called but any man evacuated by air knows that it's more than just watching symptoms, changing dressing, giving plasma or bringing out the morphine syrette when she sees fists clenched in silent pain. It's more than adjusting the splint on a native's leg, or treating an Australian for "shock," or asking the pilot to descend slowly so that a too-sudden pressure change won't make a tank man's condition worse.

Maybe it's a lot of little things—like the subtle way she has of keeping a boy's mind off fears of losing his injured leg. Or the manner in which she calms a fellow's nerves when she can see how jumpy he is about taking his first flight. Or the way she asks "Wouldn't you like a cup of chocolate?" "How about a cigarette, sergeant?" "Here are some books" or "Here's a new game we picked up on the last flight." Maybe it's the fact that, busy as she is, she still has time to talk.

Or it could be her smile, her calm efficiency and the way she keeps everything under control. Amazing women, these airborne nurses, how they keep up the hard, tiresome flights month after month in every climate of the globe. A patient's own troubles begin to be forgotten in admiration for the nurse aboard his plane—and the hundreds of other nurses just like her.

Call it nursing care, call it building morale, call it anything—the flight nurse's sincere desire to help and comfort her patients, her warm spirit and friendly disposition have won for her the same high accolade on every battle-front where American soldiers are fighting: "Geez, isn't she wonderful!" ☆

AIR MASTERY OVER EUROPE

(Continued from Page 5)

the whole period USSTAF bombers maintained their pummeling of German airfields in France, Germany, the Low Countries, Italy, and the Balkans.

Meanwhile the 9th Air Force, the RAF 2nd Tactical and the Mediterranean Allied Air Forces were giving strong tactical support to the advances of the land armies. In their desperate dash northward from the Falaise sector the Germans were bombed and strafed into one of the worst traffic tie-ups in the history of the world. For miles vehicles were jammed bumper to bumper in hopeless congestion on main highways and in the surrounding maze of country lanes. Toward the end, the Germans were trying to withdraw in daylight, an act of desperation in itself.

German prisoners, pouring into Allied hands through these hectic weeks, testified to the psychological effect of AAF and RAF operations. They revealed not only the terror of bombardment but the critical shortages of food, ammunition, water and fuel that directly resulted from it. The gasoline shortage had become acute and nobody knows how many Nazi tanks were blown up by their crews when they had no more fuel. Infantrymen on the so-called "holding front" had gone without food for five or six days in some cases—and nothing could have told them so well that their cause in France was *kaput*.

Not the least of AAF exploits during the Battle of France was the flying of equipment to the Maquis. For weeks B-17s of the 8th Air Force were secretly dropping red, yellow and white parachuted bundles to rendezvous points in the valleys, hills and plains of France. They delivered an astonishing total of more than 90 percent of these cargoes and never perhaps were guns, ammunition and supplies put to more effective use. As France was liberated, in town after town sobbing men and women swarmed happily into their sunlit squares to sing *La Marseillaise* once again. The victory was deservedly shared by the French Forces of the Interior.

In early September the enemy's situation was still deteriorating, but the Nazis had something left. The Luftwaffe had put into action their ME-262 and other jet and rocket-propelled aircraft. These planes had been met in combat and were known to be extremely fast, possibly good, weapons. The Germans had reserve ground forces and strong defensive positions. But that they could recover from their many disasters or make a stand on the Western Front for long was unlikely. ☆

FIGHTER CONTROL

(Continued from Page 7)

excited," he said, "they see something new and they want to bust it up right away, so you always have to tell them to make positive recognition if they're anywhere near our troops. The words 'positive recognition' make them think a little bit and, lots of times, keep them from hurting somebody. They get so damned excited when something's going on they chatter at each other, and sometimes it's our business to cool them off a little."

The pilots Major Cody was talking about usually fly a squadron out for two or three hours and, as they start to return, another squadron of their group meets them. They come home, refuel, bomb up, load the ammunition boxes and go out again. Thus, one squadron is always kept over the target, and the pilots handle one, two or three missions a day. Sometimes their orders are to bomb and strafe a certain column or a big gun emplacement. Sometimes it is armed reconnaissance on the group leader's discretion. Often it is armored or troop column support. In the latter case, the control often passes from the formal direction of the control tent to the column. Each column has an air officer with it to direct the supporting planes. They get there by 1-50,000 or 1-100,000 maps, but once overhead they can be directed by larger scaled maps.

"Gun emplacement on K-1534 is holding us up," the ground officer may radio.

"Roger," says the squadron leader, and some planes dive down and the emplacement is no longer any difficulty.

"Enemy antitank gun around the corner ahead of your drive, hold up a moment," the aircraft may radio, and the column slows down while P-47's dive out of the sky and rake the gun. It's teamwork. Often a column with a nice open road and no Germans in front of it has no use for air support at the moment, and it will release a squadron. The squadron calls back to fighter control for some targets, and if there are none the planes may go out on armed recon looking for targets on their own.

Then, of course, there is the problem of aircraft numbers. The 9th may be the largest air force in the world, but it doesn't have all the planes in the world and quite often a priority target will dominate a day's proceedings. Orders from the command may say that under no circumstances are planes to be diverted from the job laid out. On that day, a division may be pinned down by enemy guns located in a position that only air power can knock out easily. The division may call for help and be told there simply are no planes to send to it. On such occasions, the controllers don't feel too happy when they have to say to the Army liaison officers who transmit the requests for help, "Sorry, you'll have to wait your turn."

One of the little adventures they like to talk about around fighter control is that of the *Handy Foot* squadron some weeks ago. *Handy Foot* was on armed recco and spotted a column of tanks quite near some American positions. The controllers told the squadron to make positive identification and two planes dived down, winged over and the pilots looked right out at some crosses on the tanks.

"My God, I'm looking right in the muzzle of an 88!" one flyer yelled into the radio. Planes of *Handy Foot* thereupon knocked out the front tanks in the column and then the back ones. The Germans couldn't move either forward or backward. The controllers sent over more planes; *Handy* briefed them and went home to reload. All that day, there was no moment when there were not planes bombing and strafing the column. By nightfall, 128 tanks had been claimed destroyed. On other occasions, flights of Messerschmitts may see American formations fly past them placidly. Minutes later, another formation of American planes will dive out of the sun and have a field day with the unsuspecting ME's. Such meetings are arranged by fighter control on information from planes, radar installations, ground observers and other means.

As the system operates here—complete with air warning personnel, filterers, tellers and large tables on which all planes in the vicinity are plotted—fighter control in the 9th is a logical offensive development of the air defense network protecting the coasts of the United States when hostile air attack threatened. The original cadre of this fighter control squadron came from the Seattle Fighter Wing.

"God, how we miss the Bell Telephone Company," a Signal Corps communications man commented. After several of its men had been trained at the fighter control school at Orlando, Fla., the unit moved to England, and from there directed interceptions and dispatched the fighter cover for 8th Air Force attacks on Germany.

Fighter control in those days had to get planes to a certain spot at a certain second to relieve others which were running low on gas. The controllers had to get them there and get them back. They tell how Lieutenant Russell talked to a pilot lost over the Continent with his compass shot out. Lieutenant Russell brought him home by the sun, vectoring him with such advice as, "Turn eight o'clock to the sun. Now turn so the sun is at three o'clock."

All chief controllers here are pilots and know how a flyer feels. Maj. Carl Geiss, one of the top men in the outfit, got a DSC at Bataan and later, with the late Lt. Col. Boyd Wagner, trained fighter pilots and served as a test pilot in the perilous days in Australia when the Philippines fell.

The controllers have a profound respect for weather and for Allied antiaircraft batteries. Weather officers are consulted almost every hour, and toward dusk a close check is kept with the antiaircraft liaison officer in case any of our planes are still up. On the Sunday of the Mons incident one squadron didn't come in until dark, and probably for the first time that day there was an air of tense excitement in the room. Communications were tied up but the controllers finally broke in so that AA batteries could be told to hold fire until all friendly planes were down. At night in combat zones, the burden of proof that one is friendly rests with the airplane.

Shortly after dark, that Sunday, Brig. Gen. James W. McCauley, commanding general of a fighter wing, entered the tent. He had been looking things over at a new control set-up. This day fighter control had been using alternate equipment and a larger unit was being installed some miles away. Fighter control is continually moving its units, leapfrogging across France and Belgium toward Germany. The general was told about the diversion at Mons and, with a couple of executives, he consulted the map. He pointed to a spot which was many miles from the place where we were. Then he traced the various places where the fighter control center had been located, from the spot a few miles back of the beach where the tent had been set up under fire from German snipers and artillery. The unit had waited off shore on D-day. There had been too much going on for them to risk taking their valuable equipment ashore. The next night, however, they had taken it in and installed it at a location which hadn't yet been captured. There had been other moves since, and more were to come. Major Cody turned to me and said, "It's a shame that things were so quiet here today."

Things may have been quiet in the tent that day, but they weren't quiet at Mons.

Our fighter-bombers, directed by control, destroyed more than 900 trucks and 775 pieces of horsedrawn equipment that very pleasant Sunday. ☆

SHOOTING THE BREEZE

Burma. Naga headhunters lived in a tantalized state for several weeks after AAF planes began appearing in their skies. They could never get close enough to determine the size or temperament of the winged creatures. The great question in Naga society became, "Where do the warbirds sleep?" They seemed rather big to roost in trees. The Nagas sent a scout on the long trek to an AAF airbase in Assam, and there he found the answers to all his questions, including the biggest surprise that the smallest of the warbirds had wings six spears in length. He was so thrilled and amazed that the commanding officer of a fighter group asked the native if he wanted to take a ride.

The visitor was insulted. "The Nagas," he said haughtily, "are law-abiding people. It is not our custom to go up in the air."

England. On D plus-1 the British Broadcasting Company went about its job with such unrelenting casualness that it almost itself got blitzed. At a flight control station on the coast nerves were still sharp. Plotters were tensely tracking aircraft across the channel and up and down the Cherbourg Peninsula. Fighter controllers were still vectoring their planes over Very High Frequency radio to targets on the beachhead.

About that time the BBC made itself heard. With newly stepped up transmission, it beamed out in the direction of the in-

vasion, booming into the control station's VHF. One of the controllers was brought up short by conversation on his headset that was distinctly not R/T. "Hello, Marlborough, Marlborough, is that you?" said an agitated voice. "There's something wrong with our VHF. All we get is some girl singing 'Everything I Have Is Yours'." A moment later, more furious—"Can't we get that damned boogie woogie off the air?" And from the second rabid controller: "Blow it up! Vector somebody over there and tell him to hit it!" Fortunately for BBC, they found a better way.

Sicily. When Lt. Robert I. Graetz was forced to ditch his A-36 in the Mediterranean, his back-pack dinghy sank and he swam for 13 hours before dragging himself exhausted upon a beach. The first Americans Graetz met were two MPs. One warned him gravely that he was out of uniform. No necktie. The other cautioned Graetz of the dangers which might befall him while going without his helmet.

Hawaii. Pvt. Glenn Bricker of Philadelphia cooks for a colonel on an island base. Finishing breakfast one morning, the colonel left his office, and Bricker began tidying up around the place. When he progressed to the colonel's bedroom, he decided that a little nap could do no harm. His next contact with the warring world was the colonel, irate and noisy beside him. "What's this?" the officer roared, although it was pretty apparent that the private was asleep in his bed. "Sir, I must have been tired," Bricker mumbled. Then his mind began to click. "I worked far into the night on some custard pies," he added. The colonel's voice had softened noticeably as the private got to his feet. "Those pies had better be good," he said. They were, and the case was closed.

At Sea. The story goes that a Navy PBY in Dumbo service, a highly esteemed sea rescue organization, spotted a man adrift in a raft and immediately set about to pick him up. They flew over him, but the man did not look up or wave the usual greeting. They knew he was alive, however. They could see him moving his arms, busily employed with something in the water. The PBY landed and taxied toward the raft, whereupon the man began waving them away and motioning for quiet. The rescue crew, who could see the flyer's Army wings and khaki shirt, thought he must be suffering from shock or the heat. When they pulled alongside his raft, the man got highly indignant. It was then they noticed that he was using his emergency tackle and had already caught one fish. At the moment he was after something really big, and didn't want to be rescued just yet. He preferred, he said, to wait for the *next* Dumbo. Rather patiently, the PBY pilot explained that while Dumbo service was dependable, it didn't run quite so regularly as a commuter's train. Reluctantly the AAF man got aboard and the Dumbo took off.

P. S. We don't believe this either.

Italy. Latest to attack the AAF institution of flying pay is an organization of Fifth Army GIs who wrote: "Having crawled through all the mud and dust in Italy, we want extra pay for NOT flying."

France. One of the basic distinctions between permanent and temporary rank was recently clarified by Maj. John L. McGinn of Long Beach, Calif., a Mustang squadron leader. That afternoon the major had been diving on an ME 109 when an imperative voice blurted in his radio, "Get away from there! Don't shoot him! He's mine!" The major pulled up and one of his pilots, 1st Lt. John R. Eskridge of Elmore City, Okla., dived down and destroyed the German. Upon returning to his base Major McGinn jokingly pointed out Eskridge as a man holding the permanent rank of lieutenant.

U.S.A. This account deals with the first paratrooper ever born in a parachute. The fact that it was a pigeon paratrooper only slightly dims the lustre of the tale. It seems that men who train birds at the AAF Tactical Center in Orlando, Fla., make certain that no novice pigeons are sent overseas. The ones selected as pigeon paratroopers have already completed advanced flight training and are known to be sturdy, dependable birds. They are given practice jumps until they can hit the silk like a stunt jumper. Their complete composure was demonstrated recently when a container of three birds was lost after being dropped. Four days later the pigeons were found, unruffled but hungry. They had eaten part of the straw flooring of their container, and in one corner the female of the party had laid an egg. When hatched, that little pigeon won't need to ask his daddy what *he* did in the war. ☆

GOT ANY GOOD STORIES? SEND 'EM IN!

Two officers in the Aleutians gossip over their clothesline on wash day. All men are obliged to do their own laundry on this particular island.

Saturday night happens, no matter where.
Maybe it takes scheming, but Americans
get their baths, and keep clothes clean.

French, Italian and German salvage went into this washing machine which was designed and built by members of 12th AF Service Command stationed in Sicily.

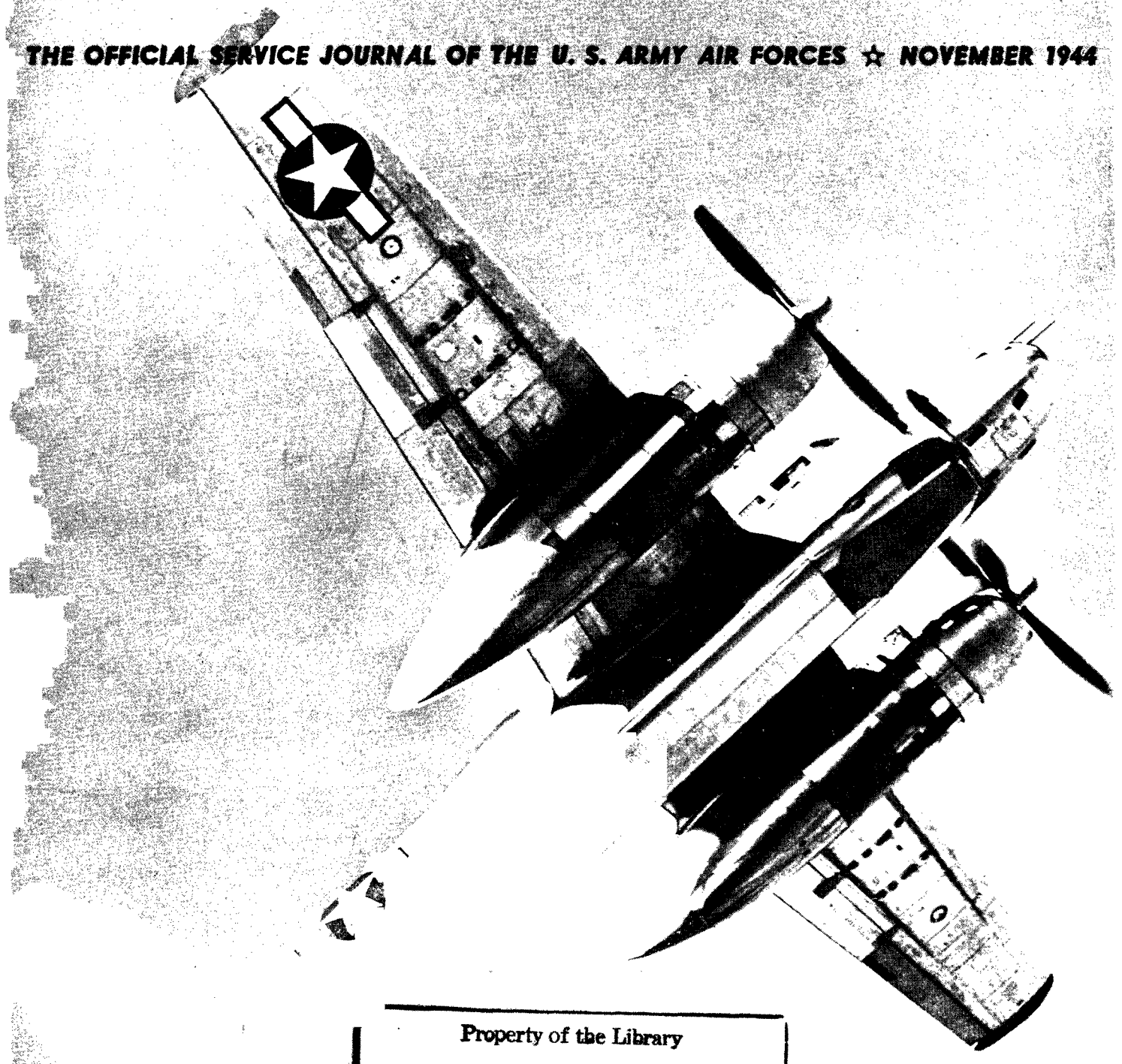
This outdoor bath and laundry has a personalized touch. And from the unwelcome signs about the place one gathers that the GI hopes to keep it that way.

No Roman bath for Cpl. Howard F. Evans, with a bomb squadron in southern Italy, but a very serviceable tub made from that highly adaptable article, the oil drum.

Dear Editor

AIR FORCE

THE OFFICIAL SERVICE JOURNAL OF THE U. S. ARMY AIR FORCES ☆ NOVEMBER 1944



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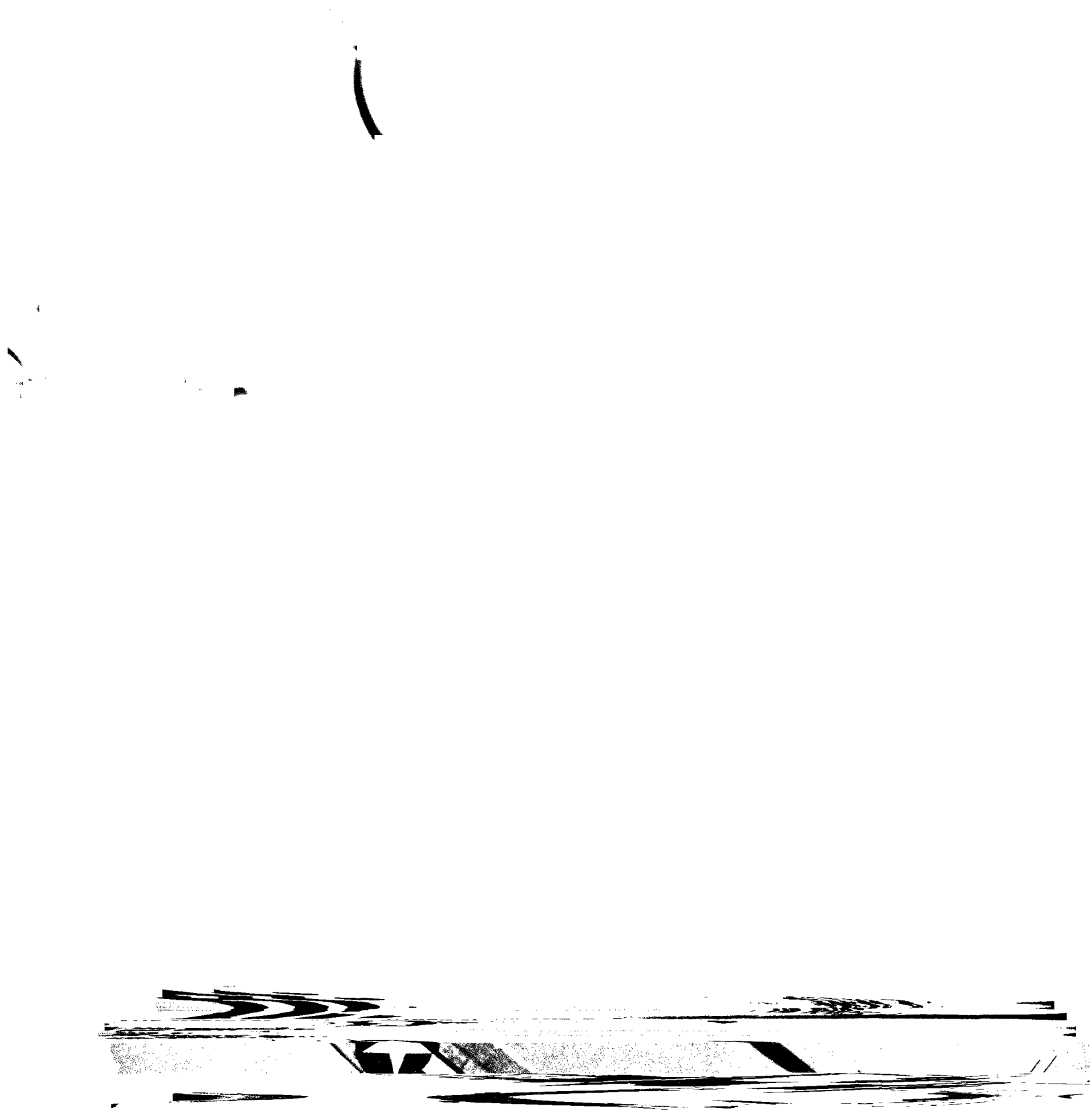

Rendezvous

For the Record

Dear Editor:

. . . I read in the September issue of AIR FORCE where one of the glorified B-17s flew the total of 29 consecutive missions without turning back. Good—but there are records better, far better than that. I flew B-26s through Sicily, Italy and France. My airplane the "Sweet Sue's Duke of Paducah (Ky.)" flew 53 missions without turning back. Later, after I left the group, she cracked up on her 97th mission—far more missions than any B-26 ever went on. . . .

Lt. J. M. Z., Orlando, Fla.

. . . In your last (October) issue . . . was the expressed probability that the B-17 "Bachelor's Delight" had set an AAF record by flying 124 combat missions. General Kenney has had under his command several 17s and 25s with 150 and 200 combat missions. I know specifically of a B-17 "Guinea Pig" with 212 missions and a B-25 "Dirty Dora" that was still flying when I left and had over 180 missions.

Speaking of records, I would like to put in a bid for one of my squadrons. . . . This organization picked up 15 B-25s on the East Coast, flew them across the States, across the Pacific to Australia, trained for a couple of weeks in Australia, flew them in New Guinea and flew approximately three months with an average of 25 missions per airplane with the same original airplanes. This calls for a large amount of maintenance, pilot proficiency and luck and the men concerned deserve a lot of credit. . . .

Col. C. U. True, Commanding, Turner Field, Ga.

Nice going. Can anyone top these? —*Ed.*

MISS WELCH

Disastrous Weakness

Dear Editor:

. . . If it is humanly possible, I would like some information about your lovely miss in this September issue of AIR FORCE. That is the lovely creature in the back portion of the magazine sitting with the lucky GI Joe, and on his left, another lovely. I would like her name and full statistics about that "gorgeous blonde" of a woman. You see I have been making it my hobby of collecting statistics about blondes—my mostly disastrous weakness. . . .

Pfc. Arthur G. Studley, Alexandria, Va.

Name: Miss [illegible] Welch; age, 19; height, 5' 7"; [illegible] 120 pounds; [illegible] —*Ed.*

It's Done with Mirrors

Dear Editor:

Your article "Shooting Landings by Radio" in your October issue names the

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AIR FORCE

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Bombpower — *Maj. Charles D. Frazer* — 6
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[illegible]

Operation: REUNION

By Capt. L. P. Bachmann

AIR FORCE Overseas Staff

Airmen just back from Romanian POW camps stripped off their vermin-ridden uniforms and took hot, soapy baths before receiving a fresh issue of clothing. While this was taking place their discarded uniforms were sprayed with a louse-killing disinfectant by a 15th Air Force sergeant. Lice were among the souvenirs they picked up after being shot down attacking Romanian oilfields.

The advance of the Allies into German-held territory means more than battles won or ground regained. It means freedom for our own captured [illegible]. Here is the story of the first great [illegible] carried out by air

ABOUT midnight a guy ran into a Romanian prison barracks yelling, "Chonka! Chonka! Where the hell's Chonka?"

And drowsily Chonka sat up in his bunk, rubbed his eyes, yawned, and inquired, "Huh? . . . Me?"

"Dammit, Chonka, wake up!" the guy yelled. "Something's happened. Come listen to the guards. Find out what they're talking about."

T/Sgt. John P. Chonka, 15th Air Force gunner, crawled out of bed, grumbling at his ability to speak Romanian. He walked through the barracks and stood for a moment listening to a group of excited guards.

As he came back to his bunk the other men crowded around him, demanding a report.

"Oh, they say the war's over," Chonka said sleepily. "Romania has surrendered."

"What else?" the other POWs yelled, pressing closer. "Give out! What about us?"

"Well," Chonka said, "they may turn us loose in the morning." With that, he crawled back into bed.

Sergeant Chonka, however, was the only man in the prison who hadn't been thrown into a fit of wild enthusiasm. The other Americans began singing at prospects of freedom and talking about the things they were going to eat.

"For months we had amused ourselves by making out menus," S/Sgt. William Mansfield, a ball-turret gunner from Tallahassee, said later. "Everytime a guy had nothing else to do he would make out a long list—porterhouse steak, creamed potatoes, thick gravy, lettuce and tomato salad, ice cream, and coffee—*United States* coffee!"

The party had reached its peak at 2 a.m. when a Romanian colonel came into the barracks.

"Men," he said, "at last Romania is on the right side. We knew all along that we should have been with the Allies, but what could we do? The Germans were around us, and the Allies were so far away."

When morning came the Romanians opened all exits to the prison and told the Americans they were free.

The 15th Air Force's great offensive against Ploesti oil fields, between August 5 and 20, had cost many men and planes. The accumulated losses since August 1, 1943, amounted to nearly 2300 United States airmen held as prisoners of war.

Some of these men had been prisoners of Romania for 13 months; some had been held but a few weeks. Among these late arrivals was Lt. Col. James A. Gunn III, commanding officer of a heavy bomb group.

On the morning the Americans were released, Colonel Gunn went to the Romanian Air Minister, and the Secretary of Foreign Affairs, and got their permission to establish communications with the 15th Air Force in Italy.

S/Sgt. Eddy Lavary of Lanchester, Ohio, served as POW postmaster in the camp where he and 1,000 others were imprisoned.

On the morning of August 26 he was taken to an airport in Bucharest and told that he could attempt the flight to Italy across Nazi-held Yugoslavia. They presented him with a tired old Savoia Marchetti, and, after a brief checkout on the strange instrument panel, he took off. Thirty minutes later he was back. The plane was too old and asthmatic.

He crawled out of the Savoia Marchetti and a group of Romanian flyers, sympathetic to his plan, tried to console him. Among these was Capt. Bazu Cantacuzino, commanding officer of a pursuit group outfitted with Me-109G's. The captain spoke English and was credited with 64 victories by the Romanian scoring system. He referred casually to shooting down Lightnings, Libs and Forts.

Captain Cantacuzino offered to take Colonel Gunn back to Italy, providing the American could fit into the radio compartment of a Messerschmitt.

Within a few minutes an adequate facsimile of the United States flag was painted on the German plane. The colonel was folded into the fuselage and the panel again screwed into place. As the Messerschmitt took off from Bucharest, Colonel Gunn hoped the Romanian ace was completely converted to the Allied cause, but there was nothing to do but sweat it out.

Two hours later, as the sun was setting behind the low hills of Italy, Colonel Gunn's home field was startled to see a Me-109G glide in to land. It taxied up, and AAF men surrounded it.

Captain Cantacuzino threw back the hood.

"I have somebody here you'll be glad to see," the Romanian dramatically announced. He then asked for a screwdriver and removed the panel.

A soldier cried, "Look at those GI shoes coming out!"

Colonel Gunn hurried to Brig. Gen. Charles Born, direc-

Lt. Col. James A. Gunn, III., who arranged the big rescue, drinks a toast with Captain Cantacuzino who did him a big favor.

A wounded American airman is loaded aboard an ambulance following his arrival in Italy. Sick and wounded were rescued first.

tor of operations, and they quickly worked out a plan to rescue the men from Romania.

The first phase of their plan was to insure that the airdrome outside Bucharest was still safe for evacuation and to start the prisoners toward their rendezvous point. If this went off successfully it was to mesh with the major field order. The first phase of this operation began when some P-51s took off to make sure things were still safe. Captain Cantacuzino flew one of these fighters—and flew it perfectly. They found the Bucharest airdrome safe and the signal was sent for the second phase of the operation to begin.

Immediately several B-17s, heavily escorted by P-51s, flew a rescue party into Bucharest. This party consisted of high officials who knew the Romanian political and military background, headed by Col. George Kraigher, of headquarters, MAAF. The Americans met with the necessary Romanian officials, and then the main operation began.

Back in Italy ground crews had worked day and night outfitting Fortresses with special racks for carrying passengers in the bomb bays. Several planes were equipped for litter cases since it was known that some of the prisoners of war were in hospitals around Bucharest.

By the time these planes were ready to leave Italy, the rescue party had rounded up hundreds of American airmen in Bucharest. They were transported to the airdrome and lined up around the perimeter of the field in groups of 20 at intervals of 150 feet. There they waited for the B-17s.

In general appearance the men ran the scale from ragamuffin to buffoon. Some wore German helmets and others wore Russian hats. They were bedecked with Nazi Iron Crosses and fully half of the men had Romanian air force insignia. Others had acquired the extra fancy Romanian paratrooper wings. They carried wine, swords and walking sticks, and although they had been out of prison but a few days, some had the photographs and addresses of Romanian girls.

Yet, with all this, there was a genuine American flavor. One prison barracks had received a shipment of GI trousers, but they were all size 40. This amused the men, since they had been living on prison fare. The oversize trousers especially pleased certain of the POWs, who folded the waist band into deep pleats which ran almost to the knees. Then they disconnected their dog tags and draped the chain in a long loop like the trappings of a zoot suit.

That was the way they awaited their liberation.

The first sight of American planes was a flight of P-51s which swept in and gave them a royal buzz. Then the fighters climbed up over the field and began circling for the Fortresses to come in.

The bombers arrived and taxied to the first group. Twenty Americans sprinted out and tumbled into the B-17. Another Fortress followed and picked up the next group. They came in three waves, at one-hour intervals, cutting their engines but ten minutes between landing and take-off.

In the first wave were two planes which carried medical supplies, and Lt. Col. William R. Lovelace and Major Raymond J. Beal, in charge of evacuating the wounded. These two officers spent a hectic three hours gathering up patients and transporting them back to the airdrome in time to make the last wave.

Things went well with the doctors until, faced with the problem of getting 12 miles across Bucharest to a hospital, they were given the services of a character who had served as Premier Antonescu's chauffeur. Whether or not this man was overjoyed at having new allies, or whether he was simply a wild man with an automobile, the two surgeons did not discover. He proved, however, to be the hottest chauffeur they had ever seen. Enroute to the hospital he swerved and whipped corners, blasted through traffic at such a rate the doctors felt destined to end their mission on the pavements of Bucharest. Fortunately, they reach their patients and with time growing short dispatched all but three litter cases to the airdrome. As a last resort Colonel Lovelace stopped a truck in the middle of a street and, for five dollars, persuaded the driver to take aboard two patients. He loaded the last man on a city bus.

In all, 98 wounded airmen were among the 1,166 men taken out of Bucharest in the first two days of the rescue. On the third day the last remaining Americans, and those who had arranged for the evacuation, were flown out. In the three days of the operation, there was no man in Italy more pleased than Maj. Gen. Nathan F. Twining, commanding general of the 15th Air Force, and no one watched the returning men unload with greater satisfaction.

"Thank God you're back," he told them as they stepped out upon their airfield again. "We sweated you out a long time."

As for the men, some kissed the ground; others kept shaking hands with everybody, and grinning at their comrades in prison; while some were too overcome by emotion to say or do anything.

Revealing their morale, the men were outspoken in appreciation and loyalty to the 15th Air Force. Of all those

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Combat may make you Lazy

By Maj. Walker M. Mahurin

He was a good guy. I'd known him in England and I'd flown with him. I knew he was a fine pilot, a good flight leader and a reasonably eager lieutenant. But here he was in the States, assigned to the kind of job he used to gripe about not having—and he was miserable. Most of the time he was sore, sore inside, and the rest of the time he did a lousy job as assistant base operations officer. Somehow his reports, schedules, forms were always days behind; he never could be found when he was needed. After three months in this job he still didn't know all the personnel working directly under him.

What's more, the people he worked and lived with didn't like him. They resented his arrogance, his sloppiness, his I've-been-winning-the-war-and-risking-my-neck-while-you've-been-taking-it-easy-in-the-States attitude. Overseas, he had been a popular member of his group, always the center of a happy gang in the local pub. But in the States he was playing a lone-wolf role, acting as though nobody around was worth his time. I'd see him in the PX or the canteen, talking to no one and looking as though he'd snap off your head if you so much as said "hello" to him.

I wish I could say he was the only one of his kind, but after I had visited a few more bases I noticed quite a few like him. And I heard hints in conversations. A base CO once remarked in my presence, "One thing I don't want any more of is guys just back from combat. We have too much work to do to take time off to pamper them."

Well, I resented what he said, naturally. But I knew this CO was an honest hard worker who meant nothing spiteful. Not that I hold any brief for those in the States who are obviously in no hurry to fight, although they were trained for combat duty. There are guys like that and there are people who are just plain reluctant to give a combat man a chance to adapt himself—COs who don't want to disrupt their nice, neat little outfits for anybody.

However, most of the men who haven't been overseas are kept here because they have particular specialties that make them more valuable behind the lines than in them. The CO who made that remark was this kind of man—one of the best—and I thought about what he said. Then, when I got my new assignment and tried to settle down in a job, I found there were certain tendencies in me that I had to fight. I can't honestly swear that I've beaten them all yet, but at least I can tell you men still overseas what to be careful of, and I can give you my ideas on why we get that way.

First, in combat jobs, no matter how many hours they give us on the ground gadgets and no matter how many lectures S-2 arranges, most of us don't have enough to do when we're not flying. Particularly in theaters like the ETO where weather can keep you on the ground sometimes for days and days, a guy gets in the habit of lying flat on his back a good deal of the time. We become students of the horizontal. But we know it's all right. We rationalize it to ourselves by saying we risk our necks and deserve plenty of leisure when we're not operational.

Well, in a combat zone that attitude is all right. Fighting is what we're there for and if we do our fighting OK that attitude makes sense. But back in the States, where there isn't much dying tomorrow or even the next day, it gets a little silly. The habit of thinking of yourself as a kind of superman who deserves the best the world has to offer

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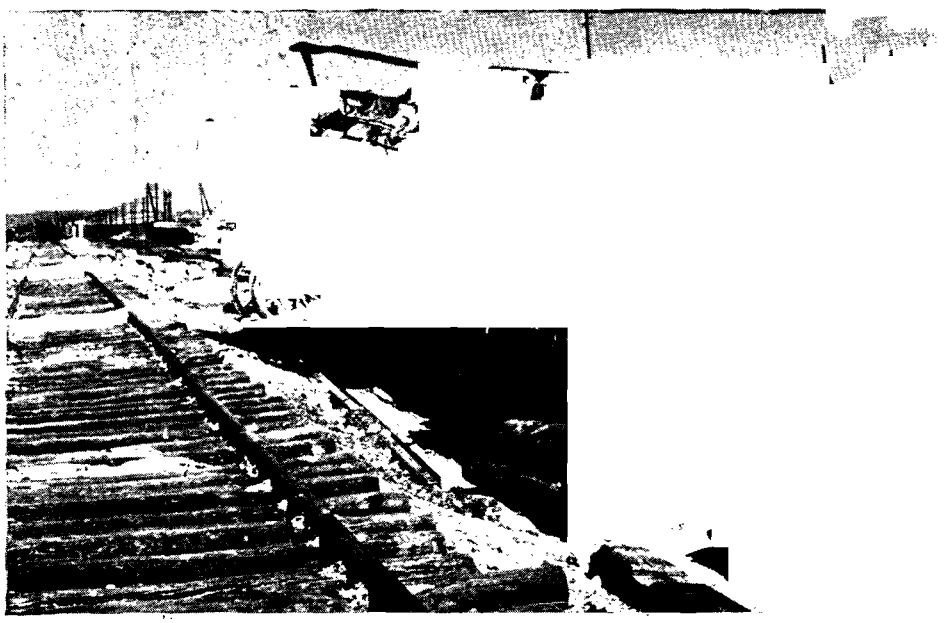
Men back from combat frequently have trouble adapting themselves to jobs in the States. Here a fighter pilot with 17 months in the ETO and 21 Nazi planes to his credit gives some reasons why

ILLUSTRATION BY T/SGT. D. BROCKELL

German aircraft engines, desperately needed by Luftwaffe, were abandoned after an attack on Nazi hangars outside Paris.

In April, 1943, Renault factory was producing 40 trucks daily for Nazis. Allied bombers stopped all production for a month.

BOMBPOWER



Four attacks by 8th Air Force heavies levelled the German rail shops at Rheims. Tracks, turnabouts, warehouses, shop buildings, and locomotives were smashed into rubble.

The results of two years' steady pounding by our British-based heavies are graphically revealed in this eyewitness report from precision target areas in France

By MAJ. CHARLES D. FRAZER
AIR FORCE *Overseas Staff*

LATHES, presses and drilling machines, most of them broken and dusty with disuse, stood in crowded ranks along both sides of the factory. Overhead the saw-tooth roof was a dangling skeleton of steel. But across the reaches of cement floor not a bomb crater could be seen.

The stocky Frenchman in black business suit and beret waved toward the wreckage.

"Your bombs were well fuzed," he said. "One hundred and thirty bombs struck this building. Five were duds. The rest went through one surface, the roof, then exploded before hitting the floor. Damage to our machines was enormous. It was work well done."

This was the story everywhere. Frenchmen who had seen 8th Air Force bombardment of targets in the Paris and Rheims areas made varying comments. An engineer spoke of bomb fuzing. A former French airman praised the "impeccable" formations. Other men admired the courage of those crews who had weathered the hottest flak in Europe.

But the sum of their statements came to one thing—work well done. Even German officers, standing not only in the ruins of airfields, rail yards, factories and oil plants but in the ruins of their own military ambition, had characterized American bombardment as an A-1 job.

A description of results achieved in 8th Air Force attacks upon industrial France—as found through ground inspection of targets and interviews with French businessmen shortly after the occupation—requires, first, a review of the problem involved. For nowhere in the world has precision bombing been put to a more severe test.

French factories operated by or for the Nazis generally were much smaller in area than those of the Reich itself, and the Germans had gone to extravagant lengths to fend off U. S. air power. Paris was so stoutly armored with antiaircraft and fleets of fighter planes that bombers were forced up to 25,000 feet or more. Key plants were protected by firewalls and other structures.

Moreover, these factories were situated in thickly populated sections among people who at heart were friendly to the Allied cause or secretly active in it. Always, this was a vital consideration. The 8th Air Force sent only picked crews and expert bombardiers on Paris missions, never used incendiaries on factories (which normally cause up to half the damage in a bombing attack), and rarely attacked through cloud cover.

Whatever the difficulties, however, destruction of French industry was essential, for it figured largely in the plans of the German war machine. The success of the mission may be seen in a few typical targets—for example, the CAM ball and roller bearing plant.

This concern—the Compagnie d'Application Mecaniques—was a subsidiary of the Swedish SKF organization. Its two plants at Bois Colombe and Ivry were capable in pre-war times of producing 40,000 bearings per day. The wartime production figure ranged from 15,000 to 25,000 daily. Two thousand workers were employed.

From a strategic standpoint this may have been the most important industrial target in France. Manufacture of bearings requires highly skilled labor and it is one industry the Germans could not decentralize. And, while Germany produced 75 percent of her own bearings at Schweinfurt, Erkner and elsewhere, CAM was counted on for 10 to 15 percent of the total requirements. CAM made tapered roller bearings, a product so urgent that the Germans, like a vagrant picking up butts in the street, were salvaging them from all crashed Allied aircraft.

Two attacks were made by the 8th Air Force upon CAM's Bois Colombe plant: on September 15, 1943, with 78 Forts dropping 229 tons of HE, and on December 31, 1943, with 57 Forts dropping 164 tons. On that New Year Eve other bombers paid a call on the Ivry plant, too. In all cases 500-pound bombs were used against single-story, steel and concrete buildings.

The first attack on Bois Colombe destroyed 30 percent of the surface structures and 20 percent of the machines. Practically all roofs fell in. Orvar Gustaffson, the Swedish manager who ran the plants under German supervision, called this a very good result. Since 30 operations are needed to make a bearing, this percentage of destruction put the plant out completely for two months. Even after work was resumed production never again got above 12,000 bearings per day.

After the second attack, Bois Colombe was down for another two months and the Ivry plant was down for nearly three. At Ivry bombs destroyed many four-spindle automatic machines which the Germans could neither repair nor replace.

These CAM factories were very small pinpoint targets. Apparently the Germans understood that if AAF bombers could hit the plants twice they could do it again, so in May of this year Nazi officials in charge of CAM made a spectacular move. They undertook to transfer all usable machines from Bois Colombe and Ivry into a vast grotto at Taverny, just outside Paris. Strenuous labor was involved and the work took weeks. Cold and damp, the grotto was wholly unsuited to the manufacture of bearings, and to overcome this obstacle the Germans installed heating equipment. They also ran electric power and oil lines into the caves and built tunnels for a railroad spur. Eventually this fantastic factory, occupying 250,000 square feet of cavern 40 to 80 yards below ground, was put into operation; but it was then too late—July, 1944. Production of a sort was maintained for one month, then ceased altogether on August 12.

Quite a different type of plant in the Bois Colombe vicinity was that of Hispano Suiza. Here German-controlled workers repaired airplane and marine engines, repaired ME-109 aircraft, and manufactured components for Daimler

Benz engines. Here, too, the Nazis were put out of business in late 1943.

Three attacks were sent against Hispano Suiza. On September 9, a shop for machining crankshafts was destroyed. On the morning of September 15, administration buildings were wrecked and a vital foundry was knocked out. It is still out. On December 31, a third visit demolished the Daimler unit, hit the foundry again and destroyed a toolshop. Work at Hispano Suiza was never resumed.

Europe's largest automotive factory is the Renault works at Billancourt, which before the war employed 25,000 men and women. Following the German conquest of France, this great industrial unit was turned to the production of materials for the Wehrmacht.

Actually, there are two Renault plants. The main plant, covering nearly 300 acres, produced tanks, aero and marine engines, trucks, axles and gears, among other items, and repaired many kinds of vehicles. The Caudron Renault plant made trainer aircraft, manufactured component parts for Messerschmitt planes, repaired aircraft and produced automobile chassis. Buildings at both centers, as in most French industry, were of single-story steel frame construction, although at Caudron Renault one large shop was built of light reinforced concrete shells.

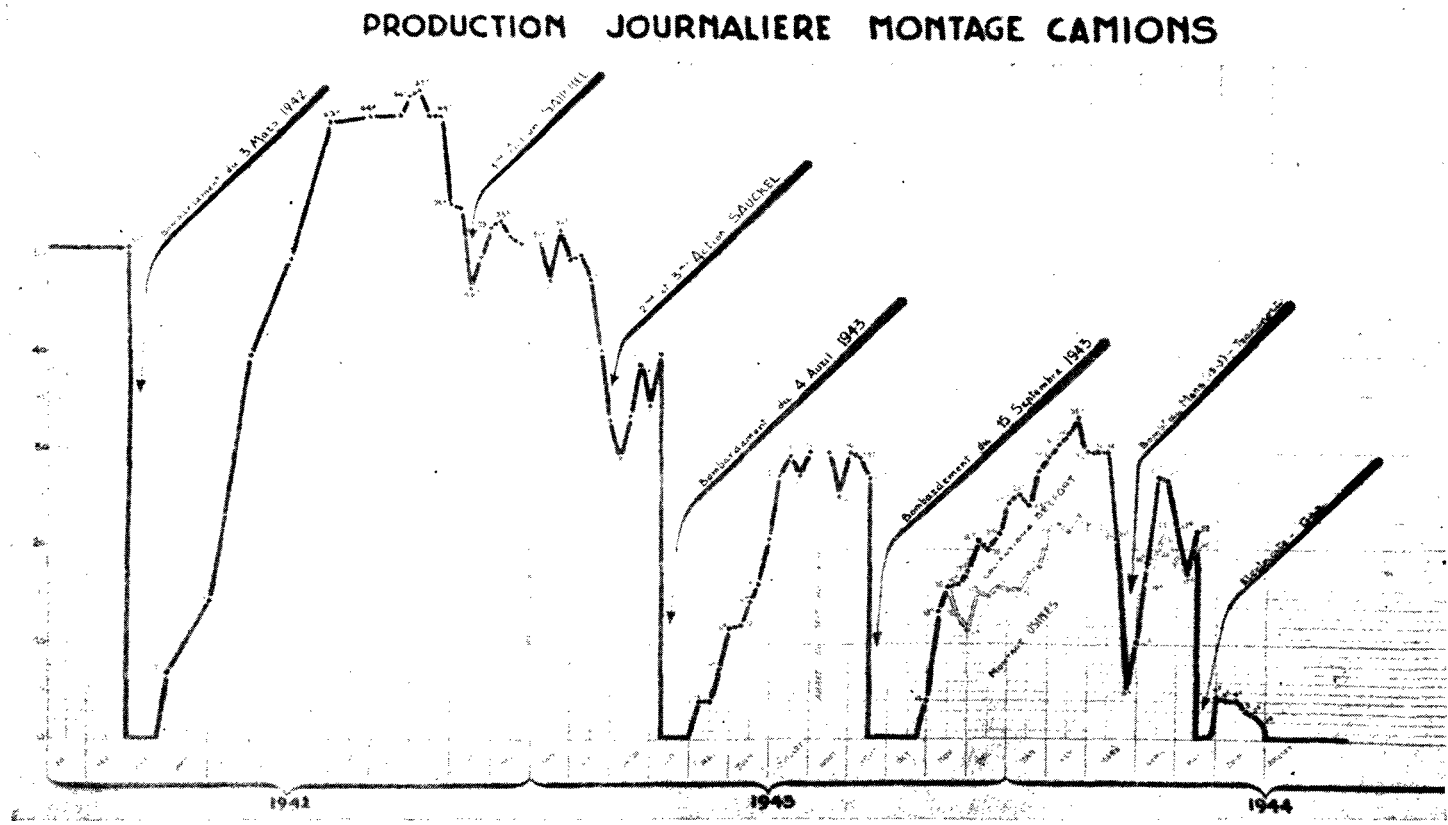
Renault was bombed first by the RAF. In March, 1942, a saturation attack by 222 British aircraft put the main Renault plant wholly out of production. Germans promptly ordered the factory rebuilt and gave the Renault management a high priority for necessary materials, as they continued to do through the war. Numerous improvements in building construction and machine methods were introduced.

Thirteen months later, in April, 1943, the 8th Air Force hit the remodeled plant. Eighty-five Forts dropped 251 tons of HE, using 1000-pound bombs fuzed at 1/40 second tail, designed to explode at about floor level assuming that the fuzes were initiated by the roofs. (Where roofs were flimsy this did not always occur, in which cases bombs penetrated the floor with relatively small areas of damage.)

Once again Renault had to be rebuilt. Jean Renault, son of the owner of this enterprise, describing that first AAF assault, stated that 80 percent of the plant's roofs were knocked down, 20 percent of the shops destroyed, 500 machines completely destroyed, 1,000 badly damaged and 2,000 slightly damaged.

In September this main Renault factory was again hit by 21 aircraft, but as a secondary target. Cloud over another part of Paris prevented one combat wing from dropping on the primary, so further destruction was wrought upon Renault as it was rebuilding. Reconstruction of this plant required several months of work by all employees. Among materials needed were 30 acres of glass.

During September, also, two attacks were leveled against the Caudron Renault factory—one on September 3, by 37 Forts, the second on September 15, by 40 Forts. In the latter mission, 119 tons of 500-pounders fuzed at 1/100 second tail were dropped and caused very great damage both to structures and machines. Four of these bombs hit the reinforced concrete shell building at Caudron and destroyed 43,600 square feet of it, better than the per ton average. The Caudron plant, including chassis shops, was put entirely out of production and is still out. The main works is nearly restored.



Production chart, taken from Renault Works' files, shows results of Allied bombings. Attacks in March 1942, April 1943, and September 1943, in each case completely knocked out production of Nazi trucks for one month. Figures at left edge of chart indicate total trucks produced. Germans moved part of assembly line to Belfort but later bombings cut production down to permanent zero.

Production charts show the disaster these bombings brought to Renault, and thus to Nazi operations. But even these charts are too lenient because, as M. Renault observed, they were made by Frenchmen for German consumption. All through the occupation, the Renault works was under the rigid control of an able German commissar who was supposedly a civilian but who was last seen in Paris, just before the evacuation, wearing an officer's uniform.

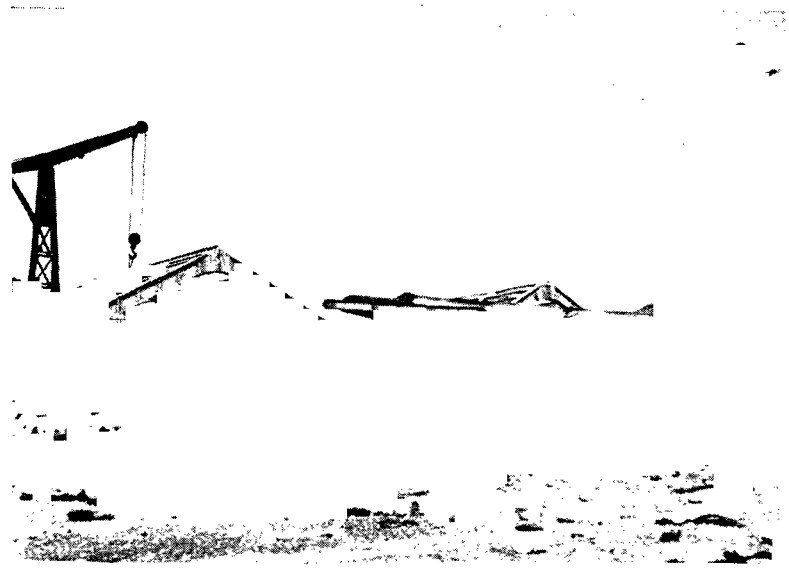
Airfields always stood high on the 8th Air Force priority list and among the most important in France were those at Villacoublay and Orly, near Paris, and the Rheims-Champagne airbase farther north.

Villacoublay was once the largest of all Luftwaffe installations, the service base for all northwest France and a highly active interception field. Its complex facilities included hangars and repair shops for FW-190s, JU-88s and night fighters, plants for assembly and service of army cooperation aircraft, a shop for Heinkels, several others for Junkers transports, a training field, and acres of runways, aprons and dispersals. Eight hundred men worked on FW repair, nearly 1,800 on Junkers, plus many other employees.

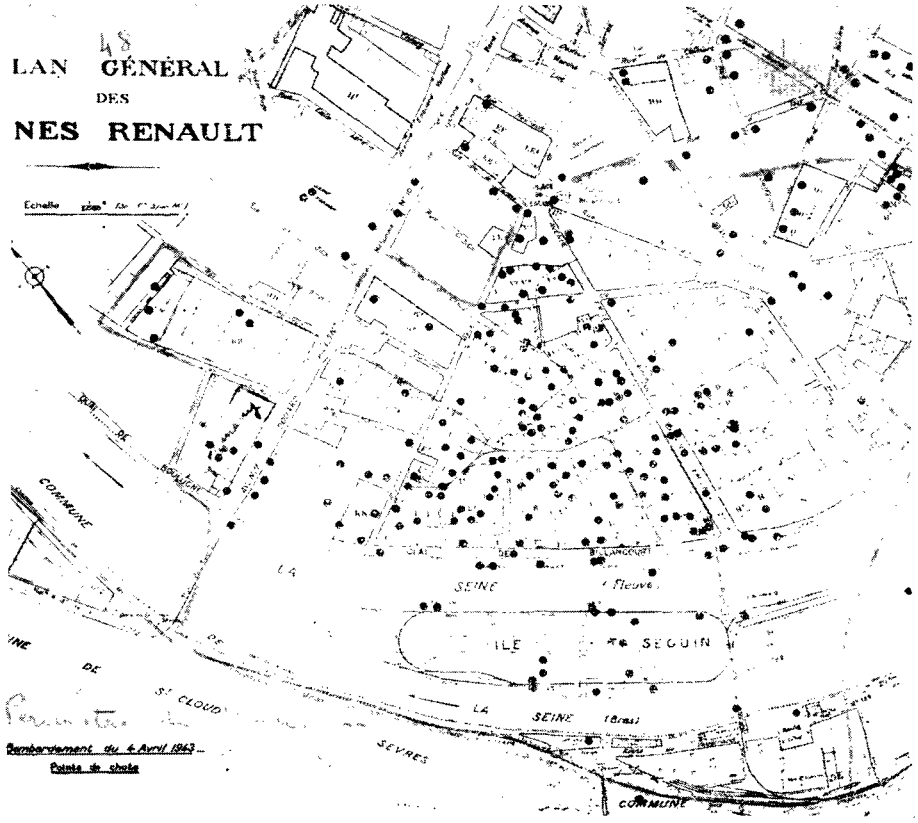
This field was hit four times. In June, 1943, B-17s bombed from 27,000 feet through partial cloud to destroy much of the FW-190 section. Two months later, 133 Forts returned with aiming points all over the field and knocked Villacoublay out of effective action for nearly eight months. In July and August, 1944, the field was again attacked by the 8th Air Force, the last assault being made by B-24s to posthole the field and interfere with German efforts to withdraw aircraft. More than 800 tons of bombs were dropped in the four missions and no section of the base escaped damage. Some runways were rebuilt three or four times.

Orly, a field nearby, was not active until the beginning of this year and then mainly as a storage point for V-1 and V-2 materials. Liberators, carrying 500-pounders with some incendiaries, struck Orly in May and July, demolishing two giant dirigible hangars used for housing fly-bombs. Hangars and other installations burned well in both instances and no further attacks were necessary.

Photo-intelligence officers learned from French workmen that neither at Villacoublay nor at Orly had the Germans set up dummy aircraft. Once they had created an entire dummy field a few miles away, complete with fake planes, but had lost interest in their little ruse when the British



Smashed hangars at Villacoublay were part of the score made by 8th Air Force while Germans held the field during battle of Paris. The enemy had no chance to salvage their damaged planes.



Renault officials compiled this bomb plot after 8th Air Force attack on 4 April 1943. Pencil line outlines factory area, dots denote hits. Rectangle at left, marked "Germany," shows where Germans adapted French tanks for use by Wehrmacht.

Thorough saturation of rocket installations like this one at Siracourt, France, effectively blasted Nazi hopes of hammering England into submission.

This mass of concrete near Paris was one of several flying bomb storage depots destroyed by bombers. Robot supplies were also stored in caves but accurate bombing wrecked entrances, rail lines.

American soldiers search through wreckage of German planes at Orly airdrome near Paris. In background are remains of two huge Zeppelin hangars which Germans used to store pilotless plane parts.

This mass of burned out tanks and pipes was once a busy section of a vital oil and gasoline storage depot in the outskirts of Paris. From it Germans moved about 750 tons each day to Normandy front.

bombed it with dummy wooden bombs. The field at Rheims had been the headquarters of the chief of the Luftwaffe in France. This base, extremely active both as an interception and service center for FWs and JU-88s, was frequently attacked by the 8th Air Force and finally rendered wholly useless by a June raid which left the field littered with scores of crumpled hangars and shops and enormous numbers of damaged aircraft. Many hangars had been newly constructed by the Nazis and were of the arched-roof, reinforced concrete type, supposedly bombproof. These roofs caved in just as other types.

In the spring and summer of 1944, the Nazi oil industry became a No. 1 priority with the AAF. Two typical targets were situated at Gennevilliers, on the bank of the Seine.

An important producer was the Standard Oil plant (Standard Francaise des Petroles), which had been turning out 2,000 tons of petroleum products per month, including a grease for tank treads. Between one-third and one-half of the plant's total production was being taken for German use.

On June 22, in the early evening, 72 heavies, loaded with 100- and 250-pound HE bombs with instantaneous and 1/100 second fuzes, carried out an assault against the Standard plant and it promptly became a ruin. Bombs landed at

all key points of the factory's 34,000 square yards of space, setting fires which flamed for two days. By some chance, the home of the director, George Auclair, who lived on one corner of the property, was neither hit nor damaged.

Almost adjoining Standard was a gasoline depot once owned by the Compagnie Industriale Maritime but later taken over by the Germans. This distribution depot, known as WIFO, handled 750 tons of gasoline a day for the Normandy front. Most of its 500-cubic meter tanks were arranged in clusters surrounded by heavy firewalls. Heavy bombers, attacking at the same time as the strike against Standard, destroyed approximately 20,000 of the depot's total 45,000 cubic meter capacity. Some of the firewalls, especially those girding diesel oil tanks, effectively prevented destruction, but others failed altogether and the bulk of WIFO's installations was a mass of burned and wrinkled wreckage.

Still a third target in Gennevilliers on that day was the old Ford plant, now operated by the Laffly concern. This plant had once equipped and maintained an entire Panzer division, repairing tanks, halftracks and other vehicles, and had assembled snowplows for the Russian front and Norway's roads. Here the chief immediate damage was destruc-

Allied bombings forced Nazis to convert Paris subways into aircraft factories. Porte de Lillas station (above) produced propellers.

Ground inspection parties reported that damage to enemy installations was even greater than had been reported by our photo-interpreters

Nazis lost 29 storage tanks with a total of 13,000 tons of oil when 8th Air Force bombs fired the huge Standard Oil plant at Gennevilliers. Intense heat of fire caused tanks in foreground to collapse.

tion of electric power. And while the Germans had already begun to curtail use of this plant before the attack, wrecking of more than 50 percent of its facilities ended all hope of continued or future use.

The strategic bombing of railroads, like all foregoing types of bomb damage, is a subject for exhaustive research. No definite conclusions can be drawn until the enemy is finally defeated and a thorough-going study is completed.

Still, even casual inspection of French railways is impressive, particularly in the Paris area. The French transportation system is so constructed that all troop and freight traffic from Germany to Normandy or southern France normally passed through Paris, and in May and June, 1944, a terrific joint assault on Paris marshalling yards was carried out by the RAF and AAF.

Marshalling yards run to a pattern. There are reception sidings, forwarding sidings and sorting sites where trains are made up. This maze of trackage always converges at one or two points in the yard.

Allied technique in blasting these targets was to combine an RAF saturation attack by Lancasters and Halifaxes with precision bombing by the 8th Air Force against choke points. RAF bombs demolished and burned rolling stock, shattered yard buildings and raised hell generally, while the AAF tore up tracks where it would do the most good and destroyed key repair shops, control stations and other works.

Robert Le Besnerais, general manager of the Societe Nationale de Chemins de Fers Francais—the government-controlled railway system—conceded that marshalling yard attacks had considerable cumulative effect in immobilizing the Germans in May. He believes, however, that precision bombing of bridges and important trackage was even more disastrous and represented a more economic use of aircraft. He cited especially the cutting of rail and highway bridges on the Seine, Loire, Oise and Yonne rivers.

Prior to the invasion, Seine River bridges had been cut by the 9th Air Force. Then, after D-day, the 8th was given the assignment of knocking out rail and highway bridges across the Loire and Yonne.

Along the former river, from Nantes on the coast to Nevers in central France, not a bridge was left standing. This havoc, said M. Le Besnerais, hurt the German effort incalculably. Some reinforcing divisions for Normandy were delayed eight to fifteen days—despite constant bridge-mending by those indefatigable rebuilders, the Germans—and many were completely stopped. Presumably, the Nazis had sufficient rolling stock, but everlasting detours made it impossible for them ever to get troops or equipment to the right place at the right time. The railroads of France were in a gigantic dislocation.

As has been indicated, the Germans went underground wherever possible to escape Allied air blows, and an interesting example of their frenzied frustration was found in the Paris subway.

Early in the war, there had existed a French turbo-mechanical factory at Epone-Mezieres, 40 kilometers west of Paris. This plant made compressors and other equipment for French aircraft and had obtained in 1939 a large amount of machinery from the United States for the purpose.

After France's collapse the factory owners refused to work for Germany. One man fled to Switzerland, another to New York; a third just stayed in Paris. Germans took over the plant and converted it to the manufacture of shafts for Ratier propellers. In June, 1944, an average of 300 prop shafts a month was being produced. Just about that time, however, AAF bombers destroyed a railway station adjacent to the factory at Epone-Mezieres and the Germans grew nervous. They were afraid that next time the plant would go up, too. Moreover, they were having 25 or more air raid alerts daily which, as in many other French plants, seriously disrupted production.

Consequently, they decided to move the factory into some mushroom caves near Poissy. Many such caves were being utilized for manufacture of aircraft parts, submarine torpedoes and the like. Before they could move, however, the 8th Air Force wrecked a bridge at Poissy. This complicated the transportation problem, so the Germans took a new tack and moved the plant into a branch line of the Paris subway.

To accomplish this, they shut off four kilometers of the Metro Paris subway on a deep branch line and, at no little trouble to themselves, moved scores of heavy machines onto the platforms at the Porte de Lillas station, 156 steps down from the street.

Apparently the original idea was to operate lathes, drills and cutters right on the Porte de Lillas platforms. But a fresh difficulty presented itself. So great was the vibration that the platforms couldn't stand the strain.

The Todt organization was called in. They tore up the subway tracks, laid a reinforced concrete floor on the roadbed and installed electric current. Additional plants had been moved in at other Metro stations and the plan called for installation of heating equipment, building of a railway connection and similar construction. While this mammoth job of work was begun on June 15 none of the plants ever did get into operation and the whole project was eventually abandoned in favor of a retreat from Paris. Incidentally, men who know Berlin say that refuge in that city's subways would be impractical because they are much too shallow.

This effort to go underground, involving titanic labors, is perhaps the most dramatic evidence of the damage wrought by precision bombing in France. The Nazis knew that there was no escape, even for small-size plants—and that what the 8th could see, it could hit.

This damage was done with a remarkably low loss of life among French civilians. In some attacks, no lives were lost. Of all attacks described, only one could be called inaccurate—an assault upon Villacoublay. During one of four raids on that target, some bombs, falling short, hit the nearby village, killing several persons. But the understanding with which the French accepted this unavoidable result of war revealed itself in a typical and touching incident.

A Fortress had been shot down in the attack. The bomber crashed in a field, killing the entire crew, and the French people of the village paid tribute to those men by covering the Fort with flowers. The Germans were enraged. They issued an order that the incident should not occur again, under threat of heavy penalties. Next morning the bomber bore twice as many flowers.

Ground inspection of French targets disclosed a wide variety of information. For one thing it showed that the Germans had consistently been hit where it hurt the most. For another it showed that selection of bombs and fuzes had been handled with skill, that the area and type of damage per ton of bombs had been highly effective and that the bombings themselves had been extremely precise.

Nobody who visits these targets, who sees the demolished airfields, railways, oil depots and factories, could possibly doubt that the Wehrmacht suffered inestimable blows from bombing in France. Nobody who has seen the Taverny grotto or the subway platform at Porte de Lillas could doubt that the Nazis were desperate and had great hopes and plans for underground production. But it was too late. As usual, their plans came to nothing in the end. ☆

Portrait of a Guy Thinking About an Island

2nd Lt. Bert Stiles
8th Air Force

THE Fortresses took off in the late afternoon, and flew by wings to the west of England and turned south. Out of sight to the northeast, there was fighting on the beaches, and many dead men lay in the surf. But the Forts were high above all that. Since the first day, the 6th of June, their job had been easy.

Today the target was an airfield on the Brest Peninsula, not so far from Lorient, where the Forts used to go in the old days. He flew it when it was his turn, and watched the sun slide down through the soft blue toward the sea. When it was time to bomb, the field was already a smoky mess from the wings up ahead.

The flak started just after bombs away. The first four puffs were just outside the window. He could see the dull flash as the shells burst. The formation leader banked steeply right. The flak tracked along easily.

There was an ugly clank underneath somewhere. He knew they were hit. Engines OK. Instruments reading true. Everything OK. The helpless fear of those soft black puffs tightened inside him. It was always the same. Nothing to do but sit there and pray the luck holds. And then they were out of it, turning toward home. "Ball-turret to pilot," came over interphone. "We got holes in the gut."

Once you're out of it, flak never seems quite real, till the next time. The formations churn through the quiet sky, and the earth is a million miles low.

The formations let down into the darkening east. He leaned forward, waiting for England.

England. He said it in his mind, and then slow in his mouth, without moving his lips.

When he was eight years old he read Robin Hood the first time. After that he must have read it twenty more. Sherwood Forest and Nottingham town in the days of Richard of the Lion Heart. He'd dreamed of it then, waiting for the day when he would stand at the rail of a ship waiting for England to come out of the sea, out of the haze. Almost like now.

But it wasn't the same. Because now, for a little while, England was home, more home than Colorado. More home than the house on York street could ever be.

After the ride to Munich he thought that the island had sunk into the sea, and France had someway stretched and spread on north to the pole.

After Kiel, letting down over the North Sea, he had said a funny knocked-out prayer. *Be there, island. Please be there. Be there soon.* After Berlin, after the soft acres of death above that shattered town, nothing had ever looked so good as the dim line of surf a half-hour ahead.

It slipped in gently, as always, clean and friendly and far off. That would be Lands End, Cornwall and Devon. The names ring. He could sit with a map and say the names out loud, and never get tired of the sound of them . . . Torquay, Nutt Corner, Conventry and Charing Cross.

The Forts hit the coast at 8,000 feet. A flight of Spitfires was playing in the clouds at three o'clock low.

A guy named Mitchell lay on a cliff above the sea and watched the gulls, and dreamed the Spitfire. And a guy named Leslie Howard, who was Mitchell for a couple of hours worth of movie, crashed back there somewhere coming back from Lisbon, probably leaning forward waiting for England to show through the dusk.

Strange, how any land could be so many shades of green, with the lazy netting of the lanes that wandered everywhere to nowhere. Looking down there, War was just a word, without meaning. It looked so peacefully lovely, yet the people who lived there had fought since the beginning of time, since long before the Romans. And they were still fighting.

He flew his turn, for a while, taking it easy, not trying to squeeze the lead ship any. He was glad when the pilot took over again. It was better just to look.

Airfields and towns and churches and hedges, more airfields and ponds and brooks, and cows. More airfields and roads and train tracks and radio towers.

He tried to imagine it as it must have been once, long before William the Conqueror, when King Lear was wandering mad on the heath. He couldn't bring it through. He couldn't believe it had ever been wild. Everything looked permanent, steady till the end of time.

He was so tired of sitting, he wanted to bail out. Yet he would have liked to fly on for hours, up to the lands of the Scotsmen. Stornaway, Inverness, and the Isle of Skye.

Two Lancasters were landing on the east-west runway. A flight of P-51s came over the top from nine o'clock. Night was slipping over the world from the east, but there was still day back at six o'clock.

Though it was not his land, and although he had only lived there a little while, he thought he knew why these quiet Englishmen raised so much hell with anyone who tried to take over.

He was tired, saggy tired, starting at the knees on up to the eyes. But he felt good, just glad to be there, just so God damn good to be there, there were no words to tell it.

It was almost dark then, and the stars were coming through. ☆

Wright 3350 engine is cradled on a test stand in a Power Plant Laboratory for a periodic check up after 150 hour endurance test.

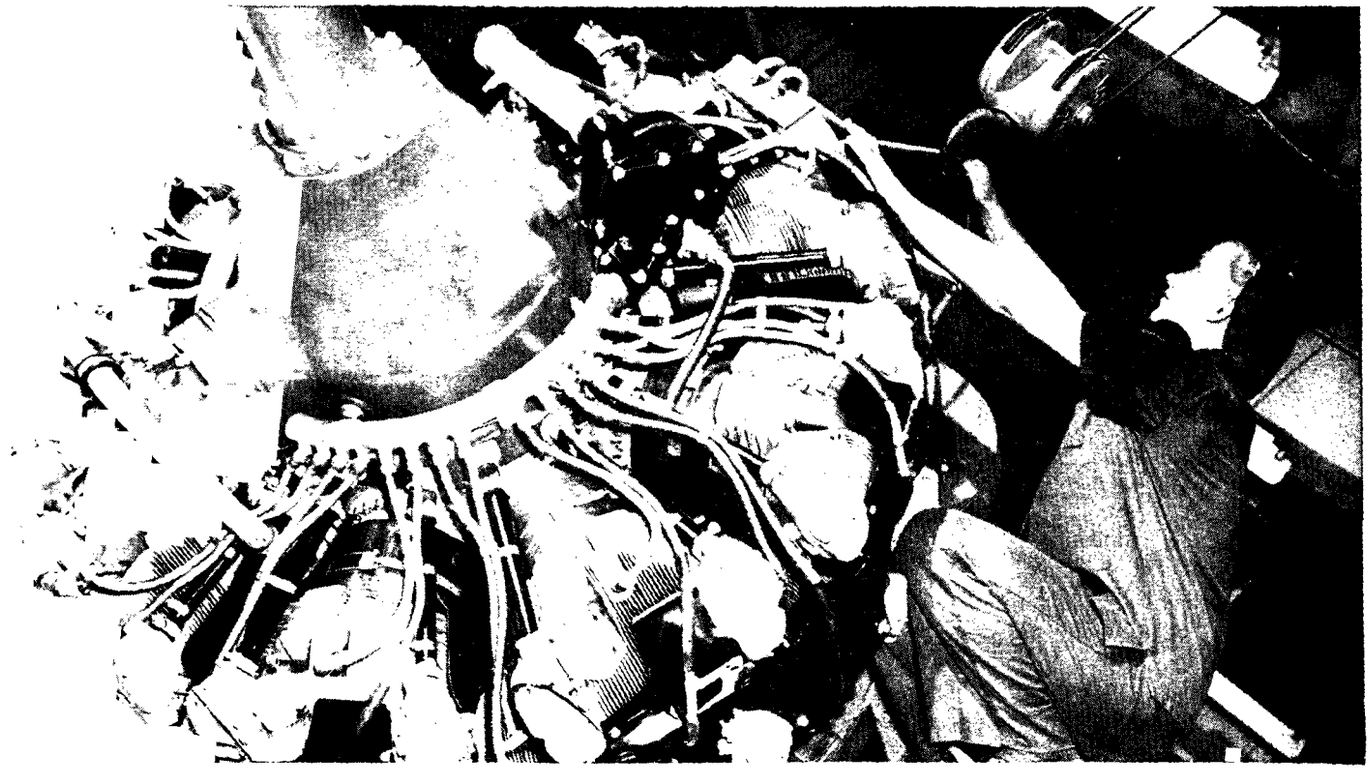
EXTRA horsepower — the stuff that counts when our planes are up and the chips are down — has contributed as much as any other single development to the margin of superiority our fighting aircraft have attained over the enemy.

Our fighters and bombers now are flying 1,000 more horsepower than they had at the start of the war, thanks to super fuels, tougher metals, design changes, improved water and fuel injection systems and new supercharger installations. And the 3,000-horsepower engine for AAF planes is now a reality.

Giving engines an extra bonus in horsepower has not been easy for our engineers. One horsepower is the force required to lift 550 pounds one foot in one second. Now apply this yardstick to an aircraft engine, bearing in mind that, unlike any other power plant, a plane's engine seldom remains on an even keel. It must operate efficiently during steep climbs, dives, pull-outs, banks and sharp turns, and it frequently must fly on its back. Within a few minutes, it may be hurtled through space from desert temperatures of 130 degrees above zero to altitudes with temperatures as low as 67° below, from sea level air into the thin air of the stratosphere. Add to this the combat necessity of keeping out of the enemy's gunsights and you have a thumbnail sketch of the horsepower problem.

The race for more horsepower began during the last war when AAF engineers helped design and produce the Liberty engine which introduced the turbosupercharger, lifted De Havilands to record ceilings and powered the Douglas "World Cruisers." Never capable of producing better than 425 horsepower in flight, however, the Liberty finally had to give way to 500-plus-horsepower designs.

Not until 1936 were the first 1,000 horsepower engines developed — a radial, aircooled design in the P-36 pursuit and an inline engine for use in the XP-40 and XP-39 air-



This 2,200 horsepower, 18-cylinder Wright Cyclone engine takes the Superfortresses to Japan.

AAF engineers are giving our airmen a victory bonus in horsepower

planes. Progressive development, spurred by the war, has given us today's super horsepower engines.

Chiefly responsible for upping aircraft engine dependability and horsepower are the experts of the Air Technical Service Command's Power Plant Laboratory and the "Four Horsemen" Pratt & Whitney, Wright Aeronautical, Allison and Packard Rolls Royce who manufacture the engines that power every type of combat plane in use by the AAF.

Their problem has been to supply a maximum of dependable horsepower at a minimum cost in fuel in the smallest, lightest package possible, so that an engine can be fitted into the trim lines of a fighter or lend itself to nacelle streamlining in a cargo plane or bomber.

What the engineers strive for is a pound per horsepower equation. In the P-38, for example, each engine weighs only 1,395 pounds without turbosupercharger and produces 1,500 horsepower at take-off.

To put more horsepower in small packages, engineers must take a standard engine apart piece by piece and improve upon each part individually by redesigning, strengthening and using better metals, materials and fuels. The only alternative is to build a bigger engine.

This we did for such planes as the B-29, P-61, P-63 and the A-26, which have completely new engines producing 25 percent more horsepower than any engine available 18 months ago.

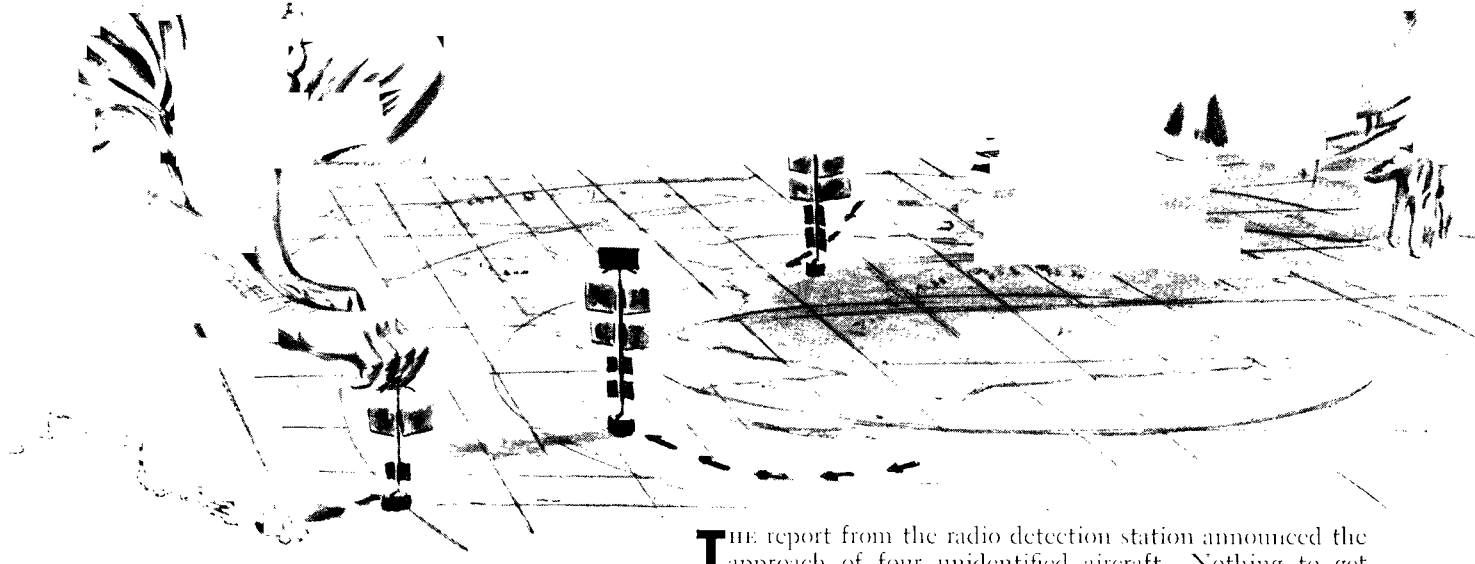
Performance-wise advancements have meant longer range, better rate of climb, faster speeds, higher altitudes and safer operation for our aircraft.

To understand various horsepower ratings, it is necessary to define the four general categories which the AAF uses today for rating engines: *Take-off rating*: power output necessary to get the airplane into the air and up to a safe flying altitude. *Normal rating*: horsepower which the engine can deliver continuously without undue stress. *Military rating*: maximum power available in flight within safety limitations, usually equal to take-off rating. *War emergency rating*: highest power that it is possible to take from the engine within limits of structural safety.

War emergency ratings give fighters or bombers a surplus of power when they get in tight spots. Permissible only for a short period—five minutes—this added power affords highest possible performance during actual contact with the enemy. Its use may shorten the life of an engine by many hours but it may bring the airplane back to fight again.

The B-29's engine originally was a combination of two nine-cylinder Wright R-1820s. By the time the engine was first installed in the XB-29, then in the Navy's Mars and later in the B-29, it was a completely new development the R-3350. To get more power and performance, the designers had built a bigger engine. Actually, in cubic inch displacement it was smaller—3350 cubic inches compared with 3640 cubic inches for the initial twin-row design. But the R-3350 had more power because of increased cylinder size and two speed integral superchargers.

When first tested at Wright Field in 1937-38, the R-3350 developed a take-off horsepower rating of 1,500. Today the engine turns out 2,200 horsepower at take-off because reduction gears were changed, a new impeller drive was installed and cylinder head shapes were made thicker with increased fin area. Thicker cylinder heads permit a more uniform heat flow and strengthened construction; increased fin area



Interception Begins on the Ground

By CHARLOTTE KNIGHT

AIR FORCE Staff

ILLUSTRATED BY CPL. LOUIS GLANZMAN

Fighter control positions our planes for the kill—at the right place, time, and altitude

THE report from the radio detection station announced the approach of four unidentified aircraft. Nothing to get excited about. Or was it?

"Get moving, boys," said Capt. David Harbour, 5th Air Force fighter pilot then on duty as controller in the Dobadura fighter sector, "here comes the whole Jap air force!"

Nor was he being facetious—as the next half hour proved. Without a moment's hesitation he scrambled every fighter squadron in his area, and even then feared it wouldn't be sufficient opposition to throw against the raid that was coming. Using his prerogative as controller, Captain Harbour grounded a flight of transports due to take off at that same time and used their fighter escort to reinforce his designated air defense fighters for the intereception.

All because of "four unidentified aircraft."

Actually, 48 Jap planes raided Allied shipping in Ora Bay that day. And 46 of them were shot down as definites, the other two as probables. Not one ship of ours was sunk or damaged, not one of our men was killed. We lost one P-38.

By all counts this was one of the most successful intereceptions in that theater. Eight days later it was followed by another, equally spectacular, this time during the Finchhafen landings on October 22, 1943, when all the controlling was done from a destroyer acting as "control" ship. The box score speaks for itself: Our fighters not only prevented the Japs from sinking a single ship but managed to shoot down 84 enemy planes in the bargain.

This was a year ago, but these actions set a pattern for interceptions which proved to be the rule rather than the exception in the months since then. On June 18 large-scale interceptions reached a climax in the Marianas; on that day, Navy aircraft intercepted and shot down 335 Jap planes.

There are sound reasons for this success: Added up, they all mean air superiority. Our planes may be better, our tactics may be better, and our pilots may be able to out-fly and out-shoot the Jap. But it doesn't end there. Fighters have got to be in position to meet the enemy at the right spot, the right altitude, the right time, and in sufficient numbers to destroy him.

This is where the controller comes in. He is the man who puts 'em there. The secrecy which has surrounded our whole warning and control system has had its customary effect on the operation's personnel: either they are never heard about —or if they are, they are generally taken for a couple of other guys. We are speaking here of a *fighter* controller and not the controller who does an equally important job directing traffic from an airdrome control tower. The fighter controller, by contrast, rarely sees the aircraft he is directing and often may be located miles from the nearest airfield.

The system under which he operates is known variously as fighter control, flight control, and tactical control. The term "flight control" when used in connection with these operations means the system of vectoring aircraft in a purely *tactical* situation to a specific point. Likewise it is not to be confused with the Flight Control system which provides pilots of all types of aircraft with weather, landing, and other flying safety data. The Navy, which frequently uses AAF personnel for controlling amphibious operations when land-based aircraft is involved, calls the system "fighter-directing."

Whatever the nomenclature, the principle is the same: it means *ground* control. And it is based on one of the strange paradoxes of aerial warfare that permits a man sitting in a concealed room, sometimes below ground, nine times out of ten to know more about the aerial situation miles above and away from him than a pilot himself in a CAVU sky. Flyers who doubted that at first have come to have a healthy respect for the electronic "seeing" devices which are not limited by the range of 20/20 vision, clouds or blinding sun.

"Drumstick leader from Dogface . . . Heads up . . . Jerries up-sun ready to bounce you . . . one two zero . . ."

Pilots flying into the sun on a fighter sweep over France in pre-invasion days needed only one such warning from a controller many miles back in an English coast fighter-control station to develop a genuine awe of the operation.

Now that it's had a five-year combat workout, the role of this complex aircraft warning and control system in the success of Allied fighter operations throughout the world is beginning to assume its proper perspective.

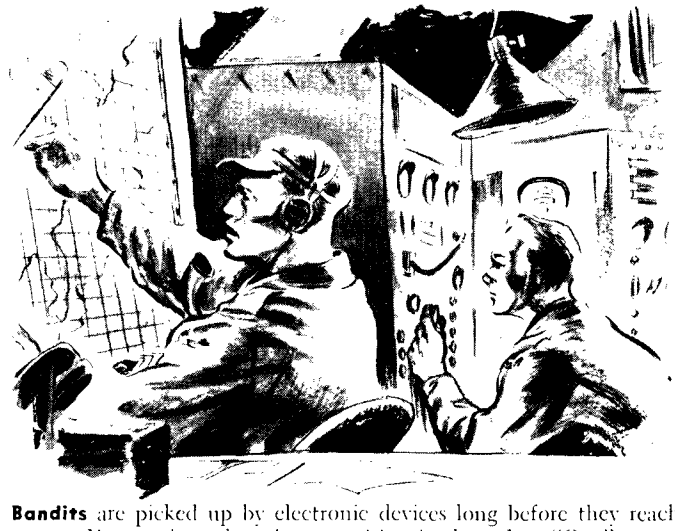
The role certainly hasn't been a walk-on either. It is common knowledge by now that it was this system which made it possible in England's darkest hour for 50 flyable Spitfires and a handful of Hurricanes to prove more than a match for the Luftwaffe's best. Developed by the RAF for the air defense of the British isles, it was designed to do just what it *had* to do in the Battle of Britain: (1) furnish enough advance warning, by means of radars and ground observers, of the approach of enemy aircraft to permit the fighters to be in the air ready to meet the raiders, (2) provide a means of tracking accurately both friendly and enemy aircraft and (3) be able to lead the fighters to an exact interception with a frequently unseen foe.

It is a tribute to the effectiveness of the British warning and control set-up to acknowledge that the AAF's system has been patterned after it. So has Germany's for that matter. For a long time Jerry couldn't figure out how the British fighters were always up to meet his bombers. He chalked it up to information leaks. When he did find out he tried hard to catch up—and he's been racing us ever since.

Aircraft warning and control is a complex operation demanding the highest degree of teamwork, split-second coordination, and specialized performance on the part of its radio and radar personnel, ground observers, plotters, filterers, tellers, liaison officers and controllers. The system works so fast that often fighters are ordered to scramble within 60 to 90 seconds after hostile aircraft has been detected.

Heart of its far flung network is the Information Center, known as the "IC" or "control center," where the controller is boss man. He sits on a gallery— or catwalk—overlooking the "Ops" board on which are plotted filtered reports from radar and ground observer stations showing altitude, number, and position of aircraft within a given area. Before him are status boards listing weather information, condition of squadrons airborne or on the ground, and— in certain cases—the exact minute-by-minute picture of ground action in that sector. At his side are liaison officers for Navy, antiaircraft, ground forces, etc.

The controller has many jobs, of which one—directing



Bandits are picked up by electronic devices long before they reach target. Exact minute by-minute position is phoned to "Ops" room.

interceptions—is mentioned in these pages. In Italy and in Western Europe, where the control centers direct air cooperation missions, the controller's major responsibility is to lead fighters, fighter-bombers, and reconnaissance planes to specific targets and bring them home again. Elsewhere his duties might be chiefly to rendezvous fighter escort or to control air-sea rescues, or "home" lost aircraft. Surprisingly often, the controller gets saddled with all these things at once.

The moment hostile aircraft is reported, the controller instantly and automatically becomes in effect a field general whose duty it is to protect not only the lives of all men in his area but all installations, ships, and friendly aircraft in a given sector. From here on the air show is his.

It's a hot seat and nobody knows this better than the controller. No matter how good the system, no matter how foolproof the equipment, it is no better than the "operational brain" behind it. The controller must make decisions with lightning speed and each decision has to be the right one. If he waits too long to scramble his fighters, disaster may descend on his very vulnerable neck. If he scrambles them too soon, he takes a chance of their going after a decoy raid while the main strike comes a little later from a differ-

ent direction. If he does not interpret his warning reports accurately, he'll lead his fighters to the wrong spot, or he may send up one squadron to intercept 100 bombers. If he fails completely to act on the warning information at hand, there might be another Pearl Harbor somewhere.

Whatever the situation, if he does any of these things he had better start looking for a good ditch-digging spot, for his days as a controller will be over. More important naturally is the fact that he cannot afford to make any of these mistakes. Where lives and materiel are at stake, he can't indulge in any trial and error tactics with an enemy raid coming in to wipe him out. Generally, he'll get but one good crack at the enemy as he tries to intercept him. The controller has to make it a first round knockout.

The controller's problems are many and complex. One of his greatest is the "commitment of forces." In this respect controlling is very much like a bridge game. You've got so much; your opponent has so much. You know—or should know—what's in his hand by your own aircraft warning and intelligence reports. How you play the game depends entirely on your knowledge of his tactics. This is where the controller's skill comes in.

How, for instance, was it possible for Captain Harbour, sitting in a New Guinea Ops room with only a report of four unidentified aircraft to go on, to call the turn accurately on a large sized raid?

"First of all," Captain Harbour explained, "I can't say the raid was *entirely* unexpected. We had just raided his base of Rabaul and I felt he would probably hit back to save face. I knew he would strike around noon because he had always hit this well-defended sector around noon before. From intelligence reports we knew he had a considerable number of dive bombers and fighters available, and since it was easily assumed the target would be our concentration of shipping at Ora Bay and Buna, I figured he would send all the dive bombers he could get off.

"I could make a stab at the altitude because we knew his dive bombers always came in between 15,000 and 17,000 feet on the last leg into the target. His track was similarly figured because all raids from Rabaul to this target generally came the same way. So, when the teller reported the first plot, even though it said only four aircraft at that stage, I knew it was the larger number of dive bombers and fighters coming at us, and I also had a good idea of all the other factors needed to make an intercception. I got our fighters together over Ora Bay, orbited them until the enemy force was about 30 miles out and vectored them into the kill."

There might have been hell to pay if the controller had been wrong in this quick deduction of the enemy situation. But months of flying and controlling against the Jap had given him a working knowledge of Japanese tactics which paid off when it counted most.

Wherever he is, a controller must know his enemy's tactics, for frequently he can read more information from a knowledge of his methods than he can from his detectors—as witness the Ora Bay raid. Particularly is this true in those zones where mountainous terrain reduces effective radar coverage to a minimum.

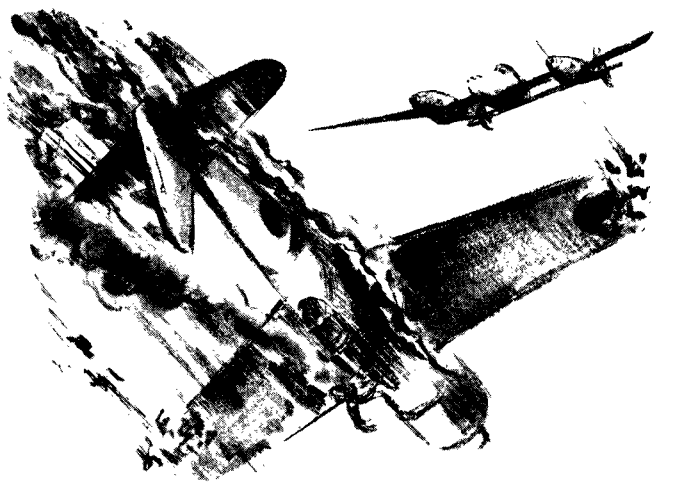
In the Southwest Pacific, as in some other theaters, the controller was a fighter pilot chosen at random in those days before the AAFSAT-trained controllers arrived on the scene. The pilot would fly one day, control the next. Flyers cast in this dual role found one as exciting as the other. "After spending fifteen months in New Guinea as a fighter pilot and controller," Captain Harbour said, "I can honestly say I believe I got a bigger thrill out of making a good interception with my squadrons than downing a Jap plane myself."

Although pilot-controller teamwork has reached a highly-developed state of almost perfect dovetailing, still there are times when the relationship is a delicate one. "Half the pilots love you, the other half of 'em hate you," as one controller put it. It's up to the controller to stack his fighters to provide the best tactical advantage. As a result, certain squadrons will always rate the gravy in such a deal.

"Even if your warning reports are accurate enough to indicate the enemy coming in at high altitude, you're taking a chance if you don't provide low cover in case the main strike comes in a little later on the deck," another controller explained. "So you have to stack your planes to cope with any enemy eventuality.

"Days may go by and your low-cover planes may not get a single crack at the bandits, while the boys upstairs are chalking up record-breaking scores. Naturally your low-cover pilots will gripe like hell and blame you for putting them there. Or it works the other way around if the raid is a low one. Whichever it is, the controller is the fall guy. But the pilot who drew a blank today may be top-scorer tomorrow, and our pilots have been flying long enough to know they'd a whole lot rather work *with* the control system than without it. The days of the free-lance fighter pilot are over. Our interceptions today are systematic, scientific—and sure. And that's the only thing that counts." ☆

Plots of friendly and enemy planes appear on grid table. Controller or intercept officer accurately vectors fighters to a "Tally-Ho!"



Pilots take over from this point on, as one "Splash!" after another is scored. Fighter control eliminates guesswork in interceptions.

Pulling in His Neck. Recent developments in the Jap's equipment, tactics and technique bear out the conclusion that the air fighting will be bitter as we strike deeper and deeper into Nippon home quarters.

Here are some developments:

Strong fighter opposition encountered by Superfortresses over Kyushu Island during a recent attack is indicative of how the Japanese have bolstered the inner zone air defense at the expense of the perimeter.

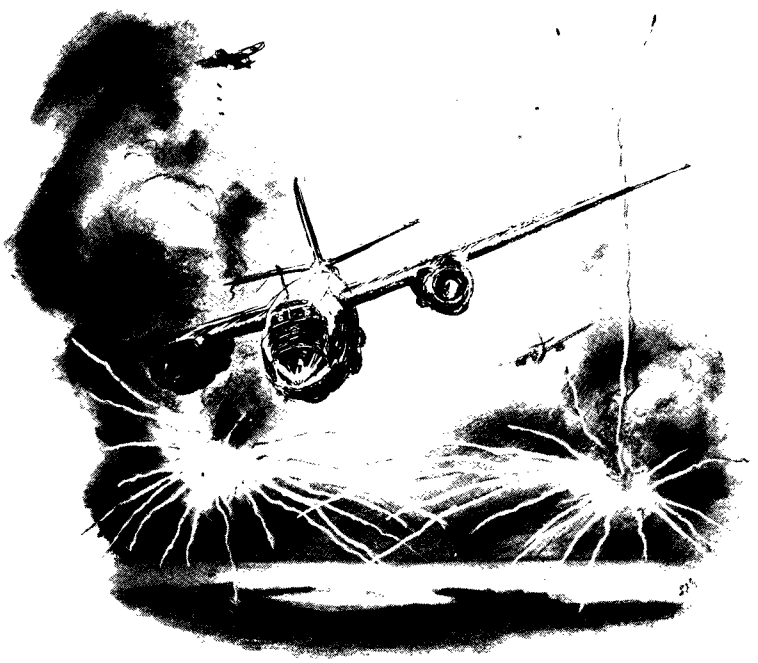
The enemy is developing his antiaircraft defenses close to home. Reports indicate that AA has been improved, both in volume and in accuracy.

Jap fighters are being equipped with better armament and better armor. The 20 mm and the 12.7 mm guns are being substituted for the 7.7 mm, which was one of the principal Jap aerial weapons at the beginning of the war. Moreover, the Japs are developing more powerful 20 mm guns, and single-shot 37 mm tank guns have been mounted in some fighters.

More and more, the Jap is equipping his fighters for air-to-air bombing, hoping thus to destroy our bomber formations by this defense. With somewhat better than usual accuracy, Zekes dropped 125 phosphorous bombs on our formations over Yap.

Current production emphasis is on twin-engine fighters.

Merchant ships are being armed more heavily than ever before. Double- and triple-barreled 25 mm automatic antiaircraft guns, production of which has been stepped up sharply, are being installed on many merchantmen.



Civilian defense activities, such as building shelters and training the populace for blackouts and air raids, have been intensified greatly. Among other recent instruction, the Air Defense General Headquarters has told the people to prepare breakfast and lunch each night for the following day, since gas mains are cut off as soon as the alarm sounds.

Ramming Department. A roundabout source gives us a story on the so-called Sturm or Ramm Staffel of German fighters, whose job is to ram American heavy bombers if they fail to shoot them down. Twenty German pilots, most of them being punished for flying offenses, were assigned to this job. These pilots, flying FW-190s with cockpit tops and sides

THIS IS

heavily armored, were under orders to attack our formations in the usual way, from head-on, and then to turn and ram individual bombers from behind. The Nazi pilot, if still alive, is supposed to bail out at this point.

Devil's Due. Whatever our pilots generally think of Jap fighter pilots, they recognize skill when they see it. Take the case of the Jap who was chased all over the sky by four P-51s. He circled and came in for more. They couldn't get a bead on him. Finally, as if tired of it, he broke away and went home.

The P-51 boys, admitting they had been outmaneuvered, came to know the Jap respectfully as "the coach."

Limit: One Squawk. Evidently civilians are expected to do a lot of squawking during our air raids over Korea. Lt. Gen. Sonada of the Korean Defense General Headquarters issued by radio this stern warning: "In any war, whenever a person thinks, 'Things are looking bad' or 'This is the end' he is already inviting a losing war. When we are bombed there will be cases where one may yell loud, but what we don't want you to do is continue yelling."

Propaganda. One of the current stories of the ingenious Jap propaganda bureau is that war prisoners taken by the Americans are run down and squashed by tanks.

Seaplane Tactics. With the Jap seaplane increasing in importance as a factor in the Pacific war, the instructions given to pilots of these planes are interesting and revealing.

Discussing the seaplane fighter, the Jap instructions to student pilots say, "These planes possess the characteristics of good observation, good turning power and the firepower of flexible and machine guns. They fight mutually supported and maintain constant and close liaison among themselves. Therefore, they should refrain from becoming dispersed in the battle area, and, as they possess a good field of fire . . ., they should feint the enemy into an opposite course action and draw him into a dog fight."

It is pointed out that the seaplane fighter is frequently only a decoy and "though they must endure this, they should try to reverse the situation by luring the enemy to a position below a friendly plane." Then the instructions add: "Upon catching on to the ruse, the friendly plane will dive to the attack without giving the enemy a chance to escape. However, in these cases it is not easy to lure away an enemy who is wise to the game. On the contrary, since this will redound to our disadvantage, spontaneous action may be most necessary."

The pilot is told that in undertaking an attack from a favorable position against a superior airplane, repeated steep dives and steep climbing attacks should be made. In other cases, the instructions add, it is advisable, immediately following one attack, to feign pursuit and attack.

The pilot is advised to use his fixed guns mainly, holding the flexible guns in position to use at a favorable moment.

YOUR ENEMY

"On the occasion of engaging an enemy plane in combat, use your turning ability to the utmost. You should make it impossible for other enemy planes to enter combat. In case the enemy comes in to attack from an opposite course, it is usually disadvantageous for one to plan to fight on the opposite course. In this case, it is best to lower the nose of the plane and pass the enemy at full speed. Then, without letting him get away, counterattack by executing a chandelle."

Annoyed. Japanese air commanders are greatly exercised about the increasing numbers of Jap aircraft destroyed on the ground. A recent order to all commanders, describing these on-the-ground losses as "most regrettable," declared that in cases where shelter installations are not complete, all flyable aircraft must be withdrawn before the raid starts.

As for those airplanes which remain on the ground, these measures were ordered:

1. Drain out the fuel.
2. Unload and disperse the equipment carried in the airplanes, especially pyrotechnics.
3. Disperse the planes, concealing them away from the field.

Oil defenses. Prior to its occupation by the Soviets, Ploesti was one of Hitler's great prizes. From its installations the Germans got much of the oil that kept the Nazi war machine running. No wonder it was a favorite target for Allied strategic bombing. And no wonder the Germans protected it with an elaborate system of air defenses.

Because the Ploesti defenses represented one of the Germans' best efforts, an examination of the measures used is interesting.

Active defense was built around fighter aircraft, anti-aircraft batteries and searchlights. Balloon barrages, used to hinder dive bombers, were disposed in two concentric circles, one having a radius of 2,700 yards and the other about 1,100 yards. Smoke screens were employed effectively both day and night. Usually, they were extended to an area much larger than that to be defended and were placed with limited intensity so that fighter defense, fire-fighting and first aid would not be handicapped. Ordinarily the screen was raised by fixed installations but mobile equipment made it possible to change the area of the screen.

Passive defense included protection walls of reinforced concrete, some of them designed to make false shadows. Storage tanks were camouflaged, sometimes with light planking propped in the form of roofs. Among other things, this camouflage was designed to give the impression of barracks of various forms and dimensions. The camouflage color for protection walls was usually green or some very dark tone. Nearby roads and canals which might constitute points of reference for enemy attack were camouflaged to alter their width and directions.

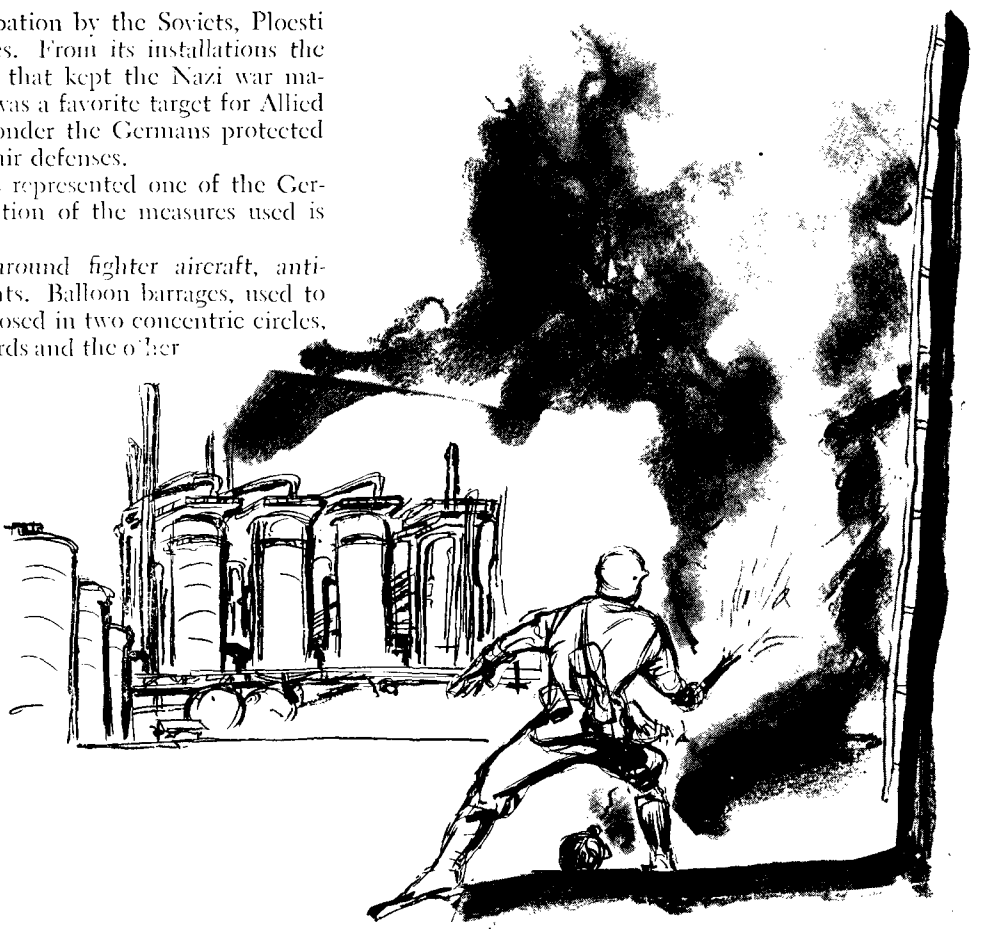
Another interesting camouflage measure was a system of dummy installations, built three to six miles from the real installations. The dummies were equipped to make false smoke and fires.

Jets. Here, briefly, are descriptions of the Luftwaffe's jet-propelled fighters.

ME-163: Single-engine, single-seat midwing monoplane. Resembles an arrowhead. Wings sharply swept back, short tear-drop fuselage. Tall single fin and rudder. Span 30 feet, length 20 feet. Speed, over 500 miles per hour. The 163 is rocket type, employing a single liquid rocket-propulsion unit. The endurance at full power is reported to be only a few minutes, but the jet may be used only intermittently.

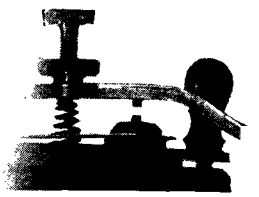
ME-262: Single-seat, twin-engine, low-wing monoplane. Wings are tapered with squarish tips. Slim fuselage has a long nose, with cockpit placed over the wing. Span 41 feet, length 35 feet 5 inches. Speed, over 550 miles per hour. In contrast to the rocket-type 163, the 262 is a true jet-propelled fighter with two jet units.

First claim for a destroyed ME-262 was made recently by two 8th Air Force P-47 pilots. Flying at 11,000 feet near Brussels, they saw the ME-262 at 500 feet and at once went into a 45-degree dive. The German attempted to make a belly-landing. The Thunderbolts came in strafing, and the jet plane was destroyed on the ground. ☆



When a radio operator makes a mistake, it can easily be fatal

KEY MEN



THE B-24s were about half an hour from their targets in Italy. The flight had been long and uneventful, so the radio operator in the lead plane took off his headset and relaxed. While he was watching the scenery, the ground station called with instructions not to go over the target. Reports had been received of unusually strong fighter opposition, and orders were issued to call back the flight. But the radio operator never got the message. The formation continued over the target and got the hell shot out of it. All because a radio operator was not paying attention to his job.

It is axiomatic that a radio operator keeps his headset on at all times. Otherwise, he is useless to the flight. But radio operators, like anyone else, are apt to make mistakes. They agree, however, that there is no reason why the same error should be committed twice. The incidents reported here—as told to an AIR FORCE staff writer—come straight from the radio operators who offer them with the thought that even once is too much.

Take the case of the radio operator who was returning from a mission with a seriously wounded gunner aboard. Following the correct procedure, he called his base with a request to get an ambulance ready and have medical assistance on hand. But he called on the fixed wire antenna and he had his antenna switch on the trailing wire position. Naturally, there was no transmission. Every radio operator in the air force knows that the antenna switch should have been on the fixed wire position. But this man was excited and he did not take time to check his equipment. As a result of this simple error, no one was waiting to treat the wounded gunner. He might have died from the loss of blood before he got the necessary attention.

Then there was the radio operator in the lead plane of a flight of B-17s attacking targets in France. Halfway between his base and the target, he called the ground station for a message check. He might just as well have sent a personally engraved message to the *Hauptmann* at the nearest Luftwaffe base, presented his compliments, informed him that some American planes were on their way, and requested the Nazi to please send up some interceptors. It amounted to the same thing. Thirty-five FW 190s attacked, shot down two planes, forced four to turn back and damaged several others. It is the opinion of the men on the mission that the Germans would never have been alerted so quickly, or been in a position to attack so effectively, if the radio operator had not broken radio silence.

The lesson of maintaining radio silence, except in emergencies, is one of the first things taught to radiomen. From the time they get into school, until their tour of duty is completed, the importance of keeping off the air unless absolutely necessary is repeatedly hammered home. Yet on this flight, and many others like it, men were killed, planes were lost, and the success of the mission seriously diminished because a radio operator did not remember the first rule of his trade: Maintain radio silence at all times unless the situation is critical.

Combat-wise radio operators report that some men have had the extremely bad habit of calling for frequency checks shortly after leaving their base. Such action is completely unnecessary and serves chiefly to warn the enemy. The radio operator should know if his radio transmitter is on the exact frequency before the take-off. If he has any doubt about it, he should check by tuning the radio receiver to the exact frequency to be monitored and then zero beat the transmitter against the receiver. This will put him on the frequency of the ground station.

Another serious error reported from the ETO is the inability of radio operators to change frequencies quickly. If it is necessary to ditch a plane, the Air-Sea Rescue must be radioed information as to the distressed aircraft's position. To do this, the radio operator must switch frequencies—and fast. The few seconds spent making the proper adjustments may mean the difference between being immediately rescued or floating aimlessly around on a raft.

The same situation applies when weather or other obstacles make it impossible to establish contact with the base ground station. To call the alternative station, a quick frequency change must be made. Men who have sweated out this operation say that it is essential that the radio operator know how to do it with maximum efficiency and a minimum loss of time.

Some of the mistakes made fall into the category of plain damn fool tricks. Such was the situation with the B-26s which were returning to their base during the battle of Sicily. The lead operator called for a QDM, got one, but never bothered to authenticate it. The entire flight went into a German field. Some smart Nazi had tricked the radio operator into believing that it was his home station which sent out the signal. The Germans are very obliging in that regard. Asking for authentication is a simple matter—it would seem such action should be practically automatic—but reports indicate that this mistake has been made with serious consequences in every combat theater. In the early days in England, a B-17 flight was cancelled by a German radio

(Continued on Page 56)

Wear That Armor!

LIVING today on borrowed time are many AAF bomber crewmen whose names on flak and cannon shell fragments were erased by their body armor. The good sense which led them to wear flak suits and helmets in combat and thus live to fly another day will likely bring them home intact.

But there's a touch of that "fools rush in" business about wearing body armor. While seasoned veterans swear by their issued protection and wouldn't fly without it, some of the greener airmen are foolish enough to go into action unshielded.

It shouldn't be difficult to persuade a man to guard himself against death or a wound which may cripple him for the rest of his life. But some people have to learn the hard way, and the principal objection to that kind of education is that graduation usually comes too late.

The usual complaint of the objector to flak suits and helmets is that they are too cumbersome, that their weight and bulk hampers his movements too greatly. Maybe they are a bit inconvenient. It's inconvenient to die, too.

The flak suit currently in use by the AAF is composed of overlapping plates of manganese steel contained in vests and aprons of canvas. Designed and developed by Brig. Gen. Malcolm C. Grow, surgeon of the US Strategic Air Forces in Europe, it is intended to provide protection particularly against head, neck, chest and abdominal wounds from spent bullets and low velocity flak and 20 mm shell fragments, which formerly were responsible for 85 percent of all casualties in air combat.

The body armor comes in several fashionable styles—fashionable for those who want to see the States again. The garments are worn singly or combined, according to the flyer's combat post.

The M1 vest, armored front and back, weighs 18 pounds, 2 ounces. The M2 vest is armored only in front and is worn by crewmembers who occupy armor-plated seats. The M3 tapered apron, for crew members who are in an otherwise unprotected sitting position in flight, weighs 4 pounds, 12 ounces. The M4 full apron, worn by gunners, weighs 7 pounds, 8 ounces.

Approximately 40 percent of combat wounds received by men flying in bombers are caused by flak, 40 percent by 20 mm cannon shells, 10 percent by free fragments of plane structure, and the remaining 10 percent by machine gun projectiles. The flak suit will protect the wearer against long-range flak and 20 mm shell fragments but not against flak which bursts near the plane.

USSTAF records on 133 airmen struck by flying flak or enemy missiles of other sorts while wearing body armor reveal that two-thirds escaped injury. The complete percentage breakdown:

No injuries	65.5
Slightly wounded	24.0
Seriously wounded	2.3
Killed	8.2

Detailed experiences of the 91.8 percent who lived to tell their stories, are on file. A few of them are quoted here to give you the general idea:

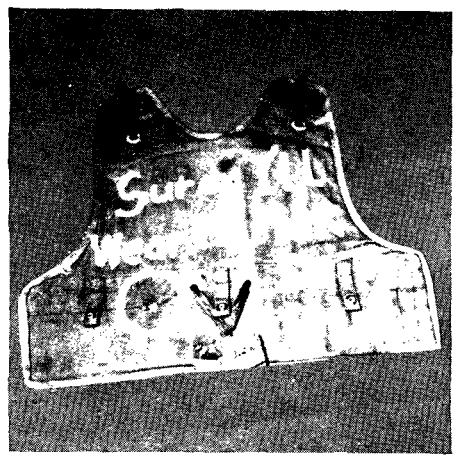
Second Lt. Thomas D. Sellers, copilot, 381st Bomb Group: "Your flak suits and helmets are your best form of life assurance. . . . My wounds outlined the flak suit as if an artist had been at work. . . . To those of you, who may object to the weight, I can truthfully say that you'll never notice it in the heat of battle. It gets lighter with each mile you go inside enemy territory until finally you wonder if it is heavy enough to do the job. . . . If you love yourself or anyone back home, then it's your duty to wear body armor, just as much as it is your duty to have ammunition in your guns."

S/Sgt. Calvin W. Hopkins, waist gunner, 401st Bomb Group: "A piece of flak penetrated the left waist gun window, just missing the left waist gunner and hitting the back of my flak suit, which was the only thing that saved me. If anyone figures the suit is too heavy to wear, he'll take my advice and banish that thought." Capt. H. G. Overly, squadron surgeon, examined Hopkins and his flak suit when the gunner returned to his base. The medic also gave the suit credit for saving the man's life.

S/Sgt. Albert J. Riley, waist gunner, 392nd Bomb Group: "I was hit by two large pieces of flak directly over the heart. Although the force of the blow knocked me down, I received no injuries except mild bruises. I advise everyone to wear a flak suit. I'd be in pretty bad shape if I hadn't worn mine."

Second Lt. Vernon H. Powell, bombardier, 416th Bomb Group: "A piece of flak came through the left side of the nose of the plane, striking the left side of my head about 2½ inches above my left eye. I sincerely believe the flak helmet saved my life."

S/Sgt. Edwin J. Miller, top turret gunner, 391st Bomb Group: "I was struck by flak on my helmet. The fabric was torn and the steel plating dented. My head was forced against the gun mount with sufficient force to break by goggles. I believe the helmet saved me from serious injury." Capt. Richard L. Rapport, Miller's squadron surgeon, said: "In my opinion, the helmet saved this man from injury which conceivably could have been serious enough to result in his death." ☆



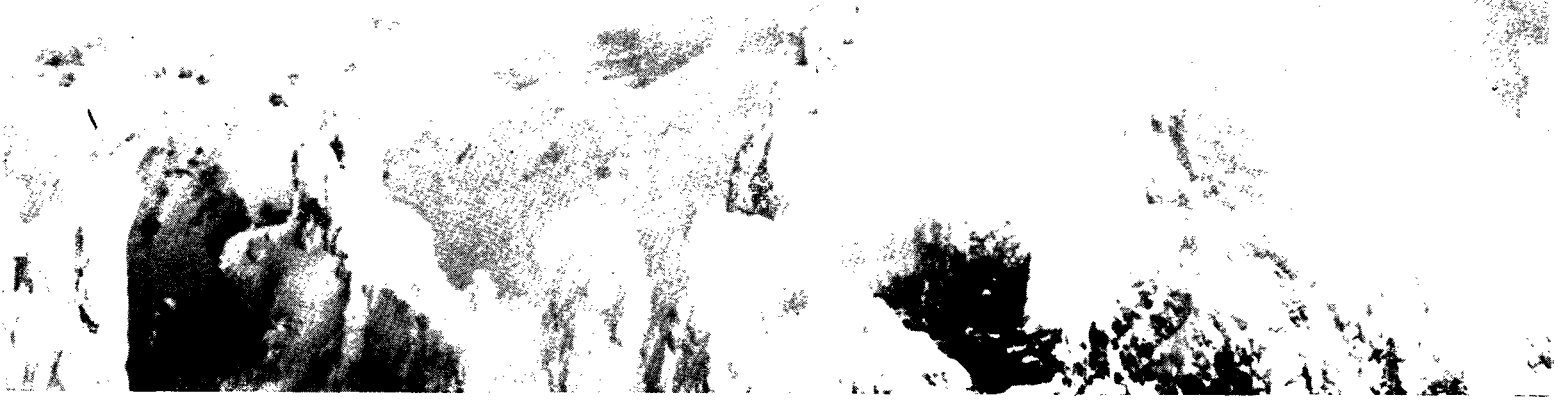
Saved by body armor when flak struck him in abdomen, 2d Lt. C. R. Cole, 305th Bomb Group bombardier, later chalked his sentiments on suit. Tear in covering is circled.

When 20 mm shell exploded against M1 vest of T/Sgt. J. W. Bothwell, 94th Bomb Group radioman, no fragments penetrated. He was cut slightly by bent armor plates.

Lifeline to the USSR

BY HERBERT RINGOLD

Air Force Staff



THE P-40 was blown into a blizzard by a 60 mile an hour wind. The pilot climbed to 14,000 feet without oxygen—his plane had no oxygen. He couldn't contact his base—he had no radio. He couldn't see—the snow froze to his windshield. He couldn't land—the terrain was covered by giant trees and jagged mountain peaks. He couldn't bail out—at the briefing he had been told that even if they knew where he went down it would take three months to rescue him. Turning back was an academic question—he didn't know where he was. There was nothing he could do but stay there and fly his airplane. Finally, after battling conditions as bad as any ever faced by American airmen, he brought his plane into Ladd Field, Alaska. He had completed a flight over the treacherous Northwest Route from Great Falls, Mont., to Fairbanks, Alaska, where a Russian pilot was waiting to move his plane across Siberia and into battle.

This was 1942. The war was not going according to plan. In June, the Japs bombed Dutch Harbor. Our small defense forces could not prevent them from making three successful landings in the Aleutians. In Africa, Rommel had captured Tobruk and was pushing toward Alexandria. Only a hastily reorganized British army stood between his Afrika Korps and German control of the Suez Canal. The USSR had lost Rostov and Sevastopol. Nazi General Von Bock was grinding up in force for the critical battle of Stalingrad. Both the Alaskan Air Forces and the Russians needed airplanes—and in one hell of a hurry.

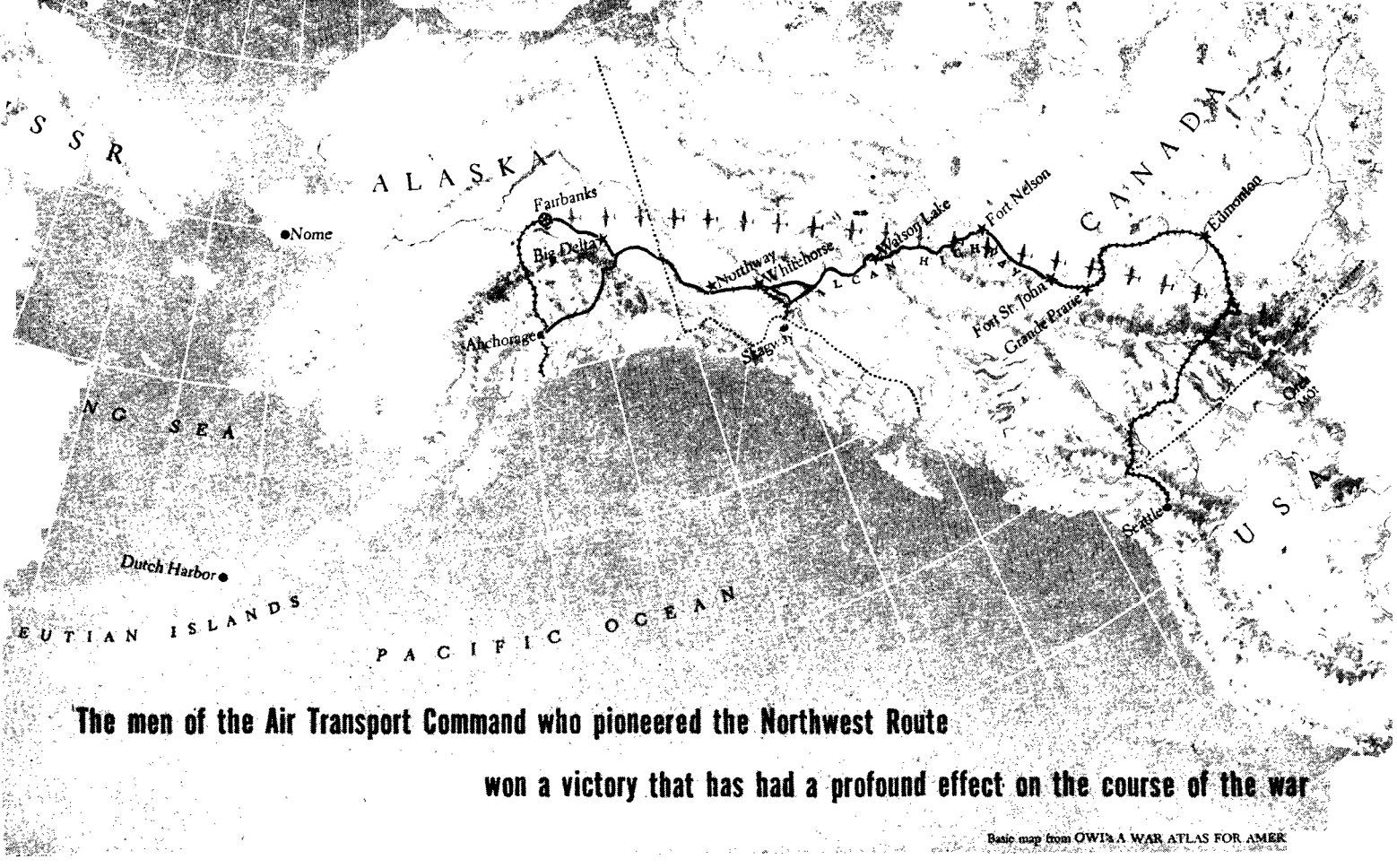
Some few planes were going to the Soviet Union the hard way—around Africa and up the Persian Gulf by boat and then overland across Iran—13,000 tortuous miles. Others were shipped via the Murmansk route, but a murderous percentage of the ships was being lost to U-boats and Norway-based Dorniers. It was obvious that a more efficient ferry route would have to be opened to Russia.

It was opened. By mid-1944, more than 5,000 planes had been delivered to the Russians over the Northwest Route. Fifty-nine percent were P-39s, but A-20s, P-63s and B-25s were moved up the run as fast as the Russians could take them into Siberia. Today, deliveries are being made at the rate of one every half hour. It's an achievement of which Americans can well be proud. It has played an important part in the winning of this war.

In the beginning, however, it was a rough deal. Back in November, 1940, the United States-Canadian Permanent Joint Board of Defense had recommended the development of an air route from the United States to Fairbanks. Early in 1942, Brig. Gen. O. A. Anderson suggested to the Air Staff that planes be ferried to Alaska. On June 26, 1942, a memorandum from Headquarters, Washington, to the 7th Ferrying Group, Ferrying Division, Air Transport Command at Great Falls stated: "You will take necessary action to organize and operate a ferry route between Great Falls, Montana and Fairbanks, Alaska."

It wasn't enough that we didn't know all of the answers; we didn't even know all of the questions that would arise when you build an airway from scratch along a route where few Americans had ever flown before, over vast expanses of snowbound territory that had never been mapped for aerial flight, in temperatures that got down to the minus sixties.

The first problem was to select the route. Great Falls, Montana was picked as the jumping-off base. It was desirable to by-pass the dangerous coastal run from Spokane into Fairbanks and necessary to establish Headquarters away from the West Coast Defense Area yet close enough to the aircraft factories. This was, remember, 1942 and combat-ready fighters were not pouring out of California's production lines. The P-39s, which the Russians used as anti-tank weapons, were coming from the East. Furthermore, Great Falls was close to a series of bush pilot flight strips which



The men of the Air Transport Command who pioneered the Northwest Route won a victory that has had a profound effect on the course of the war

Basic map from OWI's A WAR ATLAS FOR AMER

then could not honestly be called flight strips but which could be turned into a series of bases linking the United States to Alaska.

In June, 1942, a group of officers, Maj. Lloyd Earle flight commander, made the first survey run for the 7th Ferrying Group and the route was opened with major stops at Great Falls, Edmonton, Fort St. John, Fort Nelson, Watson Lake, Whitehorse, and Fairbanks.

When the route was first opened, deliveries were few and far between. Men were killed, aircraft cracked up with alarming regularity. For a while it appeared that the promised delivery schedule would not be met. Moreover, the winter of 1942-43 was the coldest in all the recorded history of Fairbanks. The temperature dropped to 67 degrees below zero. At some way stations, men lived in tents in that kind of weather—and the latrines were outside. Engine oil froze to solid ice. Weather changed from CAVU to zero-zero in seven minutes. At Ladd Field, it was not physically possible to work outdoors for long periods in temperatures that turned breath into icicles, froze eyelids together, and caused severe cases of frostbite, sometimes necessitating amputation. Mechanics took turns running in and out of heated hangars to service the planes. If any part of the body touched a piece of metal, flesh and metal could not be separated without cutting. If a single drop of 100 octane gas fell on the skin, it would raise a blister about an inch high. The fingers of some mechanics were eaten away like the hands of lepers.

An indication of the weather is seen in the case of Capt. Thomas Hardy. He was B-26 Project Officer at Fairbanks and he had two brand new Marauders, in tip-top shape, serviced by some of the best mechanics in the business. Only four hours of flying time a month is necessary to qualify for flying pay. During January, 1943, the weather was so bad that Capt. Hardy did not get flying pay.

Gradually, with the help of the untiring work carried on by Brig. Gen. Dale V. Gaffney's (now CG of ATC's Alaskan Division) Cold Weather Testing Unit at Ladd Field and the pioneering of Col. Ponton De Arce, first commanding officer at Great Falls, the principal difficulties were licked.

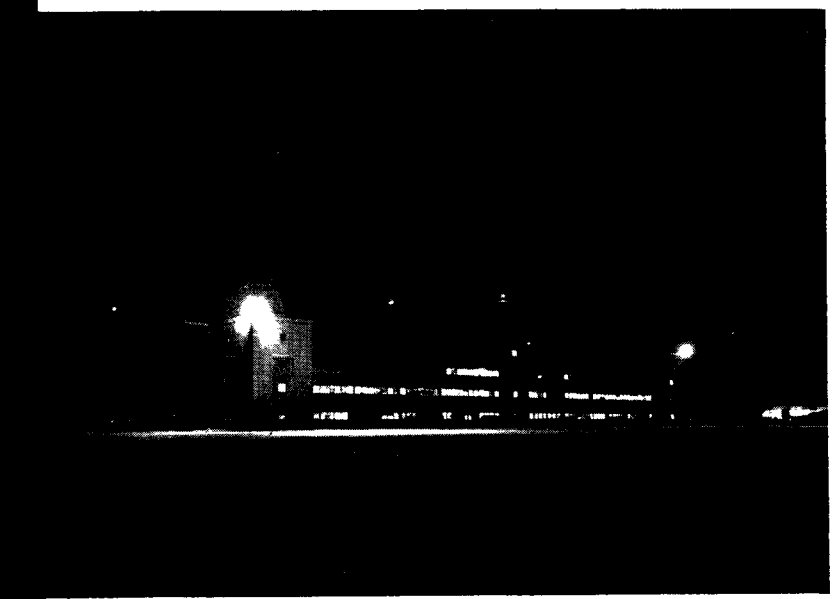
Flying the route in the early days presented the kind of hazards that grandchildren will never believe. Along the 1,900 mile run, there were only four radio ranges. They were on the air only half of the time—and then they were completely unreliable. Pilots said that the best way to run into a mountainside was to stay on the beam. Landing conditions were dangerous because most fields had only soft dirt runways. Maj. Frank Lardent said, "I taxied a B-24 over a culvert at Edmonton and the damn thing collapsed underneath me. When I parked on the landing mats, they sank into the mud."

There was no weather information of any kind in an area where the only thing that could be forecast was that the weather would be unpredictable. "I had only one weather report for 24 hours of flying," said Capt. Edmund Averman. Pilots took off under perfect flying conditions and ran into a snowstorm five minutes out. They just stuck their ships into the weather and flew until it got too tough. Then the trick was to find out where they were and how to get back.

There is a valley between Watson Lake and Whitehorse which became known as Million Dollar Valley because we lost more than a million dollars worth of airplanes up there in a short time. It was easy for experienced pilots to guess what had happened. The planes ran into weather—blizzards, thunderstorms, fog, severe icing, and ceiling zero in the mountains. In that area, there were absolutely no navigational methods to determine approximate position. Every hundred miles of frozen terrain looked just like every other hundred miles. Every mountain range presented the same ugly picture. Radios were useless—distances were too great to establish contact. The pilots just flew around blindly until

Two pack dogs bail out paratrooper style, a new technique developed by ATC Alaskan Division to save flyers downed in the wilds.

A sharpshooting Soviet airman draws a bead on the 8-ball during a competition held at the officers' club of Alaskan Division in Nome.



Ten o'clock of a December morning at Ladd Field, Alaska. There may be a midnight sun in summer, but winter is a long, dark season.

they found this likely looking valley which seemed to offer an evenue of escape. Then they crashed. Despite all the hazards of the trip, one man made it in a Piper Cub. In December, 1942, Capt. Malcolm Pruitt looked over his insurance records and took off from Great Falls in a Cub that had a range of only three hours. He knew that he could not make the 242 mile jump from Edmonton to the flight strip at Grand Prairie without adding extra hours to his flying time. So he went into a hardware store and purchased a funnel. Then he scraped up 22 one-gallon gasoline cans and cut a hole in the gas tank which extends into the Piper cockpit. He kept one eye on his course and one eye on the gas. Every time the gas supply dropped, he heaved another gallon into the tank.

After flying out of Edmonton for four hours and fifteen minutes, he was still nowhere near his first stop. The outside temperature was a smart 20 degrees below zero, and Pruitt had no heater. He finally went down into nine inches of snow in the middle of a farmer's field. He figured that he could telephone for help—but the farmer had no phone.

When he got out to his plane, he found that the motor had frozen. Pruitt had already had too many troubles to let that bother him. He found a washtub, built a fire in it, and shoved the tub under the motor, heating it up sufficiently for the take-off. After an hour of night flying without instruments, he landed again at a little railroad town in the Peace River country. Finally, he got into Grand Prairie and eventually delivered his plane to Fort St. John, 796 miles from Great Falls.

Getting through in those days was often a matter of luck. Some of the most experienced pilots in the Air Forces went down more than two years ago—and they and their airplanes haven't been found yet. Because of the lack of radio ranges, it was impossible to notify the base as to the approximate crash position. A wrecked plane was nothing more than a fly speck against a background of snow and ice that extended for thousands of miles.

There were no roads, no people, no shelter, and very little chance of finding food. It was the kind of territory that even Renfrew of the Royal Canadian Mounted has never visited. Many crewmen who crashed were found frozen to death. There have been exceptions; Lt. Leon Crane got back after 84 days in the wilderness. On the other hand, a crew bailed out within sight of an airfield—and their plane is still undiscovered.

The man with one of the most unusual rescue stories is Capt. Thomas Dichiara. He was coming back from Fairbanks as a passenger in a C-60. The plane went into a spin and Dichiara bailed out. While he was floating down into that frozen barren country, the pilot righted the ship and flew on. Dichiara was very much alone.

He had no idea where he was, so he just picked a direction and headed off. In 30 minutes, he came across the only railroad track in that part of the world. Fifteen minutes later, a train which runs only once a week came along and picked him up.

Today, conditions in that area have been changed. Where there were only four radio ranges, now there is a range station every 150 to 200 miles. With one exception, all legs are interlocking. Instead of hundreds of miles without a possible landing site, there are now 13 regular landing fields and eight flight strips, a hundred miles apart. The Alcan Highway provides a perfect checkpoint with a station every 40 miles.

An Arctic Rescue System has been organized which has effectively combatted one of the most serious of all problems faced along the Northwest Route—the question of the mental hazard faced by airmen who knew that in case of

trouble their chances of survival and rescue would be exceedingly slim. A radio network is maintained and five stations have aircraft assigned for the specific purpose of helping in the search and dropping supplies. A survival kit has been perfected complete down to frying pans. There is a standing reward of $100 awaiting any trapper who furnishes information resulting in the rescue of grounded airmen.

But the men who were given the job of setting up a rescue system were faced with a problem that ordinary rescue methods could not overcome. Crews were forced down in locations inaccessible even to a man dropped by parachute. Planes cracked up in the middle of heavily wooded forests or on the top of mountain peaks. It was often necessary to land a rescue party miles away from the stricken airmen. But the rescuers could not carry the heavy sleds and equipment needed for the evacuation work. The problem had no answer until Lt. David Irwin came up with the idea of using parapups.

Lieutenant Irwin lived in the North country for years before the war. He said that he could train his dogs so that they could be parachuted out of an airplane. Then the sleds could be dropped to the rescue party and the dogs hitched up.

A test flight was made and Lieutenant Irwin merely pushed the dogs out of a C-47. The chutes opened automatically and the dogs landed without injury. Now the use of parapups is a routine method of operation. Everything has worked without difficulty except that Lieutenant Irwin has been unable to teach his dogs to yell "Geronimo" as they jump.

Every time one problem was solved another arose which demanded immediate attention. The toughest of all was the problem of winterizing the airplanes. Hydraulic fluid wouldn't flow at minus 30 and 40. Even at less cold temperatures, the fluid became so stiff that airmen had to sit with their feet braced against the landing gear operating valve in order to lower and raise the gear. A lighter fluid was developed that would pour in zero temperatures.

The sparkplugs wouldn't heat. As one pilot put it, "By the time I got out to the end of the runway, my engine sounded like an asthmatic outboard motor boat." A new sparkplug was invented with a longer electrode protruding into the combustion chambers of the cylinders.

The oil supply to the engines was cut off because moisture ran down into the oil tank sump and promptly froze. Hundreds of feet of control cable were useless because the grease in the system froze as solid as concrete. A mechanic who helped lick the problem said, "For a while there, we were going crazy. We'd put the correct tension on the control cables to allow for a temperature of minus 15 degrees, and a drop to minus 40 caused the cables to tighten and pull something loose. Then when we fixed them for minus 40, the thermometer went up to minus 10 and expansion set in. We finally arranged a complicated system that solved the problem."

One of the problems that still hasn't been completely licked is the undramatic question of making allowances for the differential in the expansion and contraction ratio of the various metals. Aluminum does not expand at the same rate as copper. Copper has a different contraction ratio from steel. When one metal contracted, the connecting rods had to be tightened to allow for the change. Then the other metal would contract and the work had to be done all over again. When the temperature changed, one metal would expand, requiring a loosening up process all around. But the second metal had not yet expanded and the proper allowances had to be made. After this was worked out for minus

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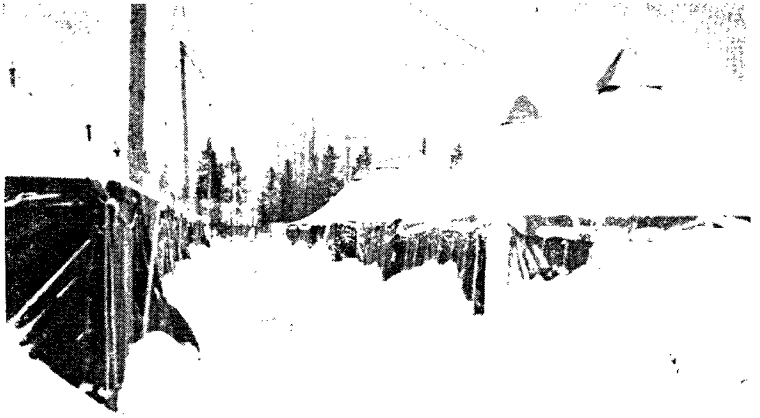
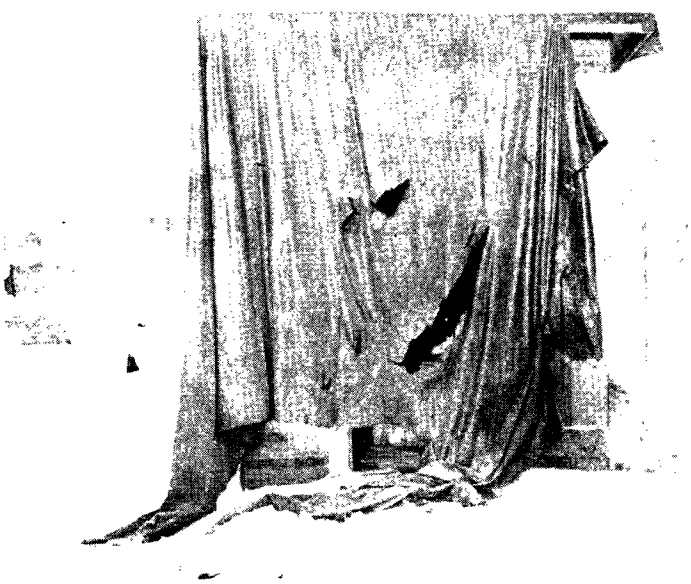


Palm Beach was never like this. ATC men in these tents at Watson Lake during the winter of '43 learned what the word "rugged" means.



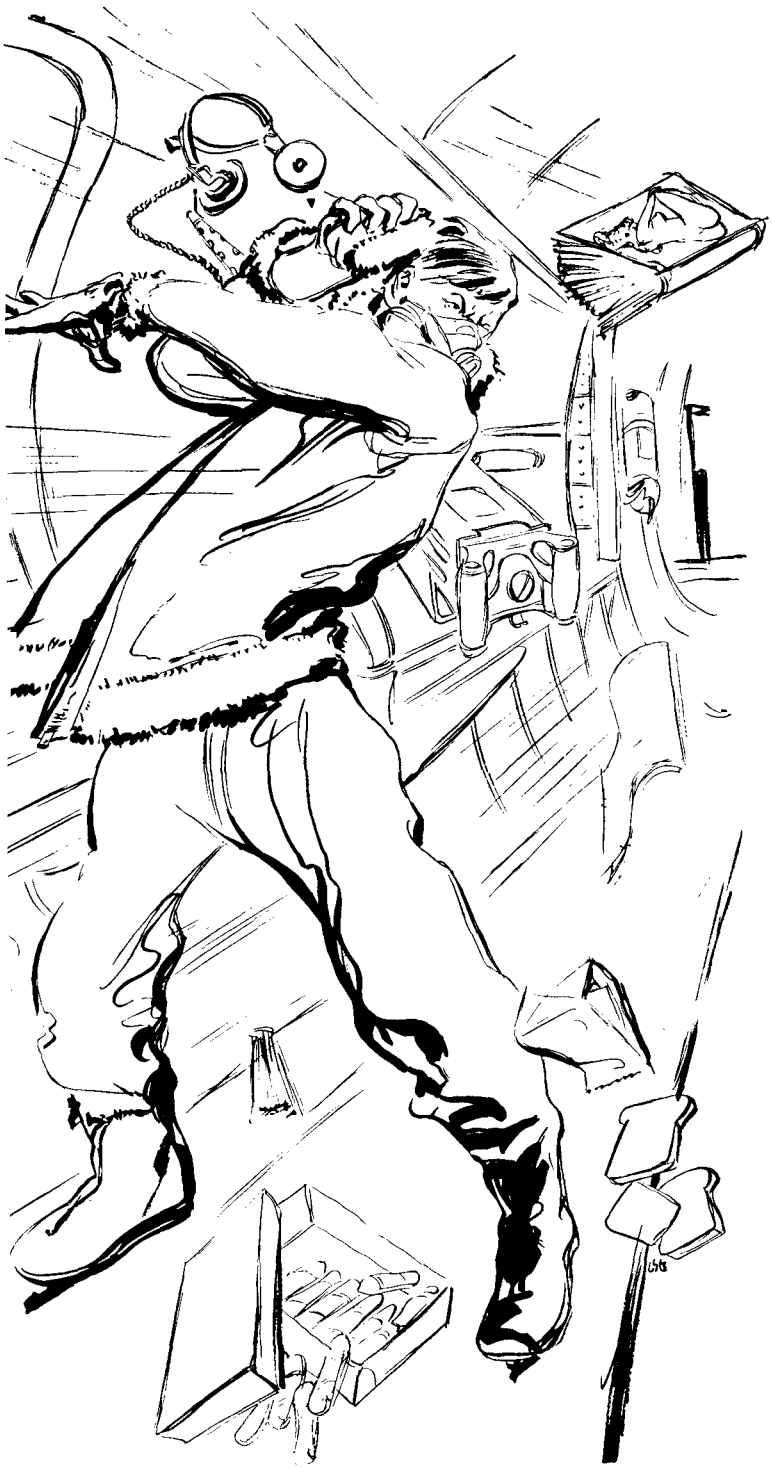
When you gotta go, at 60 below. A latrine at Fort Nelson, Canada, was probably the world's coldest place during the winter of 1943.

Digging fuel drums out of snow in 60 below zero temperatures was a routine chore for ATC men at bases along the ferry route.

THE MAN WITH THE PRIVATE BREEZE

By Maj. Luther Davis
AIR FORCE Staff

In England, when you're scared stiff, they say you've 'got the wind up.' Major Davis swears this is a true story. Major Davis frequently lies in his teeth



"It's like this," said Pfc. George Opfel of 1258 Bloom Street, Pittsburgh, Penn. "I was waist gunner and minding my own business. After we cross the coast I see a speck in the sun and I says into the intercom, 'ME-109 in the sun.' Not that I know it's an ME-109, but it sounds good.

"Well, everything's quiet for a few minutes and then I see this speck coming closer like a bat out of hell. So I calls into the intercom, 'Here he comes!' And right then is when it happened."

The captain doing the interrogating looked interested. "It was right then the wind starts. At first I figure maybe flak blew a hole in the fuselage. Not that I seen any flak. Turns out later there wasn't any hole. But the wind was terrific. It blows out some magazines I've been saving. Also a Spam sandwich which was pretty heavy. It's a hell of a wind. It almost blows the oxygen mask off my face. But me, I'm busy trying to track this ME-109 which turns out to be more like a Heinkel something or other. Only he doesn't make a pass but pulls off about two thousand yards to the side and just looks at us.

"I turn around and I see That Jerk—S/Sgt. Marion C. MacKensie is his name. Staff sergeant no less. Fresh out of the States and he's a staff sergeant. Flying his first mission and he's a staff sergeant."

"Go on with the story."

"Oh. Well, I turn around and see The Jerk hanging onto his gun for dear life, the wind whipping his winter flying suit practically off his back. And I think it's funny he's getting more wind than I am. Then I notice another thing. The wind comes from the wrong direction. From the tail toward the nose. Well, I tap The Jerk on the shoulder and he looks at me with such scared eyes I'm sorry for him. 'Relax,' I tell him. 'That Jerry ain't going to attack. He's just a snooper.' As soon as I say that The Jerk looks less frightened—and the wind dies down."

"I see," said the captain. "And the same thing happened later when you were attacked after leaving the target?"

"That's right."

"Have you any theories, Opfel?"

"I think," said Opfel darkly, "you better talk to MacKensie himself. You wouldn't believe me if I said it."

A few minutes later MacKensie came in. He was a very thin specimen with a concave chest. His eyes were enormous and kind of rabbitty looking. "Yes sir?" he said, leaning heavily on the "sir."

"About that wind," said the captain. "Know what caused it?"

"Yessir. I did."

"How?"

"I just couldn't help it. Honest it isn't my fault. You believe me don't you?" As he said this his voice quavered. A sudden burst of wind whipped through the office and blew everything out of the captain's "in" basket.

"It always happens," said MacKensie mournfully. "I get my wind up too easily."

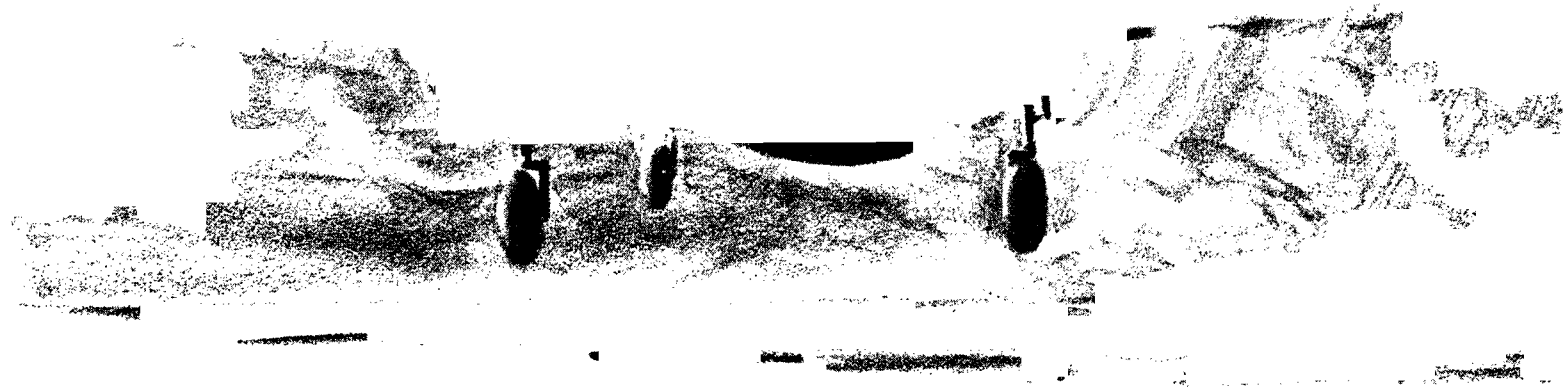
The captain gave up trying to save his papers and just let them blow. "Say that again, sergeant. Say that again."

"I guess I just get my wind up too easily."

"You mean—do you mean when you get a wind up, you really get a wind up?"

MacKensie's eyes got bigger. "Sure," he said. "Doesn't everybody?"

And that is the true story of why S/Sgt. Marion C. MacKensie, 622 East 40th Street, New York City, was removed from flying status as "unfit for combat." You'll find the whole thing in his service record which bears the cryptic comment, "This man has his own breeze. Should be kept out-of-doors." ☆

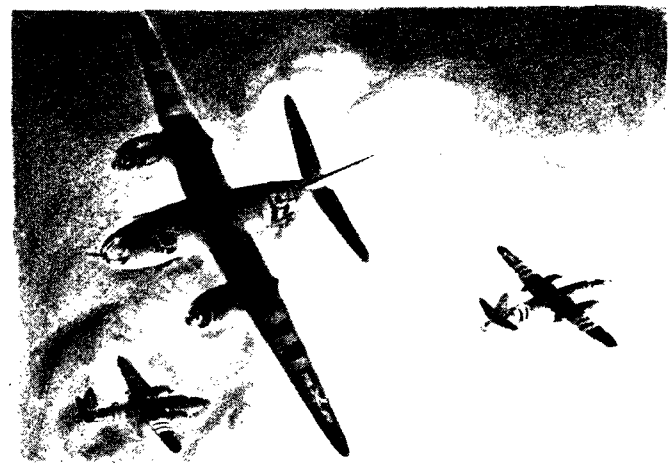


The Marauders took off for their first night mission in a cold, gusty rain. Some pessimists predicted that a third of them would not return.

Drawings By Capt. Raymond Creekmore

AIR FORCE Staff

THE Marauders, once condemned as too hot to handle, were the first American bombers to make successful night-bombing missions in force from Great Britain, striking first on May 22, and the fifth time on July 7 when nine were lost. News of these operations was withheld for a time since the first four were made without a loss. All Marauder night missions were led by 9th Air Force Pathfinders which made possible bombing through solid cloud cover. The months of night training paid off generously at dawn on June 6 when the first Normandy landings were preceded by B-26 attacks, the planes taking off in the dark.



Pathfinders, turning back over the area, could see bombs bursting.

German searchlights caught a Marauder called "Homesick," and a gunner was wounded by shell fragments. Bombardier gave first aid.

THE AIR WAR IN THE SOUTHWEST PACIFIC

By Col. B. B. Cain

Far East Air Forces

"We will come back and make the Japs pay a hundredfold in death and destruction."

That was the grim pledge made by a handful of survivors of the puny U. S. Far Eastern Air Force that was all but wiped out in the Philippines.

Today one embodiment of that pledge is the mighty Far East Air Forces, comprising the U. S. 5th and 13th Air Forces in the Southwest Pacific, which, under command of Lt. Gen. George C. Kenney, paid the first installment on that debt on the night of August 5 when a B-24 on a reconnaissance mission bombed Sassa airdrome north of Davao.

The present contraction of the Japanese air force into their Philippines stronghold is the action of a beast that knows it is hurt and about to die, cornered but dangerous.

Recapture of the Philippines to the American mind is almost an end in itself, a matter of national honor. When the day comes that our planes once more take off from Nichols and Clark fields, this time with bombs for Tokyo, we will be compensated for the long and bitter struggle along the road back to the Philippines across the Southwest Pacific from Australia.

At the beginning of the war the Japanese military machine was an almost perfect offensive unit. For years the Jap had been trained in offense. His whole movement was based on advance or die, and inasmuch as he had been convinced by these teachings that death meant a beautiful after life, he was quite ready to die, and apparently still is.

The speed of his advance after Pearl Harbor becomes almost breathless when one realizes that Manila fell on January 2, 1942, and that 18 days later he was softening up Rabaul, in New Britain. Rabaul fell three days later and became the Jap's principal forward supply depot. During the next month the Japanese steamroller over-ran Borneo, Timor in the Dutch East Indies, and Singapore; the rest of New Britain came into Jap possession, and from bases captured at Lae and Salamaua along the east coast of New Guinea the Jap was bombing Port Moresby and threatening Australia itself.

Early in March the Japs rocketed into Java on one side and occupied Bougainville in the Solomons on the other. Their tactics and strategy were superb: bold leaps, terrific shock. Meeting more opposition than anticipated at any one spot, they would by-pass it and take another, finally surround the point of stubborn resistance and strangle it into submission. A large, first-class merchant marine easily supplied, garrisoned and assisted in consolidating newly captured territory.

The ease with which the Japanese merchant marine plied protected shipping lanes, entirely covered by land-based aircraft, has backfired, however, as it made unnecessary the development of an air transport system. Instead the entire Japanese aircraft industry was devoted to combat airplane production. With such a rapid advance, anything but light maintenance was impossible, but the resulting wastage was offset by a continuous flow of new aircraft.

In the spring of 1942, with the Australian continent as an objective, the Jap met a stubborn point of resistance that he could not afford to by-pass—Port Moresby. Typical Japanese "Plan A," which had worked like magic up to this point, was put into effect for its capture. An air-covered, amphibious action supported by strong naval forces set out with the intention of sailing through China Strait around the southeast coast of New Guinea and taking Port Moresby by surprise.

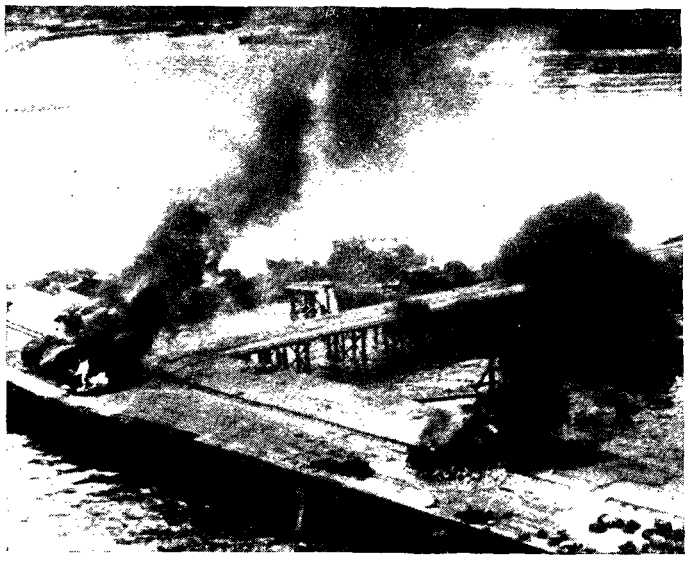
For the first time, however, the formula failed to work. Instead of a smooth victory the Jap met a serious defeat in the Battle of the Coral Sea which was fought May 4-8, 1942. The score: 11 Japanese vessels sunk to one

Jap camouflage on this Sally didn't fool low flying 5th Air Force bombers during their attack on Old Namlea airdrome, Boeroe Island.

landing east of Lae and the paratroop operation at Nadzab. After that, strike followed strike in rapid succession. Salamaua was captured, and battered Lae became ours on September 16. The Kenney air thrust secured us an advance airdrome up the Markham Valley at Kaiapit on the 20th, followed shortly afterward by the capture of Gusap and Tumpu. An amphibious landing at Finschhafen on the 22nd completed the rout of the Japs on the Huon Peninsula.

During October Rabaul was being squeezed dry of air and shipping targets. A perfectly planned and executed bombing attack on October 12 netted three enemy destroyers, three large cargo vessels, 43 small cargo vessels, 70 harbor craft and 126 airplanes destroyed. Another attack, on November 2, permanently put Rabaul out of the running as a base of any importance to the Japs.

This bleeding white of the enemy air forces and shipping in the Southwest Pacific resulted in his inability to maintain sufficiently strong air power at any one of his far flung mandate bases to jeopardize operations of our surface forces against him. Makin and Tarawa were occupied by us on November 21. The Australian 9th Division had pushed the Japanese up to Satelberg, and 1943 was closed with a successful landing at Cape Gloucester and the capture of a PT base at Arawe. New Year 1944 was celebrated one day late with a landing at Saidor, New Guinea.



Alternate oil dump goes up in smoke after B-25 attack on Halmahera Islands, last Jap bastion between New Guinea and Philippines.

Whereas the Allied Air Forces under General Kenney were functioning with deadly efficiency, the enemy's organization had become disrupted to the point of rendering his order of battle useless for tactical planning. A Japanese striking force of 100 planes had become comparable to the power of 25. The enemy was definitely in retreat.

Although Rabaul had been neutralized, it was still too strong for us to chance a frontal attack. As an alternative we captured Green Island to the east and cut off a possible avenue of escape. This move also cut off any chance of the Japanese forces escaping from Bougainville or other parts of the Solomons. Our next need was an airbase from which we could strike at the enemy's New Guinea flank and completely bottle the Rabaul-Kavieng area. The Admiralty Islands were ideal for this purpose and would also give us a valuable base for deep reconnaissance to the north.

Our objectives, Manus and Los Negros in the Admiralties, were garrisoned by some 4,000 Japanese troops. On March 15 a reconnaissance party in force, consisting of a few hundred rifles of the 1st Cavalry Division, landed at Los Negros. General MacArthur was unexpectedly on the scene and went ashore with the troops. He surveyed the situation and ordered the troops to remain in occupation. Thus Momote airdrome was captured and our perimeter was reinforced just ahead of Japanese reinforcements. This was perhaps the most important operation ever conducted in this theater.

With air coverage available from Momote we were in a favorable position to begin leap-frogging operations in New Guinea. It was no longer necessary to attempt a landing east of the Japanese stronghold at Wewak. Instead a bold stroke was planned to by-pass this heavily defended section and land at Hollandia, to the west. On March 29 and 30, heavy bombers covered Hollandia with a perfectly planned attack, destroying a considerable part of the Japanese army air force in New Guinea. On the following day, fighter-covered strafers followed up and completely wrecked enemy air facilities in the area, burnt out Hollandia and destroyed fuel, maintenance and supply dumps. During these attacks more than 400 enemy airplanes were accounted for, and there is evidence that the Japanese air command in the area was relieved in disgrace.

Hollandia, and Aitape to the east, were occupied without substantial resistance on April 22, cutting off the Japanese 18th Army concentrated mainly at Wewak and the Hansa Bay area and giving us airfields which increased our heavy bombing range to a sweeping arc that included Soerabaja, Balikpapan, Davao and Saipan. The Halmaheras were open to attack and airdromes of the Vogelkop and Geelvink Bay areas came within range of our mediums.

The aerial blitz against the enemy's bases in the Wakde Islands began on May 6, and nearly 1,000 tons of bombs were dropped on the area from then until May 17 when Allied forces landed in the Toem sector on the Dutch New Guinea mainland opposite the islands. One island of the group was occupied, followed by others. With our seizure of air facilities in the Wakdes, the whole elaborate system of Jap airdromes in western Dutch New Guinea was in jeopardy. The most distant airfield at Jefman was only 490 miles away, easily within fighter range.

Meanwhile, although some enemy resistance still was being encountered at Wakde, General Kenney would not halt his schedule of aerial advance. Progressively heavy air attacks were being directed against Biak in a repeat performance of the death blow dealt at Hollandia.

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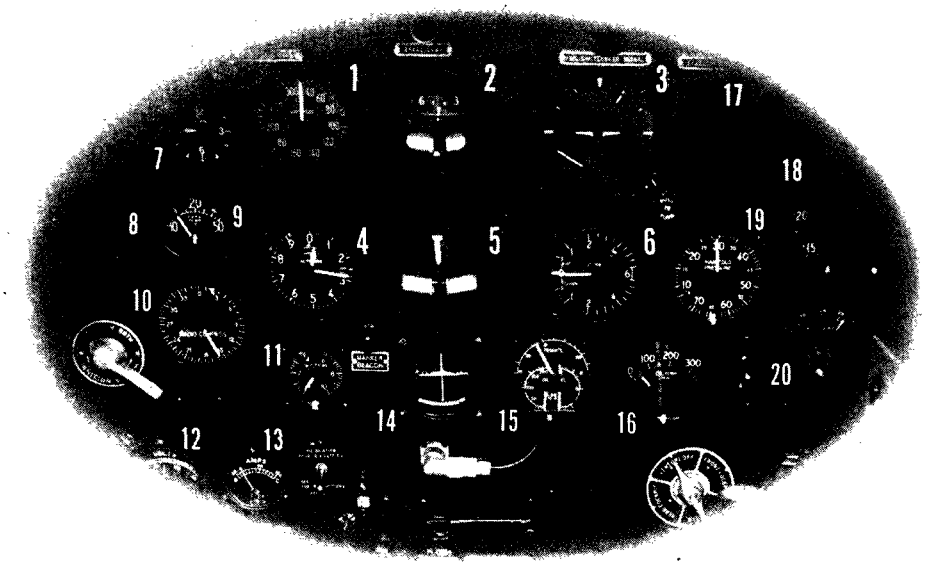

1 Airspeed Indicator
2 Turn Indicator
3 Flight Indicator
4 Altimeter
5 Turn and Bank Indicator
6 Rate of Climb Indicator
7 Clock
8 Air Temp. Gauge
9 Carburetor Temp. Gauge
10 Radio Compass
11 Suction Gauge
12 Volt Meter
13 Ammeter
14 Localizer Indicator
15 Oil Temp. Gauge
16 Cylinder Head Temp. Gauge
17 Magnetic Compass
18 RPM Meter
19 Manifold Pressure Gauge
20 Fuel Mixture Gauge

STANDARD FLIGHT INSTRUMENT PANEL

By Col. Thomas J. DuBose

Deputy, Asst. Chief of Air Staff, Training

EARLY this year, the Army Air Forces adopted one standard arrangement for the grouping of the six basic flight instruments on the instrument panels of AAF aircraft. The new arrangement, known as the Standard Flight Instrument Panel, was made official by Technical Order No. 01-1-160 dated March 11, 1944.

The Standard Flight Instrument Panel has the six basic flight instruments arranged in two horizontal rows, one above the other, with three instruments in each row. In the upper row, reading from left to right as viewed by the pilot, are the airspeed indicator, the turn indicator (directional gyro), and the flight indicator (gyro horizon or artificial horizon). In the lower row, again reading from left to right, are the altimeter, the turn and bank indicator, and the rate of climb indicator. If, in addition to the six basic flight instruments, the cross pointer and the radio compass are installed in the airplane, they are placed one above the other to the left of the two rows with the cross pointer in the upper position.

Now why was it necessary to adopt a standard arrangement for the grouping of these instruments? And, if there was such a requirement, why was this particular arrangement finally adopted?

As regards the first question, up until this new panel arrangement was officially adopted there were, in the various aircraft of the Army Air Forces, some 43 different official or quasi-official arrangements of the flight instruments. At one base it was found that there were *four different arrangements in four airplanes of the same model operating from the base.* Obviously, such a condition was extremely undesirable.

The Army Air Forces considers it essential that its pilots be able to fly on instruments. Almost every combat mission, transport, or domestic cross-country flight demands skill in instrument flying.

Flying on instruments in modern high performance airplanes demands much of the pilot. Before he can become an instrument pilot he must successfully complete a stiff training course. Before he can become a truly capable instrument pilot he must continue to practice instrument flying if he is to retain his skill. For safety, efficiency, and economy, everything possible must be done to simplify his task, not only during the training period, but throughout his instrument flying career.

From the training angle alone, the efficient mass production of pilots, able to fly on instruments, demands standardization in all phases of instruction. Such standardization is impossible without a standard arrangement of the flight instruments.

Finally, the lack of uniformity in instrument panels means just one more unnecessary complication in the already complex problem of mass production of aircraft.

As regards the second question—why the particular arrangement finally adopted?—the Army Air Forces started working on the development of the Standard Flight Instrument Panel nearly two years ago.

To the office of the Assistant Chief of Air Staff, Training, was given the responsibility of determining just what was the most acceptable lay-out for a standard panel and of monitoring the project through to completion.

The modern concept of instrument flying is based on teaching the student to visualize the attitude of his airplane from the instrument readings. By learning to do this, the student makes the necessary corrections from his visualization of his airplane's attitude, rather than mechanically moving the controls so that the pointers of the instrument dials assume the proper positions for the attitude desired. To do this properly, the student must learn to utilize all six of the basic flight instruments. The skilled instrument pilot, trained in accordance with this concept, can instantaneously and automatically create from the instrument readings a mental picture of his airplane's attitude. This, then, was the basis on which the Standard Flight Instrument Panel was developed.

For nearly 18 months, the officers of the Materiel Command and Training Command charged with developing the panel conducted studies and experiments, including exhaustive tests under actual instrument conditions, of various groupings of the flight instruments. In carrying on these studies and tests, the advice and assistance of operating units in the field were solicited and obtained. Both training and operational considerations were carefully weighed. Finally, there was evolved an instrument arrangement which seemed to fill the bill. Medical research by the office of the Air Surgeon in connection with the tests on this proposed lay-out substantiated its desirability from the standpoint of minimizing flight fatigue. This arrangement was adopted as the Standard Flight Instrument Panel.

The major advantages of the standard panel are:

1. The arrangement meets training requirements in that all six basic flight instruments are grouped together.
2. The airspeed indicator is directly over the altimeter which is necessary for accuracy in bombing operations.
3. The turn indicator (directional gyro) is directly over the turn and bank indicator which allows for vertical sighting by the pilot and his immediate perception of failure of either instrument.
4. The airspeed indicator, the altimeter,

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ON THE LINE

A MAINTENANCE ROUNDUP PREPARED IN COLLABORATION WITH AIR SERVICE COMMAND AND TECHNICAL INSPECTION DIVISION, AIR INSPECTOR'S OFFICE

A crystal gazing sergeant at an ASC depot in England foresaw the possibility of salvaging the highly sensitive quartz elements in 20,000 inactive radio crystals storaged for shipment back to the U. S. He is the proud prognosticator of a cathode ray machine which visually tells the precise frequency of a crystal and at the same time indicates its ability to withstand the tremendous vibration of a plane in flight.

The clearheaded clairvoyant is T/Sgt. James T. Johnson of Weatherford, Texas, on duty in the research department of the depot's Signal Maintenance Section, who without benefit of onija board or astrological aids, alleviated a critical shortage in these vital radio components and solved a ticklish problem in test equipment.

It seems that there was real danger of many American planes being grounded for lack of signal equipment, and the demands from fighter and bomber units in England rose to a four-motored pitch. The Air Service Command immediately began an investigation to determine the possibility of injecting new life into "Class 26" radio crystals that were awaiting debarkation and honorable discharge.

Acting along these lines, Army technicians succeeded in saving many veteran crystals from the ignominy of quiet retirement, but found that the insoluble key to the whole process was a reliable method of gauging the exact condition of the crystals after reactivation. Each unit, in order to be effectively used again, was required to function at the rated frequency originally specified by the manufacturer, and unless this same frequency was maintained after salvaging, the crystal would have to be tapped on the chest and pronounced unfit. It was necessary, therefore, to find out to what extent the radio crystals had been affected by the reclamation process, but inquiries to the States revealed that no instantaneous method of testing crystals for accurate oscillation was available.

Enter the talented tech. In a month's time he perfected a crystal tester that helped to return a high percentage of formerly rejected crystals to active duty. Few repair jobs have failed since his apparatus has been in use, and up to recently he has assisted in the reactivation of 50,000 crystals at a substantial saving. 50,000 crystals can't be wrong, and calls for the machine are being received from aircraft repair depots all over the world. Already, two of the machines are in operation in India.

Sergeant Johnson studied radio engineering at Texas Christian University and prior to entering the Army in November, 1942, was a civil service radio technician at Fort Sam Houston, San Antonio.

Name, rank and serial number of the oldest P-38 in active service in the Southwest Pacific is reported to be No. 42-12694, answering to a dozen different nicknames including Sweet Lips, Ruth II and Trudy.

Since joining the 13th Army Air Force back in November of 1942, she has put in more than 700 hours of day and night fighting over Guadalcanal, Munda, Kahili and Rabaul, and has more than several Jap planes to her credit. At various times during her combat life she has flown with the Sun-Setters, Vampires, Dirty Dozen and Fighting Cocks—all squadrons of the 13th AAF Fighter Command.

Rank? Well, this Lightning rates sky-high with crew chief S/Sgt. Duane E. Shumway of Winslow, Ariz.

When opportunity knocks for most of us, it usually wears rubber-soled shoes and carries a feather pillow in each hand. But for S/Sgts. Frank R. Matarese, Burlington, N. J. and William O. Harrell, Orlando, Fla. both at an ATC base in India, opportunity came right in and made itself at home.

The occasion was the difficulty encountered by maintenance men in separating airplane tires from their rims—often a time-wasting operation that literally "tired" the men out. The two sergeants collaborated to devise a machine that forces tires from the rims of landing wheels by breaking loose both sides of the "shoe" simultaneously—and will handle any size tire from the small type used by liaison planes to the king-size B-29 balloons.

Made from salvaged material at a cost of approximately $200, the machine has a square frame of H-iron, with a circular rim,

"Make mine a double shot" may be appropriate phrasing under certain conditions, but photographically speaking it merely indicates twice as many maintenance mistakes. The sergeant who dreamed up this cocktail of errors claims that he mixed seven ingredients of poor practice in each of the pix. But don't turn the page for a peek at column three until you've proved that he needs glasses! Picture A shows a B-17's top turret gun being installed, while in photo B the lower ball turret is being removed for overhaul. Serving the concoction in order to demonstrate what not to do, are (picture A, left to right) Sgt. Frank R. Flaherty and S/Sgt. John H. Cooper, both of 4100 AAF BU, and (photo B, left to right) Sgts. Cooper and Flaherty and Sgt. William R. King, 4000 AAF BU, Flight Section, Patterson Field, Ohio.

It is mounted on a hinged platform and is raised or lowered by a bomb winch to the height required by the size of the tire. A 20-ton wing jack is used to exert pressure on the circular rim which forces the bead of the tire away from the rim, thus breaking both sides of the tire from the rim at one jacking. The entire operation requires only five minutes as compared to the previous tire changes which consumed anywhere from thirty minutes to six hours.

After a demonstration in which the machine broke down two tires in three and one-half minutes each, the apparatus was warmly approved by the field's tech inspectors and engineering officers.

The critics raved when the Hollandia invasion proved an immediate smash hit in the South Pacific theater, and the brilliant performance of the AAF shared top billing with the smooth work of other coordinated arms. But backstage the supporting cast was raising the curtain on a little drama of its own. . . .

Some time before "opening night" it was discovered that a large number of P-38's being readied at an advance base in New Guinea lacked sufficient range to adequately cover the bombers listed on the program. An urgent appeal was sent to a 5th Air Force Service Command depot on the mainland for the personnel and equipment needed to outfit the fighters with extra factory-made wing tanks. Here, Maj. Jay H. Staley, Steelton, Pa., officer in charge of modification and erection, selected a detail of six men headed by M/Sgt. Willard Laugle, Cincinnati, O., and hustled them into a waiting plane for a flight to the jungle airfield.

For days thereafter Sergeant Laugle and his men worked 16 to 18 hours out of every 24, come heat, come rain, in an effort to meet the deadline. The wiring was re-routed through both wings to the pilot's compartment. New, leakproof plumbing was installed. The stresses and strains developed by the addition of the wing tank were overcome, and an intricate siphoning problem was solved. In addition, each plane was equipped with a warning light which flashed a signal to the pilot fully five minutes before it was time for him to switch to the newly installed tank.

As the ships came off the line they were test-flown by Col. Edward M. Gavin or by his assistant, Lt. Owen M. Wolf, and every P-38 in the group was delivered on time and in first-class combat condition.

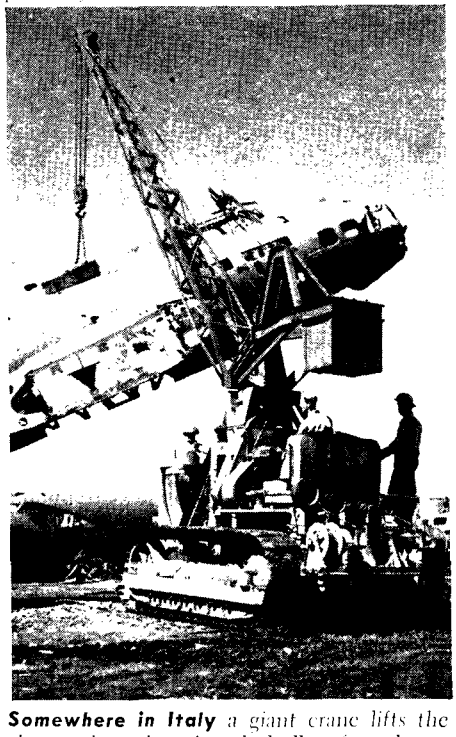
The doughty mechs who "kept 'em flying"—longer, were, besides Sergeant Laugle, T/Sgt. Arthur V. Mulvey, Sgt. John Meiner, S/Sgt. Vernon L. Haug, Pfc. Edward Levy and Pfc. John J. Klinkerfuss.

They tell us that experience is the best teacher because you can't cut classes. And when the tail skid of a B-24 starts sliding off its jack while maintenance work is being done—well, brother, you'll know what's meant by the school of hard knocks.

A star pupil is Maj. Joseph L. Myers of Brooklyn (one of our allies) N. Y., hangar maintenance chief at an Air Service Command depot in the British Isles. Noting that Liberators undergoing modification or repairs were held in position by the tail skid resting on the open crown of the jack, he found that movement by mechs inside the plane often caused the tail skid to bounce off the jack, damaging the underside of the fuselage and necessitating extensive sheet-metal repair work, besides endangering the lower ball turret.

With this in mind, Major Myers devised a tail-skid cradle welded from salvaged steel, which screws firmly into the jack by means of a two-inch threaded stem, and effectively prevents the tail skid from slipping off the jack. It is made out of ¼" thick metal, weighs nine pounds and its box-shaped sides are two inches high.

Major improvement? We're not merely punning!



***Somewhere in Italy** a giant crane lifts the shattered and stripped hulk of a heavy bomber and swings it onto a pile of other shattered and stripped hulks that have been consigned to the salvage yard for reclamation. Here's a graveyard that pays its own way, for figures in the depot engineering office indicate that over 200 battle-scarred aircraft a month in the Mediterranean Theater are made whole again with salvage.*

Rosie the Riveter would become grass-stained with envy if she were to hop over to an 8th Air Force Service Command Station in England and see the blind rivet gun designed by Sgt. Alfred G. Dannull.

A boon to sheetmetal men who formerly had to peel off large sections of sheet metal or skin in order to get to the inside or undersurface to turn rivets when patching flak holes, the gun now makes shooting rivets into inaccessible sections of skin on heavy bombers as easy as money from home.

Using tapered rivets with the large end inserted into the opening and encased by a closely fitted jacket, a hand-operated bellows type lever pulls the rivet from inside to out, forcing its greater diameter against the jacket, thus expanding it into a washer which holds the rivet securely.

WHAT'S WRONG
IN PHOTOS ON PREVIOUS PAGE

A 1. Psst! Hey, Sarge, get that dome away from its precarious perch! Always place dome carefully on ground while installing guns.

2. The pier-happy sergeant will probably ruin the solenoid cable if he keeps up his love-to-tinker activities. Correct procedure: tighten this connection by hand.

3. Tsk! Tsk! Flexible drive cables can't operate when one is hooked beneath the cover plate and two others are wrapped around the computing sight. Don't get your wires crossed, men!

4. Praise the Lord, but don't pass the ammunition—yet. Safety rules tell you not to install ammo while working on turret.

5. Roll out the barrel, and put it where it will do the most good. Apparently the mechs haven't noticed that barrel in gun at left is AWOL.

6. One of our filler caps is missing. . . . Watch for its presence in the breather cap in daily inspections. Cap prevents dust and dirt from getting into hydraulic fluid.

7. Stop! There's a limit to beating pins out on the limit stop. Failure of mechanism may cause gunner to fire into plane's fuselage or structure. Friendly tip: Follow T.O. 11-45C-5, dated June 30, 1944.

B 1. Hold that turret, pulEEZE! Incorrectly supported, as shown, it may fall against side of hoist and be damaged. Check AN 11-45G-1, dated April 25, 1944.

2. Screwdriver artistry is only a waste of muscle when removing fire cut-off cam. Here's how to do it: With turret in stowed position, guns fully elevated and pointing aft, support open entrance door by strap to prevent damage to hinge or weather stripping. Remove the eight bolts from cam bracket and ring gear. Move the turret in elevation with hand crank until open door permits removal of cam from turret well.

3. You needn't knock before entering, but at least refrain from leaning on the turret entrance door. Never apply pressure or you may spring the hinge and door won't fit properly in enclosure.

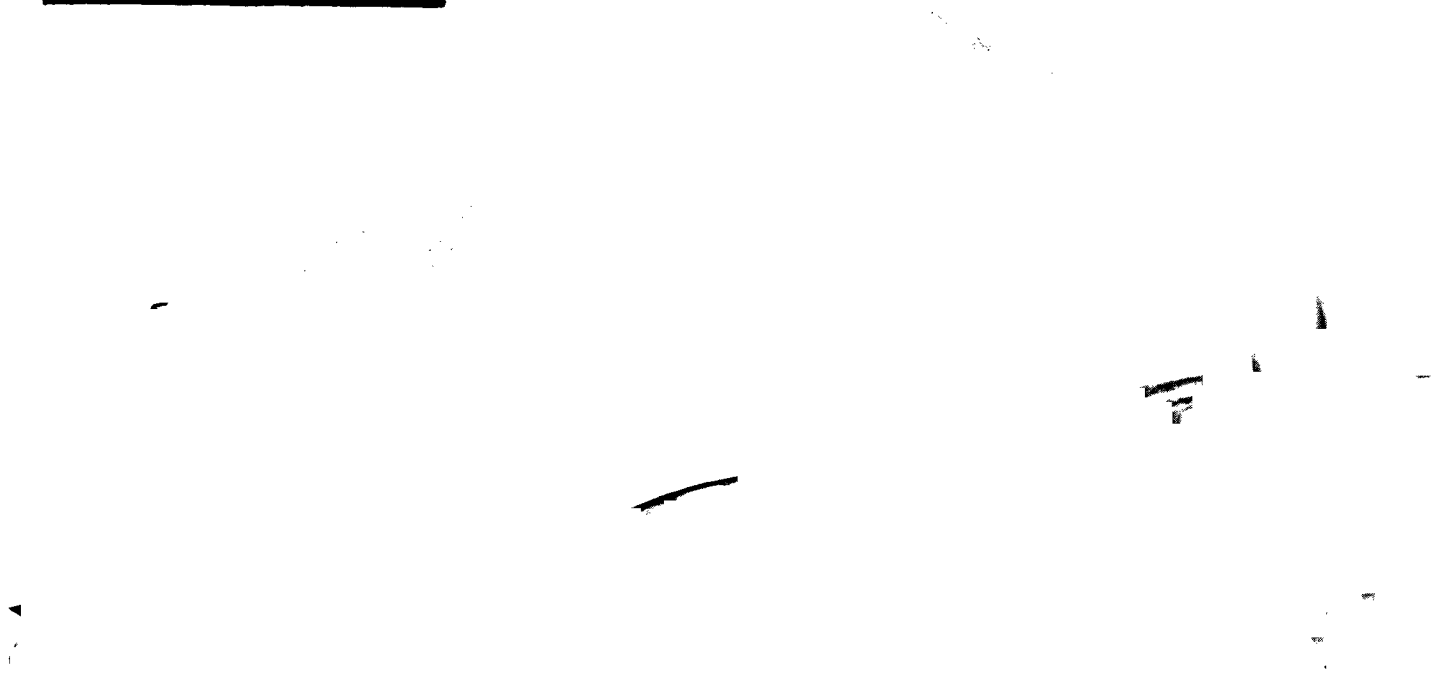
4. The Office of Flying Safety would gasp in horror to see that safety belt draped across the gun on the floor (foreground). The gunner will feel mighty naked if it's forgotten. T.O. 11-45G-1 recommends that it be left inside the turret.

5. One false move and the man in the middle may step on the plexiglas of the end bell cap. When removing such items, place them safely outside the working area.

6. Speaking of undisciplined size elevens, why leave a $2,800 computing sight laying around where it may be broken easily? And why not move the gun out of the way so men won't trip over it? We're thinking of damage to the gun, naturally.

7. Don't look now, but a flexible cable has been left attached to the computing sight. Better practice is to disconnect all flexible cables from the sight and leave them attached to the turret. If removed from turret, cable may be misplaced during repair of the sight and latter will be installed minus a cable.

technique



The A-26 . . . Our Newest Attack Bomber

By Col. V. R. Haugen, *Project Officer XA-26, Aircraft Projects Section, Engineering Division, ATSC*

Out of this war has come a new respect for the attack airplane. The boys who come in low, hit hard and get-the-hell out, have chalked up an enviable record against the enemy.

The Germans started it with the Stuka dive-bomber. But eventually the Stuka died over the western front and Britain. Although it did a devastating job against undefended targets, its lack of defensive armament made it a clay pigeon for fast Allied fighters. Our own A-24s met a similar fate. Yet, the mission for which the dive-bomber was intended—to knock out ground installations paving the way for troops—still was an important play in the game of modern war. There was but one alternative—fast light bombers with heavy firepower attacking at low altitudes, an adaptation of attack aviation which the AAF had originated years before with the Curtiss Falcon and the A-17.

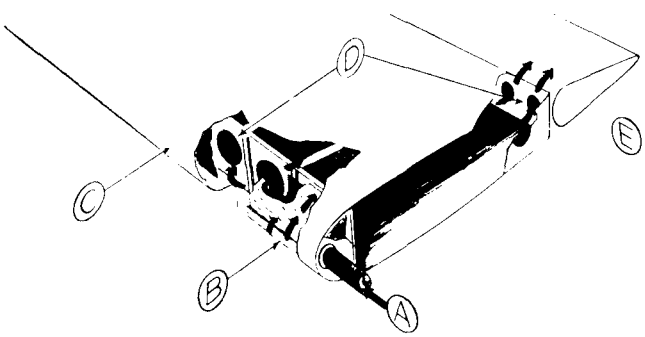
Thus did the attack bomber come into its own. In England, Africa, the South Pacific, A-20s and Beaufighters strafed and bombed the enemy and fought their way back to bases. Then came the A-36, a revamped Mustang used as an attack plane in Sicily. A "new terror" they called it. Other types of planes soon pressed home the new tactical offensive: B-26s with a dozen guns skimming low on sneak raids, B-25s with a 75 mm cannon smashing Jap shipping, even B-17s used for low-flying attack missions in New Guinea.

(Continued on Next Page)

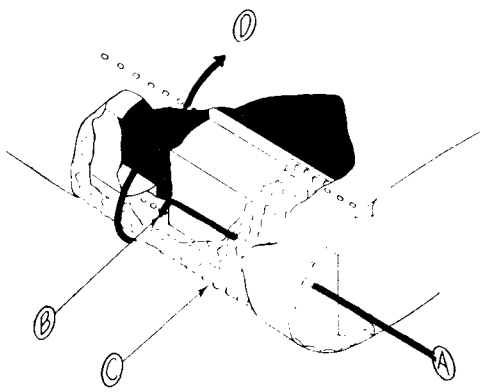
Now, packaging all the improvements possible from extensive experience with those fighting planes, comes the AAF's newest, fastest and deadliest attack bomber—the A-26 Invader, which now is seeing action.

The Invader is the fastest bomber ever built in this country. It is a hopped-up, tough, big brother to the Boston. Speedy and nimble, the A-26 can strike from tree-top altitudes and present only a flash exposure to ack-ack fire. It is designed specifically for operations against enemy aircraft on the ground, naval vessels, landing parties, wharves, towns harboring enemy troops, antiaircraft emplacements, supply dumps, tanks and troops on the march or in bivouac.

Douglas Aircraft Company, which fathered the A-24 and A-20, now has the new bomber in mass production and has made possible its remarkable potentialities by use of some exceptional design features: The Invader is designed to carry an extremely flexible selection of guns, cannons and bombs or fuel which should make its offensive striking power adaptable in almost any combat situation. It is exceptionally clean aerodynamically, employing the recently developed NACA low-drag (Laminar Flow) airfoil wing section. It is equipped with twin 2,000 horsepower R-2800 series engines. It has a new double slotted flap which reduces landing speed and assists take-off. And the entire airplane employs features of maintenance simplification stressing accessibility to all parts.



Duct (A) shoots hot air between inner and outer skins of wing (B, C), through holes in spars (D) and out slot near aileron (E).



A change in design now permits the heated air to escape through perforations in the skin (D) instead of traveling through wing.

Any ground crewman accustomed to work on the A-20 should be able quickly to adapt himself to the Invader. One mechanic on the line at Wright Field quipped: "This baby is a repairman's dream."

We have many reports, from pilots who have flown the ship during tests, on its flight characteristics. All agree that the A-26 is one of the best flying aircraft they ever have flown. It is extremely easy to handle, has well grouped controls, comfortable seating, good maneuverability and is devoid of any vicious tricks. There is no tendency to snap off into a spin, and the plane performs beautifully in a stall.

While security prevents a description of the Invader's startling performance, we can tell you that Col. J. H. Davies, who has had extensive experience flying A-24s, B-25s and A-20s against the Japs, recently had this to say after he had test-flown the Invader:

"This airplane, if properly employed, can be the greatest striking arm of the Air Force."

We who helped engineer the Invader into reality are daily making improvements in armament, performance, maintenance, utility and cockpit arrangement to make that prophecy come true.

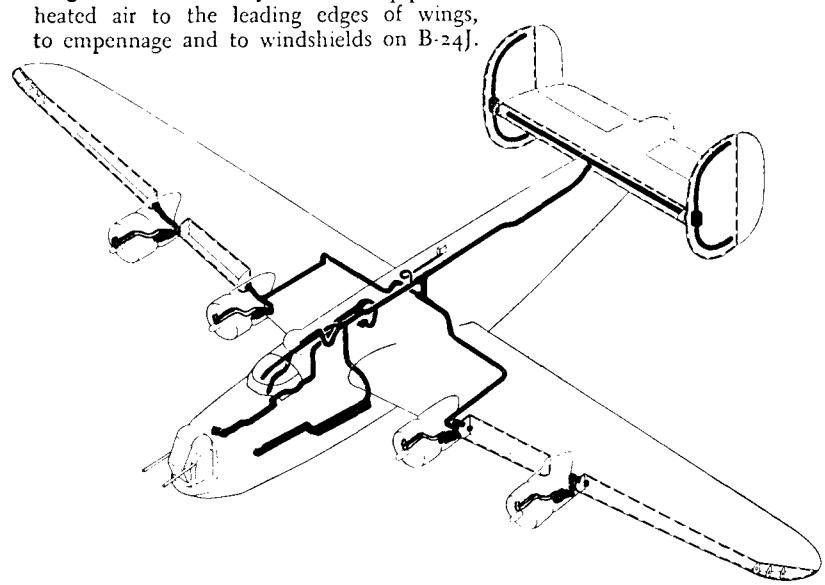
Heated Wing Anti-Icing For AAF Planes

Heated wing anti-icing systems, long under study by NACA and Materiel Command, are being adopted on B-24Js, B-32s and all future AAF aircraft designs. Other present production aircraft will continue to be equipped with de-icer boots.

Limitations of the de-icer boot system have been its failure to break off some types of ice and its inability to prevent ice build-up, which distributes smooth airflow over the wing, before breaking it off. The heated wing system, effective in preventing icing of any kind, also provides heat for anti-icing the airplane's windshield. For summer operation, ducts, heat exchangers and the double-skin leading edges of wings can be removed.

The new Thermal Ice Prevention System utilizes a series of ducts which pipe heated air from the engines to leading edges of the wings, empennage and the cockpit windshields. Cold air is scooped in through the cooling system of each engine, ducted to an exhaust heat-exchanger, then to the wings and empennage. In the B-24, inboard engine heat exchangers supply heat to the inner wing panels, the empen-

Diagram shows duct system which pipes the heated air to the leading edges of wings, to empennage and to windshields on B-24J.



nage and windshields, while outboard exchangers heat the leading edge of the outer wing panels and wing tips.

In the wing section, hot air is forced between a dimpled inner skin and the outer skin of the wing's leading edge, then through holes in the wing spars and out of the trailing edge of the wing at the aileron hinge line. The air is sufficiently cooled before passing through the wing to eliminate danger to either gas tanks or structure. Air is discharged from the empennage through perforations in the horizontal and vertical fins where the double skin is joined. The original system for heated wing anti-icing of B-24s was developed by the Ames Aeronautical Laboratory at Moffet Field, Calif.

The Germans were the first to utilize a heated wing method of anti-icing for combat aircraft, and installations on the JU-88 were studied by NACA as part of that organization's extensive anti-icing research program. To assist NACA in flight testing various anti-icing systems, the AAF's Materiel Command in 1942 set up an Ice Research Base, under contract with Northwest Airlines, at Minneapolis, where atmospheric conditions are favorable for icing. Extensive flight tests were carried out on a B-17, B-25, B-26, B-24, C-53 and C-60 through the worst icing conditions that could be found in the area. Ducting, double-skin structure and other equipment were adapted to these planes through the extensive research efforts of aircraft manufacturer and Equipment Laboratory engineers.

Although the heated wing has effectively solved the problems of wing icing, it does not guarantee complete safety of flight through an icing condition. Loss of power through propeller icing still remains a threat, but this factor is expected to be overcome in the near future.

New Super-Fuel

The AAF has developed a super-fuel for use in B-29 and B-32 bombers which will save up to 10 percent in fuel consumption and permit increasing the bombload of the big planes by several thousand pounds.

The secret of the new gasoline is a rearrangement of molecules to produce a more powerful anti-knock chemical solution. The boost comes from a change in mixture of the raw gasoline and with high octane blending agents. More of the latter are used.

Present standard fuel used by the AAF is rated as 100/130, which means the gasoline has an octane rating (anti-knock value) of 100 for cruising and a Performance Number rating of 130 during take-off or for combat reserve power. The high anti-knock chemical content of the new fuel reduces the tendency of the gasoline to detonate, thus permitting more efficient engine operation.

Produced by the nation's petroleum industry to specifications and requirements determined in tests by Air Technical Service Command chemists and powerplant engineers, the super-fuel has the highest rating of any aviation gasolines now in use. But to take full advantage of its power, the engines which it feeds must be strengthened and they require minor internal modifications.

Although the super-fuel is being used in limited quantities, its production is a major problem for fear of impeding the 500,000 barrels-a-day production of present standard fuels necessary for fighting the war. According to R. V. Kerley, ATSC fuel specialist, production of one gallon of the new fuel with present limited facilities delays production of two gallons of 100/130 fuel. Vast new refineries are being set up to permit manufacture of the super-fuel in large quantities. It soon will be in combat theaters.

The fuel has a stronger odor than other fuels because of its new chemical content, but it is not nauseating. A new coloring has been added for identification purposes.

technique TECH TALK

P-47's are being flown as transitional trainers. Removal of the turbo intercooler and allied equipment provides room for an extra cockpit which has standard instruments and controls. Although sacrificing high altitude performance, the aircraft retains its high speed and maneuverability. . . . The PT-23 has been converted to carry two litter patients, thus becoming the first trainer to be redesigned for overseas utility. Compact kitchens, complete with steam tables, have been built for transport in large gliders. . . . Laundries also will be airborne. A portable "wash-day" unit, consisting of a water pump, heater, washer and wringer, and run by a small motor which burns aviation gasoline, fits snugly in a C-47. It can turn out 45 pounds of wash every hour. . . . Small fuel servicing trailers with jeep wheels and an engine-powered pumping unit also have been designed for shipment in a C-47.

A P-38 has been equipped with the high speed strip camera which takes stereoscopic pictures. . . . A viewing instrument incorporating a one-half surfaced mirror and two polaroid filters greatly improves stereoscopic interpretation of black and white or color transparencies. Result is a three dimension picture with fine detail. . . . Panoramic cameras fitted with rotating lenses are being used for plotting aircraft flight paths, bomb and parachute trajectories. . . . An angle mirror attachment on K-24 aerial cameras permits shooting of oblique pictures from a vertical camera station. . . . Newest mapping camera will have shutter range of from 1/60 to 1/500 per second and will be used from old style ring mount.

Mae Wests now have an additional chin strap attached to the upper inflation tube which forces it to hug the wearer's neck and prevents him from rolling onto his face. . . . Lightweight flying suits are being made of nylon. The same goes for hammocks in new emergency kits, litters and, experimentally, new life rafts, since it is lighter than rubberized materials now in use. . . . Specially treated milkweed fibers are being used to soundproof aircraft cabins.

Plastic lenses with high-grade density have been fitted to glasses for pilots and aircrew members. They permit sun scanning without endangering the eyes. Green canopies and windshields which were used to eliminate glare are being discarded because they offer poor visibility in twilight or with night illumination. . . . Tow targets made of fluorescent dyed acetate satin give antiaircraft gunners an easy-to-spot target. Cloth is so bright that dark glasses must be worn by those who work with it.

Telescopic aluminum handles, instead of usual wooden ones, are being tested for a 12 pound Medical Corps litter. . . . Aeromedical experts have engineered a compact, mobile dental trailer van, complete with dental chair. . . . An experimental altitude warning signal sounds a horn at 10,250 feet, reminding personnel to don masks, and again at 40,500 feet, signalling them to use pressure demand oxygen equipment.

Quick-opening triangular pilot parachutes have been tested for personnel chutes. . . . Climatic charts aid airmen in determining proper combinations of flying suits by dividing the earth into several clothing zones for lightweight, intermediate and heavy flying garb. . . . New innersole for flying boots is made of asphalt and buckwheat husks. . . . Three-man emergency tents have been devised for use in the arctic. Type E-2 bombardier's case is a small canvas bag which can be slung over the shoulder. ☆

technique . . . CONTINUED

New Method of Static Testing

By E. R. Weaver, *Engineering Division, ATSC*

As larger aircraft with more critically designed wings have been developed for the AAF, methods of ground testing the strength of the planes under simulated flight conditions have undergone radical changes.

Newest method of static-testing aircraft structures eliminates the traditional system of piling shot-bags and lead weights on wings, fuselages and engine mounts to measure critical loading limits. The new system utilizes rubber-to-metal adhesive tension patches that enable engineers to simulate and measure flight stresses and strains more accurately.

Actual loads are applied by series of adhesive tension patches on the top-side of an airfoil and soft sponge pads on the under-side of the wing. Hydraulic jacks then proportion the applied loads through a system of beams and levers to the patches and pads in accordance with the correct aerodynamic data for the airfoil sections incorporated in the specific design.

Essentially, the tension lifting patch is a flat or curved plate (depending upon the surface to which it is applied) of steel, duralumin or plastic material. It may range in size from a six-inch square to a 6 by 24-inch rectangle, or even an irregular shape. One surface which is applied to the structure under test is covered with a piece of tough, high tensile, rubber or neoprene sponge. The thickness of the rubberized patch or pad varies from ¾ of an inch to 1¼ inches and forms a lifting element on the structural skin by adhesion. The lifting pads or pressure pads are the same size and composition but they are applied to the underside of the airfoil.

Hundreds of tension patches and pressure pads are needed to run a single test, far less, however, than the number of shot-bags required for the dead weight method previously used. A single operator can load and unload the test structure in a few minutes. By comparison, it formerly took days to pile on the shot-bags for simulating loads, since an average of 27 different types of tests are required to static test a military airplane completely.

In the test of a C-54 airplane, for instance, 300 tension patches and 300 pressure pads were used. By this number of tension patches sufficient lifting force was exerted to cause complete failure of the wing.

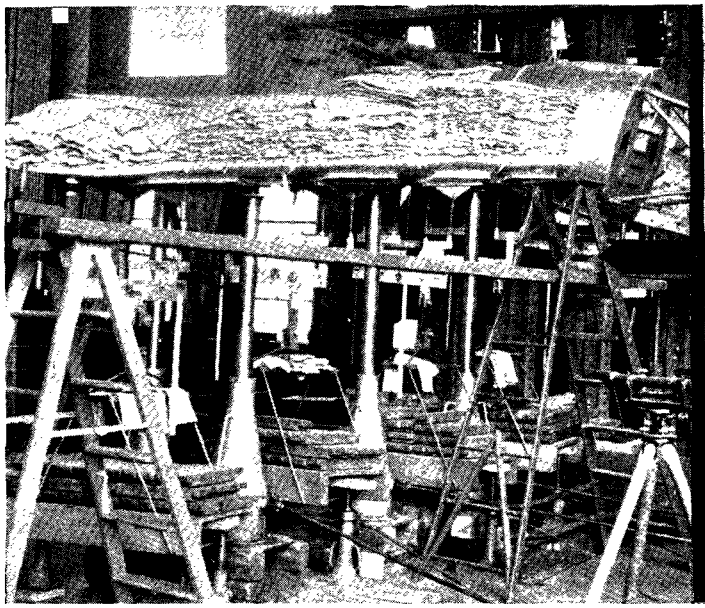
The adhesive tension patch does not reinforce the plate stringer combination of the wing surface. Wrinkle patterns due to shear lag, which form under the patches in their natural way, can be visually inspected and photographed during the tests. The sponge adheres tightly to the surface deformations and has no influence on the structure.

This method of applying load is particularly effective in the testing of cowlings, canopies, bomb doors, hatch doors, trim tabs and control surfaces. In testing a curved surface the patch bases are moulded to the curvature so that the sponge sheet distributes the load evenly to the structure.

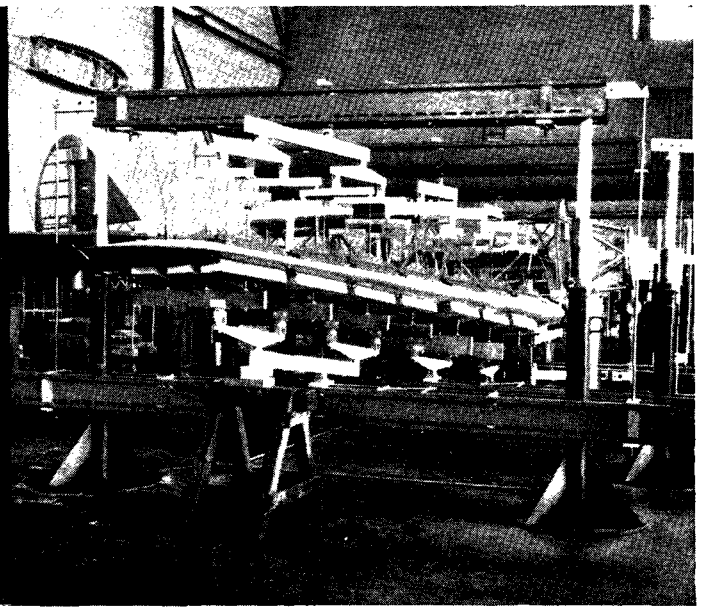
With cements now in use it is possible to develop a load capacity of 2,000 pounds per square foot on any structure for nearly five hours.

Wright Field's Aircraft Laboratory now has two of the new static test machines—one with a lifting capacity of 100,000 pounds, the other with a lifting capacity of 1,000,000 pounds. The smaller machine is used for testing trainers, fighters or small gliders, while the larger machine tests aircraft with gross weights exceeding 13 tons.

By employing the new system, the complete airplane structure including the fuselage and horizontal tail may be tested simultaneously. Controls and control surface operation can be studied during tests since there is no dead load inside the fuselage or piled on the wing to endanger personnel and interfere with control wiring and operation. Absence of dead loads in the fuselage makes it possible to inspect visually the stress reactions of the fuselage inside and outside during tests. All hydraulic lifting equipment and beams, lever systems, electric driven pump, high pressure hydraulic cylinders and auxiliary pumps and gauges are portable, and they can be readily disassembled and conveniently stored.



Shot-bags and lead weights were piled on wings, engine mounts and fuselages to measure critical loading limits under the old method of static testing aircraft structures. The operation was a tedious one, several days being required to test an airplane completely.

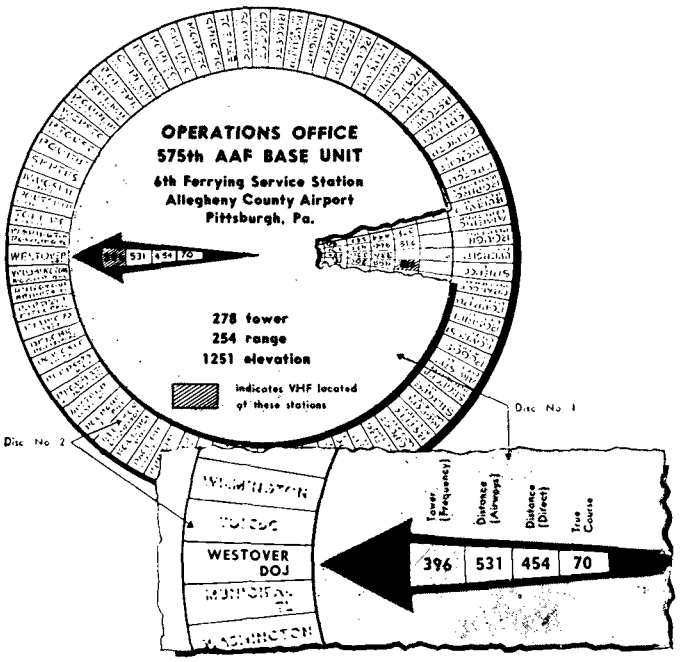


Rubber-to-metal adhesive tension patches and pressure pads, used with new static-test machine, enable engineers to measure flight stresses more accurately than they could formerly. Speed, too, is gained. One man can load and unload test structure in few minutes.

Rotating Information Chart

Pilots clearing the ATC's 6th Ferrying Service Station at Allegheny County Airport, Pittsburgh, Pa., can obtain essential flight data by a flick of a finger. This is made possible by an improved rotating information chart, designed by S/Sgt. Arnold M. Green and installed in the operations office.

Figures on tower frequency, distance by airways, distance direct and true course, relative to airfields to which flights



Rotating information chart, in use at the Air Transport Command's 6th Ferrying Service Station, Pittsburgh, Pa., is depicted in the above drawing. Closeup shows flight data provided instantly by the handy device to a pilot clearing the station for Westover Field.

are made most frequently from the Pittsburgh station, are provided instantly by the device.

The chart, as shown in the accompanying drawing, consists of two concentric discs, each covered with a protective layer of plexiglas. To use the device, a pilot turns Disc No. 1 until its arrow indicator points to the listing of his destination on the border of Disc No. 2. The desired flight information then appears in a slot in the arrow.

VHF towers are designated by a dashed red line through the frequency reading.

Although the idea for the chart is not new, Sergeant Green's device is believed to be the first to include readings on tower frequency, VHF and true course.

For the benefit of other airfields which might want to adopt the improved chart, it is pointed out that while Disc No. 2, as illustrated, is divided into 72 sectors of five degrees each, the specifications can be altered to fit requirements. The cutaway in the drawing shows how the information is plotted.

The 6th Ferrying Service Station operations office advises that the chart should be made as large as possible and readily accessible. Its own device is bolted to the counter at which pilots fill out their clearance papers.

Figures on tower frequency, range and elevation appearing on the face of Disc No. 1, as illustrated, apply to the Pittsburgh station. ☆

technique WHAT'S NEW . . .

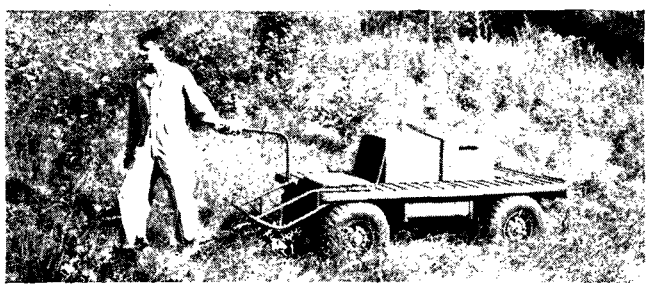
Insulated Battery Pack. A 12½ pound battery pack for testing thermometers, ohmeters, flashlights and other small electric units in extreme cold, is eighteen inches long, six inches wide and can be carried on a shoulder strap. It has been developed by Wright Field equipment laboratory. The pack contains two dozen 1½-volt dry cell batteries which enable mechanics to test any electrical unit within a voltage range of 1½ to 36. Made of plastic, the pack has a one-inch wall of insulating powder to keep the batteries at an operating temperature from eight to twenty-four hours, depending on the types of batteries used.

Lightweight Engine Cradle. A lightweight engine cradle, Type B-1, made of chrome molybdenum tubing, has been developed by the Wright Field equipment laboratory. A special bracket, attached to the rear engine support ring, permits installation of five radial engine types, the R-1830, R-2000, R-2600, R-2800 and R-3350. Four retractable swivel casters on the new cradle permit easy tie down in an airplane.

Oxygen Mask Heater. To keep frost and ice from forming inside oxygen masks, particularly in the oxygen inlet port, an electrically heated cover has been designed by the aero-medical laboratory at Wright Field and the General Electric Co. for Type A-14 masks. Made of heavy cloth, it fits snugly over the mask and snaps together around the hose. Small wires in the lining supply the heat. Connected with the electrically heated suit, the mask has a special plug-in socket which permits use of heated goggles.

Chute Harness Adjustment. A new, simplified parachute harness adjusting device, recently standardized after tests by Materiel Command's equipment laboratory, eliminates the tug and the pull now expended by airmen in tightening and loosening the present style harness. Principal components are the "adaptor," knurled sliding bar, and the tab for loosening, both attached to the rectangular base plate. To tighten the lap harness strap, the right hand pulls the free end. To loosen the harness, the adaptor tab is pulled up by the left hand. Either adjustment can be accomplished by one hand with slight effort. The shoulder harness adaptor operates in a similar manner, with only a slight pull required for adjustment.

Intermediate Flying Suit. A scientifically designed, cotton sateen, alpaca lined flying suit for wear over electrically heated suits or under heavy flying equipment has been standardized. The suits, which are lightweight and comfortable, will replace the heavy, bulky, stiff leather outfits that have proved inefficient in extreme cold.



Jeep Flat-top. Newest adaptation of the Army's most versatile vehicle is the "jungle jeep." Designed with a flat platform instead of seats, with the engine underneath, this vehicle can carry 800 pounds of personnel, cargo or supplies in areas inaccessible to larger trucks. A motorcycle-type hand throttle and a hand operated lever brake are mounted on a swivel tiller bar that replaces the steering wheel. This arrangement enables the operator to lead, follow or ride the vehicle over rough terrain. ☆

INSTRUMENT PANEL

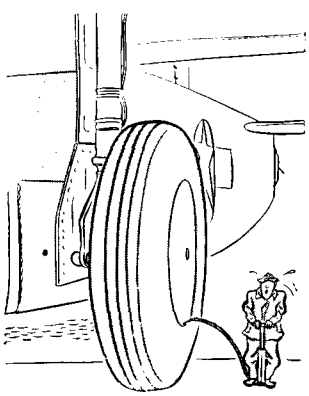
(Continued from Page 36)

and the turn and bank indicator, which are primary emergency instruments, are placed adjacent to one another.

5. The manifold pressure gauge can be installed next to the flight indicator (gyro horizon) with resulting advantage of having power instrument adjacent to attitude indicating instrument for power-attitude set-up.
6. With the manifold pressure gauge installed next to the flight indicator, the pilot with one horizontal sweep of his eyes can go from power indications through lateral and longitudinal attitude indications and by continued glances check the other flight instruments.
7. Because of their central location, there is no parallex error in reading the turn and bank indicator and the turn indicator. (Parallex error is that resulting from reading the instrument from the side, thus giving an untrue picture of the actual position of the indicator pointers.)
8. The rate of climb indicator is in the least conspicuous place. (Instructors waste much time teaching students not to use this instrument except when establishing a desired rate of descent and, in a few instances, a desired rate of climb. If the instrument is in a prominent position, it attracts the student's attention, giving him a tendency to attempt to use it to fly level.)

Modifications of the instrument panels of aircraft already in service so as to incorporate the new Standard Flight Instrument Panel are being carried out in the field as rapidly as possible. New aircraft will come off the production lines with the panel installed. Further, by approval of the Joint Aircraft Committee, the panel is now standard for all synthetic instrument training devices.

It is appreciated fully that this new panel arrangement will not satisfy everybody. However, the Standard Flight Instrument Panel represents the best thought and experience on the subject available in the AAF and, as such, is presented without apology. ☆



"Three million, five hundred thousand and one, and two, and three . . . !"

—F. WILKINSON

Flying Safety

Suggestions from the Office of Flying Safety, Headquarters, Army Air Forces, in the interest of accident reduction

THESE ITEMS ARE FOR EDUCATIONAL PURPOSES AND ARE NOT TO BE CONSTRUED AS DIRECTIVES

Bail-out Training. Flying cadets at Marana Army Air Field, Ariz., are getting realistic practice in bailing out of fighter planes along with regular flying training. Cadets jump from a mock-up of a fighter cockpit mounted on a platform about 20 feet high; harnesses are attached to a line from another tower nearby. After falling free for 10 feet they are jerked to a stop by a counter-balance.

Tower on Wheels. Advanced trainees at Shaw Field, S. C., receive landing instructions and advice from a portable control tower parked near the runway in use. The 18-foot tower is completely weatherproofed and wired to plug into the night lighting circuit. Mounted on four discarded BT wheels, it was constructed of ordinary lumber by the sub-depot from plans submitted by the operations and communications officers. It is towed by jeep and may be removed from the flying field when not in use.

Runway Status Diagrams. Safety-minded officers at Langley Field, Va., have devised a novel method to keep aircrews informed on status of runways. Diagrams of the field's runways are mapped on sidewalks outside operations office exits. In addition to showing transient crews the exact location of all runways, construction work and other hazards are marked on the map. A quick glance tells the story of the field's condition.

Many airbases rubberstamp a diagram of the field's runways on the back of Form 23. Any help offered to make transient pilots more familiar with a field's layout and current condition contribute to safer operations.

Fighter Safety Club. To stimulate pilot interest in flying safety and to reward safe pilots with clear accident records, the 72d Fighter Wing has organized a Fighter Safety Club. Pilots receive leaves of two to five days when they become eligible for three types of club membership.

A pilot who flies fighters for more than 50 hours without an accident caused in any way by pilot error is eligible to become a "pilot member." Reward for this accomplishment is two days leave. "Senior members"—pilots with more than 75 hours accident-free time—get three days leave. "Command members"—those with more than 175 hours—may take five days leave.

The base flying safety officer submits names of pilots when they become eligible for various classes of membership to the commanding general of the wing. Names are checked against accident records. If pilots are qualified, they may take the appropriate leave as soon as it does not conflict with training or other schedules.

Any disciplinary action against a member of the safety club, resulting from careless or negligent flying, immediately cancels his membership, and he must start over again.

Safety Award. A ferrying group at Love Field, Texas, stimulates interest in aircraft accident reduction by awarding this flying safety plaque to the squadron having the

best monthly safety record. Award is made on a basis of the least number of pilot error accidents per 1,000 hours of flying time. The plaque is presented to the winning squadron's commanding officer at a review before the entire group. It is then displayed in the Officers' Club.

Servicing Hints. Combat crew training school at Clovis, N. M., forbids servicing of airplanes during severe sand or dust storms. Static electricity builds up on airplanes and servicing equipment to a greater degree during these storms and sand and grit are more likely to get into fuel and oil systems.

Careless Gun Handling. At a western training field recently, a B-24 tail turret gunner was preflighting his guns on the ramp before take-off. Another B-24 was parked about 100 feet behind. A sudden burst from the tail guns hit the parked plane, and the resulting fire destroyed the cockpit and flight deck. Two crewmen working in the airplane were injured seriously.

The gunner had failed to observe local and training safety regulations. He had placed a round of live ammunition against the cartridge stop and was preflighting the guns without fire pin restrictors in place. A court martial helped the gunner repent for his error, but the damage was already done. Common sense safety precautions prevent this type of accident.

Airfield Housekeeping. Bits of metal, screws, stones and other debris scattered on airfield pavement cause serious damage to airplane tires and may result in costly aircraft accidents. To correct the problem, the Chief of Engineers has directed post engineers at AAF stations to require frequent cleaning and policing of runways, taxi strips and aprons to keep them clear of material which might cut or bruise tires.

Two-Way Crash Radio. Crash ambulances at Hunter Field, Ga., are equipped with reclaimed two-way radios to facilitate direct communication between ambulances, operations and the hospital. If information or more equipment is needed at the scene of the crash, the ambulance can transmit direct to the hospital, tower or airplane.

New Flight Control Center. The Office of Flying Safety opened its 24th Flight Control Center at Miami, Fla., on August 16 simultaneously with the establishment of a CAA Airway Traffic Control Center. The new centers were opened to facilitate control of overseas and Pan American air traffic formerly handled by overloaded Jacksonville centers.

P-40 Backfires. Backfires in P-40 engines can cause plenty of trouble if they are violent. A recent accident report concerning an engine failure on take-off revealed that the hot air door in the carburetor airscoop was jammed completely closed. The hinge pin was sheared, apparently by a backfire, making control impossible. OFS recommends a careful inspection of the airscoop after backfires either on the ground or in the air.

Plane Boners

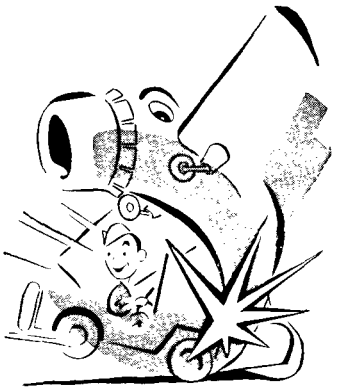
THE PREVENTION AND INVESTIGATION DIVISION, OFS, IS COMPOSED OF VETERAN FLYERS. THESE REPORTS INCLUDE COMMENTS BY THESE VETERANS ON RECENT ACCIDENTS. READ AND HEED.

MERRIAM, KAN.—A B-24 on a routine training flight crashed into a residential section after the pilot buzzed his wife's home and stunted over the area for 30 minutes. Three crew members were killed, three others injured and three civilians were seriously hurt. One house was burned to the ground and several others were damaged. The pilot who survived the crash is crippled for life.

OFS COMMENT: No matter what punishment is meted out for his flagrant violation of regulations, this pilot will carry his scars and a heavy conscience to his grave. Low flying and showing off can result in only one thing—trouble and plenty of it. The only place for low flying is in low-level combat missions. It seems pointless to risk aircrews and valuable property in this country just because a few hot pilots feel their oats and want to show off like small boys.

LOVE FIELD, TEXAS — A guard on duty on the ramp carelessly drove his jeep into the tail of a parked AT-7. Damage amounted to several hundred dollars and many valuable man-hours of repair time.

OFS COMMENT: Here's one that cannot be blamed on a pilot. The guard admitted that while driving around the planes he was supposed to be protecting, he looked the other way for a moment and crashed into the trainer. Because of his lack of alertness, the guard was fined and restricted by a summary court. Proper notation of the proceedings was entered in his service record.



CINCINNATI, OHIO — The pilot of a P-39 bailed out because of engine fire. The jump was successful but the pilot was burned severely on his hands and face.

OFS COMMENT: If this pilot had unfastened his shoulder harness and safety belt before jettisoning the door he probably would not have been burned. The opened cockpit created a draft, sucking the flames in around the pilot while he struggled with the safety belt and shoulder straps.

ROMULUS, MICH. — The pilot of a BT-13 landed with the nose high. The plane dropped in and groundlooped, damaging the gear, propeller, engine and wing.

OFS COMMENT: This pilot was an experienced ferry pilot with 22 months of transport time behind him. He hadn't flown a BT-13 during that time. This accident is further proof that no matter how good a pilot is he can get rusty if he fails to keep up with the equipment he uses. A more careful landing check and a little less cocksureness might have prevented this accident.

HERMANN, MO.—A P-40 was flown so low over the Missouri River that the propeller struck the water, breaking the shaft. The pilot attempted to pull up and belly-land in a nearby field. The plane crashed and burned. The pilot was killed.

OFS COMMENT: Another case of a pilot signing his own death warrant by indulging in foolish and unauthorized low flying. A board found the fatality occurred not in line of duty.

CASPER, WYO.—The nose wheel of a B-24 collapsed while it taxied causing major damage to the nose section.

OFS COMMENT: Investigators found that a linkage in the shimmy damper assembly had been installed backward. When a turn was attempted the link broke, allowing the nose wheel to shimmy and break off. Greater care on the part of maintenance inspectors would have prevented this accident. AAF maintenance workers must take every precaution to save lives and materiel. This kind of "goof off" doesn't help.

NEWARK, N. J.—Pilot in a P-51 took off with a badly worn tail wheel tire. Aware of this condition, he attempted to make a wheel landing at his destination. Instead, he brought the plane in on three points right on the end of the runway. The main wheels reached the pavement but the tail wheel struck the edge of the concrete and collapsed. The airplane then bounced and came in on three points again—two main wheels and the propeller. No injuries resulted but the airplane was badly damaged.

OFS COMMENT: This pilot's technique not only went to pot—he had more than 100 hours in P-51s—but he took off when he knew his equipment was in a dangerous condition. Even experienced pilots get into trouble during a momentary lapse of alertness. The only answer is eternal caution. ☆

LIFELINE TO THE USSR

(Continued from Page 27)

20, the temperature went to minus 40, then zero, then plus 5—and that's the way it went all winter.

The fact that we are delivering aircraft to an Ally who does not speak our language presented yet another problem. The Red Air Force pilots had never before seen the planes which they were to fly and the language difficulties were enormous.

Captain Wolfson reported his experience with the problem of checking out the Russians. "A young Soviet pilot with a girl interpreter came over to my P-40 for a check. The Russian climbed into the cockpit, the girl got on one wing, and I got on the other. He asked me only four questions and then took off.

First thing he wanted to know was, 'How do you start it?' I told the girl, she told him, and he said *Da*—Russian for yes. Then he asked for the maximum pressure and the rpm for the take-off. His next question was, 'How do you keep the oil temperature and the coolant temperature up?' Finally, he wanted to know how to operate the radio. Then he took the plane up for its test run. And he knew how to fly it, too."

Captain Wolfson's experience took place before a regular system for checking out the Russians was adopted. Maj. Fredrick Kane, operations officer at Ladd Field, was in charge of that problem and he solved it handily.

"For a while," said Major Kane, "we used interpreters in our bigger ships, but that didn't work out too well because there were too many technical terms which the interpreters could not be expected to understand.

So we fell back on the universal language of all airmen—signs. In A-20s, a Russian would lie prone in the passageway directly in back of the pilot. We would point to the instrument recording the manifold pressure used for the take-off and the Red Air Force flyer would memorize it. If we reduced the power at a certain time, we would point to the proper instrument. They knew exactly what we were doing, and we got along very well.

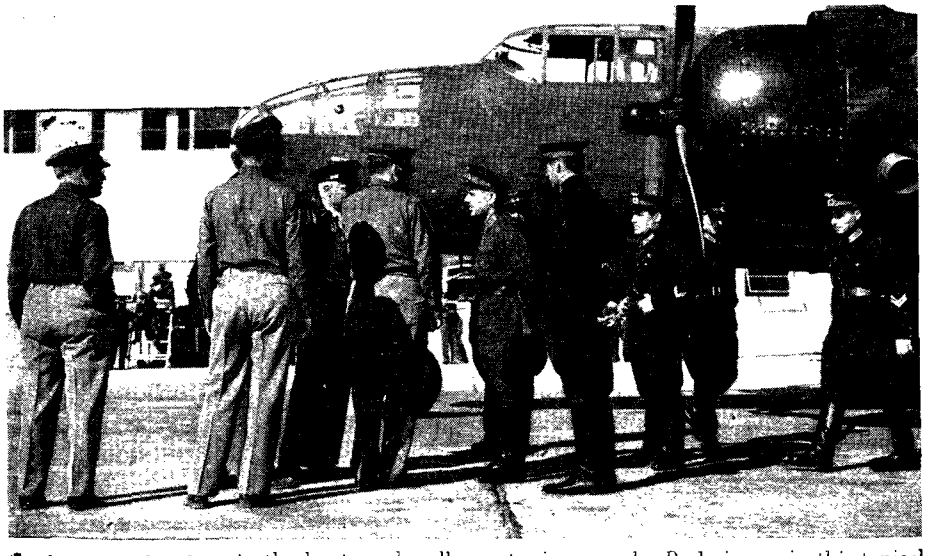
"For fighter planes, we used the cockpit check and lectures. Some of our men spoke Russian and they bore the brunt of this work. All Tech Orders were translated into Russian and mimeographed.

"One of our most unusual situations occurred with the tower operations. The Soviets had never used radio control before. They said that if everything was clear, they just came in. We explained that our regulations demanded the use of radio control, and they learned it our way.

"That gave us a problem in the tower. Our few Russian-speaking men had more important things to do than to become tower operators. We found a civilian who could speak both languages, but he didn't know anything about aircraft procedure. When an airborne Russian called in for a landing clearance, the civilian explained what was wanted to the tower chief, he outlined the necessary procedure, and back it went in Russian to the pilot. Now, of course, we have lots of people up there who talk both languages.

"Those Russians are good. Remember, they have a ferrying problem as complicated as ours, or worse. But they got those planes to the battle-front and made good use of them."

Today, the Northwest Route is nothing more than a routine ferry hop. But many good men were killed before the tremendous problems were licked. No one can say to what extent the planes ferried along the route helped turn the tide at Stalingrad and enabled the USSR to throw back the enemy. The Russians know very well that in bridging the gap between Great Falls and Fairbanks, many Americans died for the same purpose as the defenders of Moscow. As one Soviet general said, "There are graves of those who died among the snows of this route which mean as much to us as those at Smolensk, Stalingrad, or Sevastopol. We feel they died fighting beside us." ☆



Costume contrast. note the boots and pull over tunics worn by Red airmen in this typical scene at Ladd Field, Fairbanks, American terminal of the Northwest ferry route to the USSR.

Rendezvous

(Continued from Page 1)

glide path transmitter as the localizer transmitter and the localizer transmitter as the glide path transmitter. . . .

Pfc. J. T. Wylie, and Pfc. Arthur J. Serrabian, Greenwood, S. C.

Right, and when we find the culprit who switched captions he will have one stripe less than either of you. —*Ed.*

"Smokey?"

Dear Editor:

. . . In regard to the cover picture of the August issue of AIR FORCE, I am certain of the identity of the paratrooper. It is Pvt. Robert J. "Smokey" Noody, of New York, of the 82d Airborne Division and who has been awarded the Bronze Star in Normandy. The picture was made on D-day before invasion and was sent to me by Private Noody after his return to England. . . .

Catherine Balowsky, Charlotte, N. C.

Everybody agree? —*Ed.*

Mistaken Identity

Dear Editor:

SALLY—NOT BETTY

. . . On page 24 of your September, 1944, issue of AIR FORCE you have identified the aircraft on the right side of the page as a type BETTY when in reality it is a type SALLY MARK III.

As identification instructor, specializing in Japanese Aircraft, of the Will Rogers Field CCTS (PR), I wish that in your next issue you would make the necessary correction as all my student pilots are avid readers of your publication. . . .

Lt. Haven Waters, Oklahoma City, Okla.

. . . Let me be one of perhaps several thousand who call your attention to the incorrect identification. Unless I'm losing my mind and eyesight, the plane is beyond doubt SALLY. As the first photo interpreter with the 5th Air Force in the SWPA, I shall never forget my dear friends BETTY and SALLY. . . .

Maj. J. E. Smith, Muskogee, Okla.

. . . According to the latest information we have on the subject of aircraft recognition and identification, this particular plane is the SALLY. . . .

Pvt. Edward R. Austin, Truax Fld., Wis.

. . . An error was immediately noted. . . .

Paul E. Yost, San Antonio, Texas

We are building a special dog-house for our picture editor. —*Ed.*

Excitement

Dear Editor:

. . . On the inside back cover of the September issue of AIR FORCE appeared a picture of the wounded in a C-47. Two of

(Continued on Page 51)

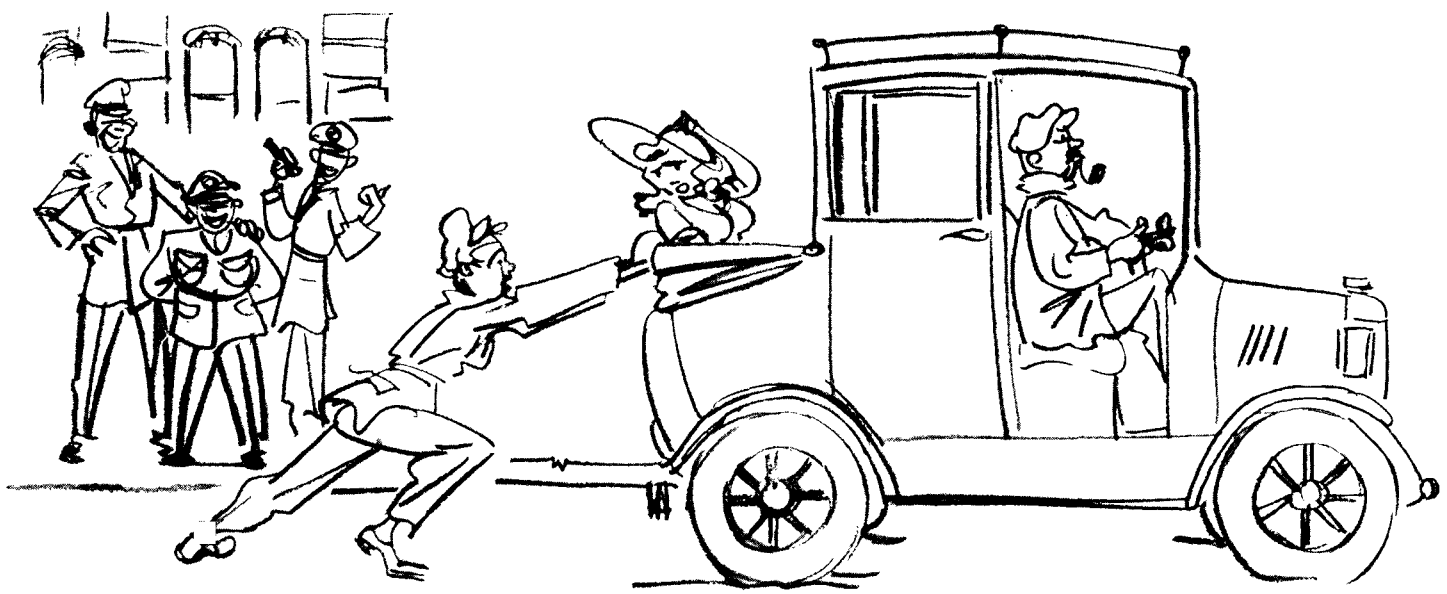
"OFF THE BEAM" by CAPT. WILLIAM T. LENT

London Leave

"Pink elephants, snakes, gremlins and now British tea!"

"I don't know whether it's a restaurant or theater. I've been in line only an hour."

"No, it isn't your mustache, Malcolm, it's just closing time."



"I can remember when it was fun to run out of gas on a date."

On the Alert

TIMELY ADVICE FROM THE AIR INSPECTOR

Administration ★ Supply and Maintenance ★ Operations and Training

Matter presented here are comments only and are not to be construed as directives.

EMERGENCY EQUIPMENT

Inspection of planes to insure that they are stocked with all authorized emergency equipment avails nothing if flying personnel fail to take advantage of such facilities when a mishap occurs. Take the case of the Allied fighter pilot forced down in kangaroo and kunai grass nine miles from his South Pacific base. Apparently he figured the hike back would be a cinch, for he started out minus his Very pistol, emergency rations and other equipment furnished him for just such an occasion. A search party found him 36 hours later in a swamp with water up to his neck and mosquitoes covering his face. He was too exhausted to move. Native trackers carried him back to the base.

FUEL TRANSFER SYSTEM

A number of forced landings due to malfunction of the fuel transfer system have been reported. Investigation has revealed that in numerous cases pilots neglected to check the system until shortage of fuel prevented continuance of flight to an adequate airport. All tanks and fuel transfer systems should be checked before reaching the "point of no return."

AIRPLANE CRASH FIRE FIGHTING

Attention of all concerned is invited to TM 5-316, "Airplane Crash Fire Fighting," which discusses equipment, fire and rescue hazards, crash operations and training. One sentence in the manual—"There is no substitute for common sense"—carries volumes of sound advice.

LETTERS OF TRANSMITTAL

To conserve manpower and paper, every effort should be made to eliminate letters of transmittal for forms and reports whenever feasible. Particular attention should be directed toward elimination of letters transmitting routine material. (Sec. III, WD Cir. 310, 1944.)

PROPER PACKING

Substantial damage to materiel in shipment is due to improper packing and car loading. Attention is invited to the provisions of Sec. VI, WD Cir. 316, 1944.

BOMBER CREW TIPS

Each crew member should have a thorough knowledge of his particular section of the plane so that in an emergency he can immediately inform the pilot of the exact nature of the trouble and also make repairs if necessary.

The pilot should be prepared to cope with difficulties arising from engine failure or flak damage to gas tanks. Even when one engine is lost, straggling behind a formation can be avoided if increased power is utilized without delay.

TANK CARS AND TRUCKS

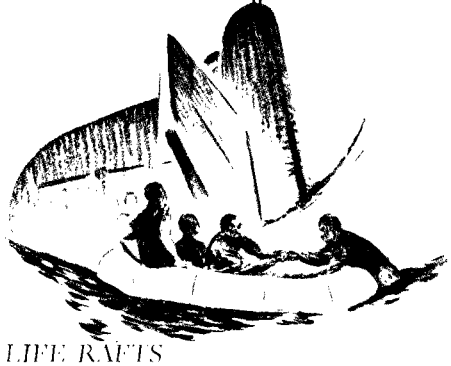
Because aviation gasoline transportation facilities are taxed to the limit, tank cars and trucks should be promptly unloaded and released.

DISABILITY PENSION

Each enlisted man who is discharged for disability has the right to file an application for Disability Pension. The application should be filed before discharge, while necessary clinical and other records are readily available for transmittal to the Veterans Administration. (Sec. IX, WD Cir. 293, 1944.)

MAIL ORDERLY

Perhaps there is no more important link in the Army's entire mail system than the mail orderly. If he doesn't perform his duty properly, the Army Postal Bulletin points out, all the planning and effort that has gone into the handling and dispatch of mail across thousands of miles by land and air will have been in vain.



LIFE RAFTS

Pertinent TOs governing the equipment and inspection of life rafts must be complied with prior to a plane's departure from its home station for overseas.

DRYING AERIAL FILM

When aerial film won't dry during a complete cycle through the A-5 or a similar machine, use of two dryers in tandem will solve the problem. This advice is passed on by a field air inspector, who warns that a good size loop of film should be left between the machines to compensate for variation in speed of the two driving motors. In areas where flies and gnats are numerous, a cheese cloth "tunnel," large enough to accommodate the loop, should be used between the dryers because the film emulsion is usually tackiest at that point.

HOW TO MAKE THE ENEMY HAPPY

Satire was used to improve AAF motor vehicle maintenance in New Guinea. Posted on the bulletin board was a letter of commendation from "Hq. Japanese Imperial Rat's Nest" to "Personnel who give heroic and continued inattention to 1st and 2d Echelon Vehicle Maintenance." The letter cites for special praise such negligence as:

"*Failure to have oil changed and vehicles properly greased.* This results in many burned out parts and general deterioration of vehicles. Velly good!

"*Failure to check inflation of tires.* This results in premature wearing out of scarce rubber. The Emperor is really tickled about this.

"*Failure to keep wheel lugs tight.* The extra wear on tire and wheel bearings as a result of this practice keeps the roads to the repair shops hot and also warms the heart of Tojo.

"*Failure to give prompt attention to small repairs.* This necessitates parts replacement which could have been avoided by earlier attention. The new parts occupy shipping space that otherwise could be used for mail and food.

"*Driving like hell.* Enough broken springs, mangled fenders, caved-in grills, and torn-

off door handles can equal in cost the destruction caused by an air raid. The thoroughness of this contribution has been exceptionally noteworthy."

Q and A

Q. Must letters of recommendation accompany an application for officer candidate school?

A. Letters of recommendation are not required by current regulations and they are considered unnecessary and undesirable. (Sec. I, WD Cir. 319, 1944.)

Q. Does a provisional unit, as defined by WD Cir. 241, 1944, submit a morning report?

A. No. Personnel on duty with provisional units will be carried on detached service by the organization to which they are permanently assigned. The parent organization will submit strength returns for all assigned personnel. (WD Cir. 241, 1944.)

Q. Where are qualifications outlined for awards to motor vehicle drivers and mechanics?

A. In Sec. II, WD Cir. 248, 1942. This circular should be checked by commanders concerned, because many qualified drivers and mechanics have not received awards for which they are eligible.

Q. Is the wearing of a miniature aviation badge authorized?

A. Yes. With the exception of flight nurses, persons authorized to wear the aviation badge may wear on their shirts a miniature badge, approximately two inches from tip to tip, if they so desire. (AR 600-35, Ch. 1, 29 July 1944.)

Q. May base units have an insigne of their own?

A. The adoption of an insigne by any AAF base unit with allotted enlisted strength of 100 or more is authorized, subject to approval of the Commanding General, AAF. The insigne may be used on aircraft permanently assigned to the base unit, on patches to be worn on pockets of flight jackets, field jackets, coveralls and work uniforms, on unofficial stationery and in decorating recreation buildings, barracks and mess halls. (AAF Ltr. 35-46, 1 August 1944, Subject: "Insignia for AAF Base Units.") ☆

AIR WAR IN THE SOUTHWEST PACIFIC

(Continued from Page 35)

With the stage set, the first act of the play for Biak came on May 27 when Allied troops established beachheads on the island. Although the landings were made at little cost, stiffening enemy resistance indicated the Japs had a strong cast lined up back of the beaches to keep us from stealing the show. Jap army and navy aircraft were rushed hurriedly to the scene and the number of fighters intercepting our attacks doubled. Thirteen enemy bombers, of which six were destroyed, bombed and strafed Allied ground positions. On June 2 there were 13 enemy bomber raids. We had a strong cast in the area, too, however, and 59 Jap planes were destroyed, with 15 probables.

Displaying a measure of his former daring, the Jap attempted to reinforce Biak on June 8. Two cruisers and five destroyers heading for the island were successfully attacked by 10 B-25s north of Vogelkop. One destroyer was sunk, another was left in a sinking condition, a third was seen blazing furiously and a fourth also was set afire. Late that night, the remnants were observed bearing northwest.

General Kenney's technique of pressing one gain while paving the way for the next jump was evidenced by a bold Allied air attack against the Jefman-Samate area on June 16. Seventeen B-25s with fighter cover destroyed more than 50 enemy planes in combat and on the ground and sank several ships. Our fighters estimated that there had been between 85 and 90 Jap planes on the ground, waiting to intensify resistance at Biak. The plan was nipped in the bud and at Biak the end was in sight. During the week of June 24, all Biak airfields were occupied by the Allies, and to make things even more difficult for the Jap to supply and reinforce his battered garrisons, 5th Air Force search units were regularly knocking down enemy transport planes operating along the formerly safe routes between the Philippines and southern areas.

Our persistent attacks in the Jap's backyard paid off on July 2 when an Allied amphibious force landed at Noemfoor, occupying Kamiri airstrip. Lack of air opposition could mean only that the enemy had at last conceded defeat in western Dutch New Guinea and had abandoned it as untenable.

July 27 saw the first of our medium and fighter units over the Halmaheras, when B-25s joined fighter-covered B-24s in an attack against airdromes in the islands. Thirty enemy planes were destroyed on the ground and 15 in the air against a loss of two planes for the attacking force. The major result of this attack was not the actual destruction of enemy aircraft but the fact that it forced the Jap to evacuate to the Philippines all of his air strength except that needed for immediate defense.

To the south, the final step in the retaking of New Guinea came on July 30 when an Allied amphibious force with strong air cover landed at Sansapor in the Vogelkop area. Thus, Manaokwari was added to the by-passed roster, leaving a Jap garrison of some 15,000 effectively cut off. Following this occupation, only token enemy air activity was encountered in the Halmaheras, and the islands became a happy hunting ground for Allied planes.

During August, our bombers pounded airfields and shipping in the islands virtually at will. Days went by without a single case of interference. Ships and parked planes were destroyed in quantity with very few losses on our part.

This lack of opposition continued into mid-September, even over the southern Philippines where our bombs had begun to fall with regularity. Then on September 15, with almost monotonous repetition, an Allied amphibious force, preceded by air and naval bombardment, landed on Morotai in the northern Halmaheras without opposition. Not a single Jap rose to question our dominance of the air.

Thus, Japanese tactics and strategy had become an almost unfathomable pattern of confused defense. With the hysteria of a man overturning furniture in the path of a pursuer around a locked room, the enemy had continued to throw reinforcing troops into our line of advance, knowing full well that they inevitably would become lost battalions, isolated and strangled.

The Jap obviously is building for a desperate stand in the Philippines where his own Rabaul position is reversed. Our bases are drawn into a thin line while he has the freedom of dispersal on an unlimited number of well stocked and equipped airbases. His internal supply lines are well covered by land-based aviation.

Yet, even with a large concentration of air power, good communications and a battlefield in his favor, he has the defensive attitude of a beaten man. Disorganized and demoralized, he is being allowed no time to dress his wounds and regain his balance.

A short time ago, this statement was heard over the Japanese Domei radio: "Frankly, the war situation in the Pacific is not favorable to the Japanese."

Frankly, we agree. ☆

COMBAT MAY MAKE YOU LAZY

(Continued from Page 5)

without working for it persists—but the reason is gone. It's damned foolish then for us to lie on our backs and pretend we're winning the war just by wearing our ribbons.

Another thing. We sometimes have chips on our shoulders for men who have been in this country sweating out gasoline rationing while we've been trying to de-luft the Luftwaffe. We don't realize that a lot of these guys are honestly as sore as boils because they've been stuck in this country when they wanted to be doing what we were. Also, we seem to forget that some of the jobs in the States are damned hard work.

Well, it's their chance now. If there's any real justice in the AAF redistribution program or in various personnel rotation projects, combat men have to be able to take over jobs at home while those who have been here all the time go out to meet the Nips.

This should be a good thing. It gives people with lots of missions behind them a chance to settle down and live forever, free from the dangers of combat. It gives men who have been griping their heads off in Kansas a chance to collect a couple of stories to tell their grandchildren. And it should be good for the AAF. Getting people who know what it's all about, who understand the problems, into training and administrative jobs should mean that those jobs will be done better. Combat experience will have a chance to get into the nooks and crannies where it never was before.

But obviously this entire plan falls apart if even a small percentage of the returnees are uninterested or lazy. Their attitude will work a hardship on all of us, including those who damned well would like a chance to spend some time near T-bone steaks and chocolate milkshakes.

I'm trying to lay off preaching but, as I see it, those of us who meet this problem have just got to settle down, grit our teeth and go to work. When we were aviation cadets we had to do a lot of dull, routine, irritating things. We wanted our wings and we took what was dished out in order to get them. Now we're big boys and many of us have our wings plus a few Jerries or Nips. And we've got to go to work again. This time there isn't a pair of shiny wings hung out ahead of us like a frankfurter in front of a bulldog, but there's plenty to be gained nevertheless. As for the ground men with overseas stripes, they can write their own analogies. This goes for them just as much as for airerew members.

The kind of work we can do—those of us who have "had it"—is showing up at many airfields in the States where returnees have rolled up their sleeves and performed to the best of their ability. If it's a new outfit being activated and organized, a man back from overseas can help enormously. He knows what's important and what's not.

When you're overseas you hate to think that somebody at home might be doing a bad job because he read someplace that the war is over. Well, no matter what the newspapers say, we know there's plenty of war still to be fought. Those of us who have tangled with the enemy should know that better than anybody else. Yet the amazing fact is that many of those very combat men are the worst offenders when they get back to the States.

When you return, you will be well treated, probably will have your picture taken and get a nice, long leave. But after the shouting is all over, you will find there's a lot of work to be done and you're expected to help do it.

In other words, you still have a war to fight. Sorry, but that's the gen. Combat may make you lazy. If you know that and watch it, maybe you'll have an easier time than some of the rest of us have had. Good luck. ☆

Cpl. Max Finkelstein of Los Angeles vowed he would kiss the first MP he saw—if he got back safe. Max did and this is his proof.

OPERATION: REUNION

(Continued from Page 4)

who came back, few could put it better than T/Sgt. Peter Beverle, waist gunner from San Diego.

Said Peter, a small, blue-eyed guy, "The United States Army looks after its boys. There isn't a one of us who doesn't realize what was behind this rescue. The 15th Air Force had always given us extra good care, and while we were in prison we knew they would get us out somehow. For the ones who needed medicine, it came on the first planes. There's no other air force like the 15th, and no other country like ours."

As for the men who flew the 500 sorties of the main operation, one Fortress pilot spoke for all of them, "I'd like to do it everyday," he said. He gulped slightly, but he wasn't embarrassed. "Did you see the look on the faces of those guys when they stepped out on our field? That made it the best mission I ever flew." ☆

Kicking off his shoes and socks to dance on friendly Italian soil, S/Sgt. Edwin Braswell of North Carolina is seen trucking on down.

Rendezvous

(Continued from Page 46)

the wounded men in that picture are now patients in this hospital.

One is Lt. Richard Sandoz on the lowest bunk right, who was awarded the Purple Heart. The other one is Marcel Mortensen, T/5, who is just across the aisle from Sandoz.

This picture caused great excitement in our hospital. . . .

Octavia Fellin, Santa Fe, N. M.

The $100 Bet

Dear Editor:

. . . We are sending the enclosed letter to you in the hope that you may be able to help Lt. Skogsberg. . . .

"Gentlemen:

"In order to settle a bet of $100, please settle this question and submit the proof. Enclosed you will find a stamped, self-addressed envelope for your convenience. Besides the $100 bet this is a question of prestige, so please answer it promptly:

"Two planes are moving in the directions indicated by the arrows (parallel), at the indicated speeds, separated by the indicated distance. A gun with a muzzle velocity of 800 feet per second is fired from plane 'Two' at plane 'One.'

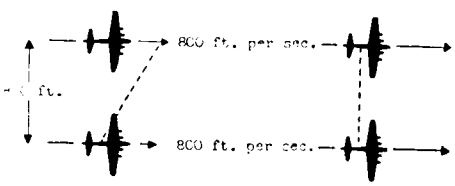


Fig. 1 Fig. 2

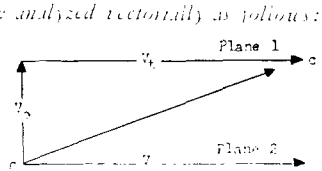
"Assuming there is no *air resistance*, and *no wind pressure*, will the gun be sighted directly on the target, or will target be given lead, and if so, how much?

"Arthur T. Skogsberg, 1st Lt., Signal Corps."

The New York Times
Information Bureau

According to the experts:

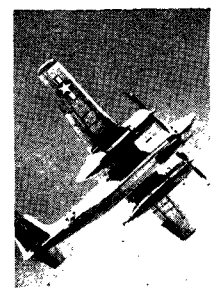
Figure 2 in your letter shows the correct line of aim for the tactical situation outlined. Ignoring bullet drop due to gravity, and bullet slow-down due to air resistance, the situation may be analyzed vectorially as follows:



The vector V_o = 800'/s in muzzle velocity; V_T is forward velocity of defending a/c is =800'/s, and is also equal to V_T, the target velocity. Adding V_o and V_T vectorially gives gc, the velocity of the bullet along path gc. The actual speed of the bullet for assumed conditions would be

$$\sqrt{800^2 + 800^2}$$

Therefore, the collision point is C if the defending gunner aims directly at the target aircraft (again ignoring gravity and bullet slow down). —*Ed.*



Our cover girl this month is a honey, as all the boys who have taken her up will testify. She's got curves just where you want them, and she is fast company.

This baby is the latest AAF plane to go into combat, and you can properly refer to her as the "Invader" when you aren't saying A-26.

You probably know another plane, the A-36, as the Invader. Here's the explanation. It seems that the name Invader was reserved for the A-26 by a U.S.-British subcommittee on airplane names back on January 13 of this year. We say "reserved" because at that time the A-26 was a classified airplane, and the name couldn't be announced.

While the A-26 was under wraps, the A-36, developed from the P-51, was establishing a good record as an attack bomber. Over in Africa some of the boys who flew A-36s thought it deserved a name of its own. They came up with the name of Invader and it caught on in a popular but unofficial sort of way.

So the A-26 is the Invader by prior claim and official action. The A-36 is officially the Mustang, same as the P-51.

Outside of that, our cover girl has few complications, as the article about her on Page 39 states. For the photograph we are indebted to the Douglas Aircraft Co., which built the A-26. And it's only fair to tell you that a piece of armament has been removed from the cover photo at the direction of those old rascals in the censor's office.

Speaking of the A-26, our picture editor in a frantic last-minute rush to make deadline for this issue came across some new shots of the attack bomber. Because we paste up our dummy layouts with photostats (fitted to proper size) of the photos to be used, he ran from editor to art department in one convulsive motion and ordered the A-26 photostats. Then he sweated out their return. Finally they came, by special courier from the photostat company, and the picture editor tore open the package while the art director stood nearby, drooling for the A-26 material. We will never quite understand what happened at the photostat company. The package contained about the right number of "stats," but none of an airplane. They all were of Errol Flynn.

From S/Sgt. Mark Murphy, our correspondent in France who wirelessed the report on Patton's air support (Page 54), comes a letter relating his darkest moment in the ETO. He says: "Somewhere near the front I had a middle-aged and slightly peculiar war correspondent wished on me. We were looking for a certain outfit and we finally found it all camouflaged in the woods with a bunch of GIs sprawled on the grass, eating. I kept asking the whereabouts of the PRO (meaning Public Relations Office, of course) and was finally directed to the medics! Just what those characters thought I was doing rushing up there at high noon with an elderly, burgundy colored war correspondent and demanding to be fixed up, I'll never know."

Maj. Walker M. "Bud" Mahurin, author of "Combat May Make You Lazy," Page 5, is one of the AAF's leading fighter pilots. Now commander of a fighter squadron in Florida, Mahurin flew with the 8th Air Force's famed Zemke Group, which at the time numbered Bob Johnson and Gabby Gabreski among its other "hot pilots."

Regarded as a perfectionist in the art of fighter warfare, the slender, easy going Mahurin in combat was quick to capitalize on an opening and smart enough to withdraw when the situation demanded.

Mahurin is not superstitious and never arms himself with talismans, but like most fighter pilots he attributes a lot of his success in the air to pure luck.

"You've got to be lucky in this business," he says. "Otherwise, I wouldn't be here now. I've made too many mistakes to let myself believe that I'm good."

Col. B. B. Cain, author of the article on SWPA operations on page 30, is one of the most experienced air officers in the Pacific. Before going to Australia in April 1942 he was attached to the RAF in England. In the Pacific, although not a combat officer, he flew on many missions. He has more than 100 combat flying hours, took part in the Bismarck Sea battle, and received the Air Medal for one action in which his plane sank a Jap warship. A regulation now forbids him to fly combat; he's too valuable a man to risk that way.

Devotees of home cooking may want to know more about the special dish featured on the inside back cover. This month's Pass It On Girl is Jeanne Conrad, a Conover model. Jeanne is from Rochester, N. Y., is 20 years old, 5 feet, 7 inches high; weighs 115 pounds, and her BWH measurements are 34, 25, 35. She has grey-blue eyes and dark brown hair. If you don't know what BWH means, kick it around awhile. You have a friend who will know. No, captain, not *Boy Whatta Honey!*

We really don't ask you for much, so when we say we still need copies of January and February 1943 issues of Air Force for our files we hope you'll be able to dig up some for us and send them in. ☆

CROSS COUNTRY

MEN of the AAF—including the hundreds whose lives he saved, though they never knew his name—owe a debt of gratitude to an officer of the Corps of Engineers, whose death has recently been reported. He was Lt. Col. Linn M. Farish, who parachuted into the interior of Yugoslavia for three different ninety-day periods during the last year to plot "escape maps" and lay out improvised airfields for Allied airmen who had cracked up on Balkan missions or been forced to bail out in enemy territory.

In addition to the technical data he compiled, Colonel Farish secured the cooperation of Marshal Tito and his Partisans in rescuing flyers who had fallen into enemy hands, or were hiding out in the countryside. He personally led several expeditions to repatriate men who were being sheltered by friendly Yugoslavs, but whose injuries prevented them from reaching a field from which they could be flown out. On one occasion, in company with Lt. Eli Popovitch of Chicago, he made a five-day trip on horseback to bring in a wounded flyer, crossing enemy lines half a dozen times during the journey. On another, the two men saw a B-24 fall in a mountain area, and spent two weeks tracking down the survivors and moving them out in ox-carts.

Colonel Farish was killed in a plane crash late in September, and it was only recently that details of his work were taken out of the "secret" file in which they had been accumulating since he began back in September 1943. Some idea of how he felt about his job may be gathered from one of his reports in which he wrote: "The United States of America is mentioned in the same breath with God in Yugoslavia." If it is, a large part of the credit is owing to such officers as Colonel Farish.

☆

A special effort is being made to get men out of the guardhouse and back on the job. General Arnold has ordered a rehabilitation program for garrison prisoners—those confined to base or post guardhouses—and one big reason is that the fullest possible duty performance is needed from everybody. The program is underway at 110 U. S. continental bases, under the supervision of the Office of the Air Provost Marshal.

A prisoner who shows proper spirit is given extra privileges—more freedom, less guarding, possibly different quarters. He is given refresher courses and shown how to keep out of trouble in the future. Special training suited to his needs in certain military occupations is given and a record kept of his progress. Special schooling is given those having little education. Self-government under supervision is encouraged.

Life in the lockup won't be luxurious, of course. Guardhouses still will be places where self-respecting GIs won't want to be. There still will be strict discipline and hard labor as regular routine, but when a man shows a real desire to behave and improve his situation, he can get out quicker and be a more useful soldier.

☆

A reservoir of male pilots being available for all flying assignments at home and overseas, all WASP personnel will be in-activated on December 20. In place of an honorable discharge, to which WASPs would have been entitled had they been on military status, each will receive a certificate of service. They will return to civilian life with the knowledge that they played an integral part in shaping the AAF and have demonstrated, in the words of the Commanding General, that, "Women have the ability and the capacity to perform the most difficult jobs in flying."

☆

Men whose duty assignments will keep them in Army of Occupation posts after V-E day comes or who will be awaiting their turn for shipment home will benefit from an extensive educational program now being shaped by the War Department. To the extent that the military functioning of a unit permits, part of the duty day previously devoted to military training will be utilized for academic or vocational work under qualified instructors drawn from enlisted and officer personnel. Men will be encouraged to pick up their schooling from any point from the sixth grade through the first two years of college, thus preparing them for continuation of their education at home under the "GI Bill of Rights." The contemplated courses will cover science, pre-professional and liberal arts, with free choice to the individual in line with his postwar plans. Use may be made of some educational facilities overseas, and there may possibly be a provision for study at foreign universities.

☆

Our correspondent in Britain sends along a recent addition to the enlisted man's vocabulary. Over there they're calling the newly authorized gold stripes for overseas service (one for each six month's period spent outside the U. S.) "Hershey Bars."

☆

With combat losses lower than anticipated and Allied air superiority manifest in all theaters, pilot trainees now will get an additional five weeks of training prior to graduation.

This means that men who were scheduled to graduate on October 16 will not receive their wings until November 20th. Detailed curricula for the additional time to be spent in each phase of training have been drawn up and go into effect on October 16.

☆

Physically qualified Regular Army officers of troop age who have served two years in staff or overhead assignments in the continental U. S. without overseas service since December 1941 will be released for assignment to command positions in the U. S. or for any overseas assignment, according to a recent directive. "Troop age" is defined as 42 or under for a major, 45 or under for a lieutenant colonel, and 48 or under for a colonel. It is planned that all will be reassigned by January 1, 1945. The directive is not inflexible, since in some cases the efficiency of an office might be affected. Exceptions must be submitted to the Deputy Chief of Staff for his personal approval.

☆

If you've been scrounging through captured enemy material in search of a "dud" shell for the postwar mantelpiece—don't. A War Department restriction now prohibits bringing or sending any explosive items home as souvenirs. Firearms are also taboo, as are nameplates from captured equipment, or any articles whose value for service, research, training or scrap outweighs their charm as trophies. In any case, an enlisted man or officer bringing any souvenirs home must have a certificate, in duplicate, describing the article, and signed by his superior officer. Theater commanders will determine what items in the various areas have value for military purposes.

☆

Further details on the demobilization plan to follow V-E day are sparse, but evidence is accumulating on how the War Department is dealing with the general problem of getting men back to civilian life as they become surplus.

Disability or Convenience-of-the-Government discharges can now be obtained by enlisted men who do not meet present minimum physical induction standards and for whom no appropriate assignment is available. The new ruling applies equally to men serving overseas or in continental assignments. The Medical Department will pass on the physical status of the man involved, and the CO under whom he is serving will determine whether or not an appropriate assignment is reasonably available.

☆

Veterans who are eligible for discharge after hospitalization are getting active assistance in seeking Federal employment under a new AAF program. Local Rating Boards for civil service examinations are being established at all station, regional and convalescent hospitals. Under this program veterans

may be examined and certified locally for Federal Civil Service positions on a country-wide basis prior to leaving the hospital.

☆

High over the Ammoniak oil refineries at Merserburg, Germany, on September 28, an AAF bombardier pressed a button, and that was the millionth ton of bombs dropped by an AAF plane in 33 months of war. In recording this milestone, General H. H. Arnold noted that it has "cost us men and materials." Battle casualties of the AAF since Pearl Harbor stand at 72,000 (dead, missing, prisoners of war and wounded) plus 5,300 non-battle casualties. A total of 14,600 have been lost on combat missions, and the training of 163,147 pilots, 31,293 bombardiers and 31,906 navigators has cost us 1,000 planes in flying accidents. Four thousand more have been worn out and 2,500 checked off as "no longer fit to fly." The breakdown of flying hours shows that 4,342 hours have been flown domestically for each plane lost or worn out, while the fatality rate, in training, of 2% means that one man is killed for each 2,700,000 miles flown, a distance equal to 100 trips around the world.

☆

Recent shifts in command assignments in the AAF include the appointment of Brig. Gen. Wm. W. Welsh as Assistant Chief of Air Staff, Training, and the assignment of Maj. Gen. Wm. O. Butler as Commanding General of the 6th Air Force. A former incumbent of that post, Maj. Gen. Ralph W. Wooten, is now Commanding General, United States Army Forces, South Atlantic.

☆

As of July 1, 1944, a 50% increase in pay has been authorized for officers, warrant officers, nurses and enlisted men required to participate in frequent glider flights, but who are not in flying-pay or parachute-jumping status. Such increases shall not exceed $50 per month for enlisted men, or $100 for other personnel.

☆

Taking note of some of the strange and wonderful designs that have been etched onto field jackets and fatigues, the War Department has directed that the practice be discontinued immediately. Drawings, designs, mottoes, names—they're all out. Only authorized and prescribed decorations may be worn.

☆

Reversing the customary, the editors of AIR FORCE have a change of address to report to its readers. From now on, it's the AIR FORCE Editorial Office, One Park Avenue, New York 16, New York.

PICTURE CREDITS

THIRD COVER: T/Sgt. Roger Coster, AIR FORCE Staff Photographer; Conover model. 22: AIR FORCE staff photograph. 39: Douglas Aircraft. 57: AIR FORCE staff photograph.

All other illustrations secured through official Army Air Forces and Signal Corps sources. Requests for prints of photographs for official use and publication appearing in AIR FORCE should be directed to the AAF Photographic Library, Headquarters, AAF, Washington 25, D. C.

The Intercom

As a medium for the exchange of ideas, AIR FORCE presents these answers to its Question of the Month. Replies are those of personnel recently returned from combat duty in the areas indicated.

QUESTION: What was the worst boner you saw pulled in combat?

T/Sgt. Burton Eaton, radio gunner, Southwest Pacific: "I was changing the feed system on the waist gun and I stopped to go down to the strip and watch some fighters come in. Two other men said they would fix my gun for me. That was my big mistake. I was lead radio man on the next mission and I didn't get a chance to check my guns until we were attacked. That was another mistake. I opened up on a Zero and nothing happened. Somebody had put my belt switch in backwards. I really learned a lesson from that. From that day on, nobody touched my guns but me."

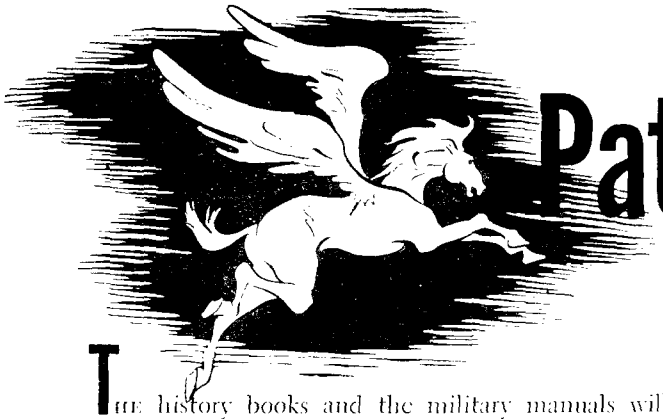
Lt. Donald Ryerson, navigator, England: "On a bomb run over Osnabruck, one group was flying about 500 feet below another group. They swung over underneath the high group during the run. There should have been inter com communication to warn the bombardiers not to drop their bombs until the path was clear. And some of the other members of the crew should have informed the bombardiers not to drop their bombs. But everything went wrong and a bomb hit the wing of a plane in the low group, tore it off, and the ship crashed. It never should have happened."

S/Sgt. James Moore, gunner, Italy: "On a mission to Marseilles, I neglected to check my suit heating equipment. When we got to 15,000 feet I started getting cold, so I turned it on. I turned it to 5 and nothing happened. I raised it to 10 and no results. 15, 20—the more I turned the colder it got. It wouldn't go any higher and I was freezing. I found out later that I had a short in my left glove and left elbow. But I never knew it. I damn near froze to death. That was one mission I didn't sweat out. It happened on my 13th mission, too. My own fault, though."

S/Sgt. Hubert Green, C-47 radio operator, England: "On D plus 1, we were to drop supplies to the paratroopers in France. There was an extremely heavy fog—we could barely see our wing lights. About 10 minutes out, the radio went bad, the fog closed in, and we were in the sky with hundreds of other planes. I got excited and neglected to check the simple things in my radio set. I couldn't find anything wrong. After the mission was over, I discovered that a switch had been knocked out of place—an easy thing to fix if I had followed ordinary procedure. It could have been fatal."

Lt. Robert Parke, bomber pilot, England: "We made a four-hour mission in the prop wash of our lead group. We were flying in the low squadron of a high group on a raid that called for climbing to altitude on the way to the target. Our group leader didn't climb fast enough to keep his low squadron out of the prop wash. Radio communication was poor and we were bouncing around. We had no control over our planes. Fighter opposition was heavy and the leader wanted to present a solid front but he stayed directly behind and on level with the lead ships. It was mighty rough."

S/Sgt. Kenneth Reavey, gunner, England: "Over Dunkerque our high flight ran into flak and broke up. They took individual evasive action and made themselves excellent fighter bait. The low flight did the right thing—we stayed together. You are just as liable to run into flak when you peel off as you are when you stick together and you bring the added disadvantage of opening yourself up to fighter attack. There's no sense in inviting trouble—our low squadron stuck together and we got through the flak belt but the other boys got jumped and they lost a couple of planes."



Patton's Air Cavalry

By S/Sgt. MARK MURPHY

AIR FORCE Overseas Staff

THE history books and the military manuals will, in the coming years, doubtless devote much space to Lt. Gen. George S. Patton, Jr.'s drive across France and the part that Brig. Gen. O. P. Weyland's 19th Tactical Air Command took in it.

In the Third Army's furious dash, air power was used with as much or more imagination than it had ever been used before, and a brief review of military tactics may help a little to explain just what was done.

From the time of Philip of Macedon, army commanders have worried about flanks, simply because most of the time an army is much longer than it is wide. To the rear of an army's front line are reserve troops and supply depots and communications. A standard method of winning a campaign is to strike the enemy's flanks, destroy his supply routes, and cut off his front line troops from support and materiel.

In past wars, cavalry often was used to protect the flanks of an army. In the present conflict, the Germans frequently have employed armored patrols for the purpose. The roving cavalry or armor would cover its own flanks, spot any enemy strength and engage the opposition until support arrived.

Patton, however, had another idea. He was in one hell of a hurry, so he called in Weyland and gave him the task of protecting an exposed flank—not the flank of an army moving methodically across known terrain, but that of a mechanized army moving with incredible speed, now in one direction, now in another, destroying the enemy, heading ever toward the German homeland.

And so for the first time in history, air, in addition to its duties of column support, reconnaissance and all the odd work of a tactical force, was given a task which until recent months in this war had been a ground job. This was no mere reconnaissance assignment. Weyland's forces were expected to cover the exposed area and handle anything that developed. Previously, armies had moved so far, stopped, regrouped and moved on again. Patton, confident that his air support would protect him, kept on going for weeks after it was expected he would stop. He and Weyland took on a job requiring nerve and skill as well as imagination.

The 19th Tactical Air Command and the Third Army were kept under wraps until August 1, although both had been activated for some time, and the 19th had done a lot in the softening up of the French coast prior to D-day. Late in July, there was the business at St. Lo, the breakthrough and some feints which caught the Germans neatly. The British were left to hold the pivot at Caen, their troops engaging the bulk of German units in the area, while the Americans cut loose on a wild jaunt through France.

Although take-off of the 19th on August 1 was delayed until late afternoon because of bad weather, the Third Army had launched operations bright and early, and, in the hours remaining before dusk, the airmen were able to knock out armor and trucks.

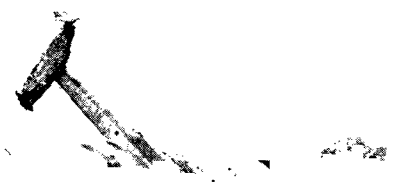
After the ground forces broke through in a drive past Avranches, the 19th really had its work cut out for it. Groups were assigned to hang over the armored columns of the Third Army, to prevent attack by enemy planes and to knock out stuff holding up the columns. Armed reconnaissance squadrons had the long range jobs of isolating battlefields, which is a military way of saying they had to kill any troops coming to the support of the enemy, to spot and break up any concentrations, and to keep the enemy constantly off balance.

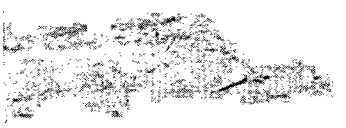
AAF pilots were told not to bust any bridges because that might hold up the progress of the American armies who were definitely on their way. If there were no targets for the column-supporting groups, they were left free to wander 30 miles ahead in search of objectives to bomb or strafe. Fighter Control stations kept track of what was going on and often sent squadrons out to hit targets noticed only minutes before by recon outfits.

Patton moved his headquarters, and the 19th TAC headquarters moved, too. The command's tasks grew daily. In addition to giving the Third Army armed support by con-

U. S. troops which liberated St. Dizier on September 1 found these Nazi planes, smashed by Allied aircraft that preceded the advance.

Elderly French woman passes wreckage of German tanks in the streets of Roncey. Nazis were driven from area during St. Lo offensive.





The 19th Tactical Air Command covered the flanks of the most spectacular breakthrough of the war

ducting reconnaissance missions, there was the job of protecting a bottleneck at Avranches, through which the Third Army's men and materiel were pouring, and some work to be done on ships in the harbor at St. Malo. Pilots were going on three and sometimes five missions a day.

Almost daily new groups were being added to the 19th as its functions were broadened. In the first five days of the Third Army's drive, the airmen flew 1,088 sorties and lost only three planes. They knocked out 250 motor vehicles, 12 tanks, nine horsedrawn vehicles, four locomotives, nine railroad cars and two naval vessels; cut five railroad lines; destroyed 17 gun positions, seven fuel and supply dumps, two marshalling yards, a gas tank and an enemy headquarters, and attacked 21 troop concentrations. All this was in addition to ceaseless patrol and reconnaissance.

The enemy withdrew to concentration points at Brest, St. Malo, Lorient, and on the Paimpol Peninsula, and the Third Army, finished with Normandy, had overrun Brittany where the fields and weather were better for air operations. The enemy tried to cut our traffic through Avranches, and Patton started east in a move threatening the Germans facing the U. S. First Army and the British in the area of Mortain and Vire.

Meanwhile continuing the Brittany campaign, Patton set out to get the river Loire for his right flank. The 19th TAC was assigned to guard this flank, and dispatches of those days read something like the description of a character of Stephen Leacock's who jumped on his horse and rode off in all directions. Word from the Third was received at the 19th's headquarters that "movement east, south and west by ground troops was greatly facilitated."

By the end of the first week of the campaign, the 19th was in full strength, and some of the Luftwaffe got up to be knocked down, 33 enemy planes being destroyed on

Fighter-bombers at Chartres derailed key cars (right) in Nazi supply train so that ground troops, close behind, could salvage cargo.

Sharp-shooting fighters choked off supplies for Nazi armies with attacks like this one which made locomotive look like uprooted tree.

August 7. Patton kept moving his headquarters close to the head of his columns. But 19th TAC headquarters had communications troubles. The farther it moved inland, the farther it was from its airbases.

General Weyland, however, flew up to confer with General Patton nearly every day, and operations continued unceasingly. Planes blasted enemy armor and gun positions, flew over areas that the Third Army *might* move into, bombed and strafed targets they found there and watched over the supply routes.

When the Germans used our color recognition panels on their tanks, the TAC pilots would fly low and look over the vehicles as carefully as a six-mile-a-minute speed would permit. Then they'd zoom upward, circle and come back down to pelt the enemy with bombs and bullets. The Germans had to use horsedrawn equipment much of the time, and our flyers killed a lot of horses, something which bothered them considerably more than killing Germans, who needed it.

During the action which closed the Argentan trap, some of the 19th's Thunderbolts pounced upon a concentration of nearly 1,000 enemy vehicles and destroyed at least half of them.

At this stage of the campaign, enemy ground troops began surrendering to the TAC flyers. One unit of about 400 Germans waved white flags at a fighter squadron which was lining up for a strafing attack. The squadron reported the location of the troops to Fighter Control and waited around until some ground soldiers rounded up the Boches. An 18-year-old boy among the prisoners said the field kitchen of his outfit had been bombed and that he hadn't had anything to eat for four days. Our planes then dropped leaflets outlining the advantages of yielding and thousands of German troops capitulated voluntarily.

German concentrations were falling one by one, and on August 18 there was a harvest of 7,000 jammed vehicles. Because most of the enemy equipment was in the British sector, the 19th was denied the jackpot. While the American flyers were credited with a few hundred trucks, some tanks and railroad rolling stock, the score of the RAF's 2nd Tactical Command was 1,159 motor transports destroyed and 1,724 damaged; 124 tanks destroyed and 96 damaged.

Meanwhile, the Allies had landed in Southern France and were 30 miles inland. The Germans were very unhappy.

Late in the month a cold front cut down flying time, and on several days the Third Army sent its own armored patrols along its right flank on the line of the Loire. There was little danger, though, because the 19th TAC had taken care of the enemy all along that 400-mile stretch. When the planes were flying, there was either no air opposition or plenty of it, the enemy preferring to jump our P-38s, P-47s and P-51s when it had an eight or ten-to-one advantage.

Our scores usually ran about four enemy craft destroyed to one of ours lost. On one occasion, eight P-51s dispersed more than 80 German planes. Another day eight P-47s, jumped by twelve ME-109s and twenty FW 190s, got six and damaged one for an American loss of two planes and pilots. In a broadcast to its troops, the German high command declared that the Luftwaffe while outnumbered, *really* was doing something, even though German soldiers "tied to a single front" might not realize it.

As the enemy tried to cross the Seine before the fall of Paris, the Thunderbolts made things miserable for him. There were practically no bridges left standing, and some of the Germans were trying to swim across the river. Most of them were using ferries, and the 19th, making things worse, put delayed action bombs in the ferry slips.

Pressing ever onward, the Americans skirted Paris on two sides, leaving the 2nd French Armored Division to occupy the encircled city after the French Forces of the Interior had a field day routing Germans out of their fine billets.

On August 25, the Luftwaffe took a terrific beating. Mustangs and Thunderbolts of the 19th and of the 9th Tactical Air Command of the 9th Air Force destroyed 77 enemy planes in the air and 50 on the ground, got 11 probables and damaged 33. The total American loss was 27 aircraft. Over Germany, 8th Air Force fighters and bombers accounted for 11 in the air and 40 on the ground. The Germans launched a few jet-propelled craft which travelled like hell but never got anywhere near our planes.

The 19th's assignment after the fall of Paris was a tough one, calling for widely diffused action. Patton was far across France and the TAC was supporting him. At the same time it was bombing Brest and other enemy targets in Western France. When these coastal installations finally capitulated, Weyland was able to devote his full strength to the campaign in the East.

In September things began to slow down, although in the middle of the month the 19th herded in 20,000 Germans to surrender in one of the oddest actions of the war. These troops yielded to what amounted to a couple of platoons of infantry and a battalion of MPs brought up for the purpose. A young infantry officer arranged the surrender after days of negotiations when he threatened, among other things, to have some circling P-47s come in and bomb the Germans. The Thunderbolts had been attacking them for weeks and they didn't want another minute of it.

Ground-air cooperation between the 19th TAC and the Third Army reached an all-time high a few weeks ago, if you can go for the fantastic story they tell at TAC headquarters. It's about a young airman, a lieutenant colonel, who was forced to bail out behind the German lines. According to the tale, he hid in a town for two days, waiting for Patton's columns to approach the area. After a Frenchman had sneaked him across the lines, the colonel reached Third Army headquarters, where he described the enemy-held town and its defenses and suggested that it be taken immediately.

"Give me a forty-five and I'll take it myself," the flyer is said to have volunteered.

The colonel's enthusiasm is supposed to have so pleased the two-gun man to whom he was reporting, that half an hour later, American tanks rolled into the town, preceding on information an AAF officer had obtained on flying-boot reconnaissance. ☆

KEY MEN

(Continued from Page 22)

operator when someone failed to ask for authentication. The enemy is tricky enough—don't fall for his obvious attempts.

It is not the purpose here to level the finger at radio operators and place all the responsibility on their shoulders. Many times, the mistakes they make can be prevented by cooperation from the rest of the crew. When the navigator or pilot receives a bearing from the radio operator that seems to be out-of-line, it is their duty to question it. Radio operators are willing to admit their mistakes, but they say that too often the pilot does not even consider them part of the crew. One radioman justifiably complains, "I made 47 missions with my pilot and I swear he doesn't even know my name." Pilots should understand the radio operator's job and see that he attends to it properly. In the following case, the fault was the radio operator's, but the pilot could have prevented it had he talked the matter over with his radioman.

A B-24 was flying from Italy to Africa to get supplies. The radio operator had forgotten to get the letter of the day. It was his job to get that information, but the pilot could have checked him before the take-off. As it was, weather forced the plane down to 1,000 feet and it passed over a friendly convoy. The radio operator reports, "They blinked the letter of the day at me and I couldn't answer. I shot back the colors of the day, but they kept after me for the proper code letter. Finally, three planes took off from some baby flat tops and buzzed in to look us over. We did everything but sing the *Star Spangled Banner* to indicate that we were friendly. They must have been satisfied, for they did not shoot at us. But it was awful close and the whole thing could have been serious. I was at fault, of course, but the pilot could have asked me about it before we left."

Radio operators are extremely important men, especially in an emergency. When a plane is lost, or is about to go down, the quick work of a good radio operator can often save the lives of the crew. As a B-26 radio operator put it, "We thrive on a crisis. When everybody gets excited, it's the radio operator who should keep cool and get the proper messages through. Well, one time I was the guy who got excited and we damn near went into the ocean because of it. We were returning from a mission with a bad engine. The pilot wanted to check his position and asked me to get a QTE. In my excitement, I misunderstood him and I got a QDM instead. With one engine out, and the danger of the second one going, we didn't have any time to cruise around while I rechecked and got the signal he had asked for in the first place. I realize now that when he gave me his instructions I should have repeated them and had him give me a confirmation. But I had one eye on that bad engine and another eye on the water, so I wasn't paying much attention. I finally did get the QTE and we got back without too much trouble. But I hate to think of what might have happened if that second engine

went bad while I was wasting time getting the wrong information."

One of the greatest causes of errors made by radio operators comes as the result of their desire to relax before the missions are completed. The case originally cited of the radioman who took off his headset during a flight is an extremely common source of trouble. Equally important are the radio operators who sometimes forget that they are also gunners. There was the radio operator in the Southwest Pacific who unloaded his guns when he was practically home. The catch is that he was only *practically* home—not actually at his base walking away from his plane. After he unloaded his guns 20 minutes from his home field, two enemy planes attacked and killed the waist gunner. Unloading guns is a quick and easy operation that should be completed *after* the landing. The mission isn't over until a report is made to the intelligence officer.

Precautions against the possibility of making mistakes can be taken on the ground at the home airfield. Experienced radio operators recommend that the radio transmitter be checked and calibrated with a frequency meter at home, and in the air when necessary to break radio silence. The radio transmitter is zero beat against the frequency meter. If the frequency meter goes dead, the aircraft should not leave the field until a replacement meter is obtained, or the meter is adjusted. It is vitally necessary that the frequency meter contain fresh batteries. Radio equipment must be checked and inspected by the radio operator daily to insure continuous and reliable radio communications service. If these precautions are overlooked, it means trouble. This trouble can be prevented before the mission is airborne; it cannot be overcome after the airplane is target-bound except by aborting.

Mistakes have been made and will continue to be made until the human element is replaced by a system whereby mechanical men can fly airplanes. Until then, the smart thing to do is learn from the mistakes of others and don't repeat errors previously made. The next error may be the fatal error. ☆

Lost Parachutes

LOST

Nos. 41-31493, 42-199747, both S-1 type; return to Lt. Dale Richardson, Post Parachute Officer, Merced Army Air Field, Merced, Calif.

No. 42-559807, chest type, lost at Baggage Room, 578th AAF BU, Municipal Airport, El Paso, Texas, 20 September, 1944. Return to Lt. F. P. Williamson, Section A, Box 350, Army Air Base, Alamogordo, New Mex.

Nos. 42-3832, 42-332930, 42-533345; return to Personal Equipment Officer, 451st AAF Base Unit, Army Air Base, Salinas, Calif.

Nos. 42-140964, 42-140859; return to 36th Photo Reconnaissance Squadron, Personal Equipment Section, Army Air Field, Muskogee, Okla.

WHAT IS YOUR AIR FORCE I. Q.?

Here is your monthly brain-twister. Chalk up five points for each correct answer. A score of 90 or above is excellent; 75 to 85, good; 60 to 70, not too bad; below 60, tsk, tsk. Answers on Page 59.

1. Tokyo has a population of approximately
A. 3,500,000 C. 7,000,000
B. 5,000,000 D. 1,500,000

2. Our 90 mm antiaircraft gun has a vertical range of approximately
A. 18,000 feet C. 5,000 feet
B. 40,000 feet D. 27,000 feet

3. A star on the American Defense Ribbon indicates
A. Three years of service prior to Pearl Harbor
B. The wearer volunteered and was not drafted
C. Service in the armed forces outside of the continental limits of the United States on or before December 7, 1941
D. One major engagement in the American theater

4. Mather Field is located nearest to
A. Los Angeles, Calif.
B. Portland, Ore.
C. Sacramento, Calif.
D. Austin, Texas

5. When pulling the rip cord on your parachute, you should
A. Draw your knees toward your chest
B. Spread your legs widely apart
C. Put your feet together and your legs straight
D. Cross your legs

6. The U. S. Savings Bond which is called the GI Bond because it is sold only to military personnel has an issue price of
A. $18.75 C. $ 3.75
B. $ 7.50 D. $12.50

7. The reciprocal heading of a directional course of 70 degrees would be
A. 180 degrees C. 160 degrees
B. 250 degrees D. 140 degrees

8. The name popularly given to the C-69 is
A. Skytrooper C. Commando
B. Constellation D. Skymaster

9. The first all-AAF bomber attack made on Berlin took place on
A. Nov. 7, 1943 C. Jan. 11, 1943
B. Mar. 4, 1944 D. Oct. 3, 1943

10. The 10th Air Force's area of operation is
A. India, Eastern Balkans and Thailand
B. China
C. The Solomons and the Bismarck Archipelago
D. India, Burma, Thailand and the Bay of Bengal

11. A group communications officer is classified under
A. S-1 C. S-3
B. S-4 D. S-2

12. American airplanes have never been operated in temperatures of minus 60 degrees.
A. True B. False

13. Flight nurses on flying status draw extra pay of
A. $60 per month
B. 50 percent of base pay
C. $75 per month
D. $100 per month

14. American troops landed in North Africa on
A. November 6, 1943
B. October 27, 1942
C. September 18, 1943
D. November 7, 1942

15. The P-63 has a four bladed propeller.
A. True B. False

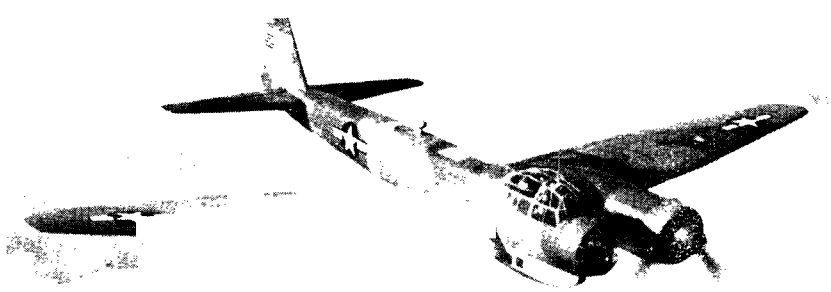
16. Under the official point system for separation from the Army, the number of decorations and awards won will receive no value.
A. True B. False

17. Army Serial No. 1 is held by
A. General George C. Marshall
B. General Henry H. Arnold
C. General John J. Pershing
D. No one

18. A major general in the AAF receives the same base pay and allowances as a lieutenant general.
A. True B. False

19. A cantilever wing has
A. Tapered edges and external bracing
B. No external bracing
C. A dihedral angle to the fuselage
D. Straight edges and no external braces

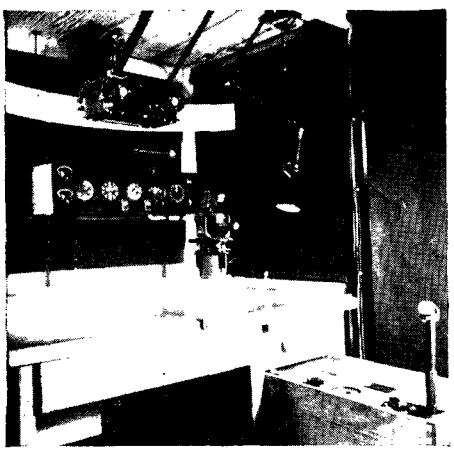
20. Identify this airplane:



TRAINING AIDS

Navigation Training En Masse. The Dead Reckoning Navigation Trainer, Type G-2, a composite assembly constructed in the form of a classroom, is now being distributed to Training Command navigation schools. Students using the G-2 are confronted with types of problems encountered during actual flight and are required to work at the same speed as they would be in an aircraft.

The classroom assembly consists of accommodations for 48 students and one instructor. The students' positions are constructed in the form of navigation compartments, each equipped with a complete array of simulated navigation instruments and connected with controls located at the instructor's desk. Problems set up by the instructor are indicated at each of the student positions. Progress of each student is denoted on a separate chart by a traveling recorder or crab. Various factors involved in dead reckoning navigation, including mechanical and instrumental variations, may be incorporated in the control and indicating circuit of the G-2.



All navigation instruments needed to make a successful mission are included in this student's booth of dead reckoning trainer.

Manual on AACS Procedures. An AACS Information File has been published to provide consolidated and standardized reference material for control tower operators, radio operators and cryptographers in the Army Airways Communications system serving aircrews in every theater of operations and in the United States.

It also is intended for use as a training textbook.

The loose-leaf file is divided into seven sections: Organization of the AACS, Control Tower Procedures, Weather, Air Traffic Rules, Airways Traffic Control, Radio Range and Airways. The publication was prepared by AACS and published by AFTAD. Designated Air Forces Manual No. 11, it is distributed, through channels, by AACS, Asheville, N. C.

Films for Electrical Specialists. Two training films portraying the fundamental theories of electricity and electronics have been prepared by the Walt Disney Studios. They are AF-213A—Basic Electricity and AF-213B—Basic Electronics.

Wide distribution of the films has been made in line with a recommendation of the Air Technical Service Command that every electrical specialist in the AAF see the films at least once.

Gunairstructor Answers. The following questions and answers concerning the Gunairstructor are published as a matter of interest to personnel at installations using the trainer. The answers were supplied by officers thoroughly familiar with the device.

Q. Can hits be scored while slipping or skidding?

A. Yes, on the older machines. More recent machines, however, are equipped with a device which will prevent hits when controls are improperly coordinated and show the instructor that the student is using improper coordination.

Q. Does the device require rudder to maintain a turn?

A. No, but, as in an airplane, skidded turns can be made with rudder alone. However, flying students are taught the principle that turning action depends upon the angle of bank which is obtained by coordinating rudder and ailerons. Hence, in order to maintain correct flying habits and prevent control abuse, the practice of coordinating rudder and aileron to start turns should be carried out in the Gunairstructor.

Q. Does the student's plane appear to be moving sideways?

A. Illusions of this kind can be produced by improper operation on the part of an unskilled instructor.

Q. Is there a means for the instructor to check the student's range estimation?

A. Yes. Four marks on the screen where the ring of the gunsight appears to the eye of the student give the instructor a measuring device by which he can estimate range in the same manner as the student. However, these four marks are sometimes difficult to see against the constantly shifting terrain projection, and a new attachment for this purpose is under experiment.

Q. Is successful operation and instruction affected by the skill and interest of the instructor?

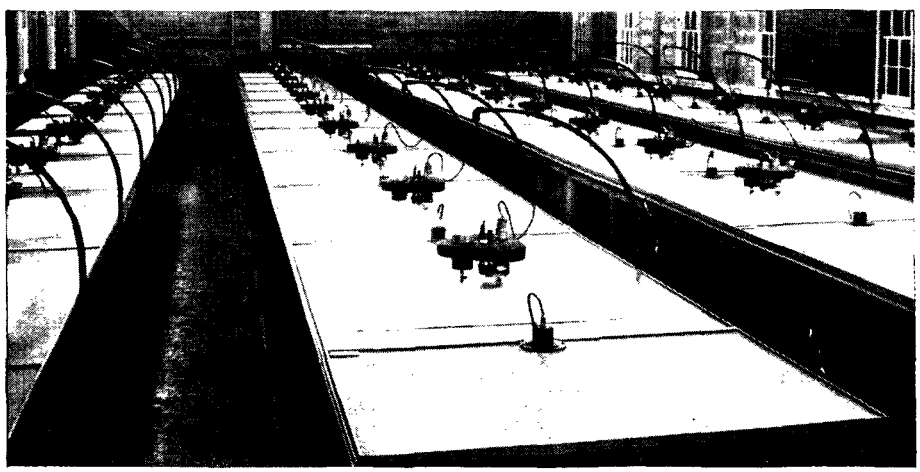
A. Decidedly yes. It can be expected that any trainer will be operated badly by an unskilled or by a careless, though skilled, instructor.

Trainers vs. Training Aids. Many personnel in the field have been inclined to look upon training devices as representing primarily the means of enabling students to train themselves. Generally speaking, they are not designed for such a job.

They are meant to be aids in training. They do not supplant the instructor; they assist him. They afford the instructor a more efficient means of demonstrating particular problems and their solution.

Shark Info. An information bulletin on sharks has been published by AFTAD for the Arctic, Desert and Tropic Information Center. Although pointing out that sharks, as a water hazard, have caused more mental discomfort than physical injury, the bulletin discusses the various kinds of sharks and offers many useful facts on how to avoid them if attacked.

The pamphlet, listed as ADTIC Information Bulletin No. 4, may be obtained through channels from ADTIC, AAF Tactical Center, Orlando, Fla. ☆



Connected to each student's navigation training booth is a "crab" which records progress of the mission. The installation shown here, in use at the AAF Navigation School, Selman Field, Monroe, La., is arranged for easy checking on individual students by the teacher.

WHERE TO GO

Information on the availability of training films and film strips, aircraft recognition materials, training devices and training publications may be obtained from the Chief, Training Aids Division, Army Air Forces, 1 Park Avenue, New York 16, N. Y., upon request through channels. AAF Regulation No. 50-19 explains fully the functions of the Training Aids Division.

Official Pin Adopted For NAAFW Members

At last the woman you left behind can wear a pair of silver wings for you without running afoul the myriad Army regulations forbidding civilians to wear military insignia.

A new pin, designed to be worn by the wives, widows, mothers, daughters, or sisters of AAF personnel, has been adopted as the official badge of the National Association of Air Forces Women. The only qualification is that the wearer must be a member-at-large of the NAAFW.

The wings are of sterling silver with an enamel center (actual size above). They have been ordered in quantity and can be obtained through NAAFW headquarters after November 20. Personnel, both in U. S. and overseas, who wish to purchase these pins as Christmas gifts for the women members of their immediate families can do so by taking out memberships in their names and enclosing annual dues plus purchase price of the pin. Send the name, address, and relationship of the woman you are enrolling in the association, together with your serial number, to: National Association of Air Forces Women, 1702 K Street, N. W., Washington 6, D. C. Dues for members at large are $1.00. Price of the pin, including postage, is $1.50 plus 30 cents federal tax.

Women who want to purchase the wings themselves must enclose with their remittances the name, grade, and serial number of the AAF man to whom they are related.

Answers to Quiz on Page 57

1. (C) 7,000,000
2. (D) 27,000 feet
3. (C) Service in the armed forces outside of the continental limits of the United States on or before December 7, 1941
4. (C) Sacramento, Calif.
5. (C) Put your feet together and your legs straight
6. (B) $7.50 7. (B) 250 degrees
8. (B) Constellation
9. (B) March 4, 1944
10. (D) India, Burma, Thailand and the Bay of Bengal
11. (C) 3 12. (B) False
13. (A) $60 per month
14. (D) November 7, 1942
15. (A) True 16. (B) False
17. (C) General John J. Pershing
18. (A) True
19. (B) No external bracing
20. JU-88

NOVEMBER IN THE AAF

. . . before December 7, 1941

1898, NOV. 9: Construction of man-carrying power airplane authorized with allotment of $25,000 to Samuel P. Langley.

1918, NOV. 4: $60,000,000 appropriated for Air Service.

1918, NOV. 11: Armistice. U. S. Army Air Service units participated in 215 bombing raids, flew 35,000 hours in combat, shot down 755 enemy aircraft officially confirmed.

1918, NOV. 14: Brig. Gen. Wm. Mitchell appointed Chief of Air Service, 3rd Army.

1920, NOV. 25: Pulitzer Trophy Race won by Lt. C. C. Moseley. Distance: 132 miles. Speed: 178 mph.

1921, NOV. 15: First flight of Roma, largest American semi-rigid airship, is made.

1922, NOV. 14: Unofficial American non-stop distance record is set by Lts. Kelly and Macready. Distance: 2060 miles.

1925, NOV. 20: Night photographs taken from bomber, using 50-lb. magnesium bombs.

1930, NOV. 6: Medal of Honor is presented to Capt. E. V. Rickenbacker for World War I service.

1931, NOV. 3: Cross-country flight at 20,000 feet from Selfridge Field, Mich. to Washington, D. C., completed by 94th Pursuit Squadron, all pilots using liquid oxygen. Flying time: 2:05:00.

1935, NOV. 11: World record balloon ascent is made. 72,394.795 feet.

1939, NOV. 7: Mackay Trophy for 1938 is awarded to 2nd Bombardment Group for 10,000-mile flight from Langley Field, Va. to Argentina.

1939, NOV. 20-21: Total of 71,133 miles of night flying is reported by the Air Corps Advanced Flying School, Kelly Field, Tex.

1940, NOV.: First navigator training in Air Corps schools begins at Barksdale Field, La.

1940, NOV. 1: Hq and Hq Sq, Hawaiian Air Force, activated.

1940, NOV. 19: GHQ Air Force removed from jurisdiction of the Chief of the Air Corps and as an element of the field forces, is placed under the command of the general commanding the field forces.

1940, NOV. 20: Hq and Hq Sq, Panama Canal Zone Air Force, activated.

1940, NOV. 21-23: Announcement of flight tests of B-25 and B-26 is made.

1941, NOV. 21: First of 16 B-24s, the first tactical planes piloted to overseas destination by AAF personnel, leaves Bolling Field for the British at Cairo.

1941, NOV. 22: 35 heavy bombers, all B-17s, now in the Philippines.

what becomes of our CONVALESCENTS?

"We are not going to bubble over with a lot of effervescent fizz about 'How to Get Well in Ten Easy Lessons.' You men entering here have seen too much blood and muck to swallow such lines. But you can be sure of this fact: every day men who came here shot to pieces walk out of this hospital ready, able, and eager to compete with anybody—be it for a civilian job or a blonde."

This is the straightforward introduction to the AAF's convalescent hospitals that overseas returnees get when they enter, wounded, ill, mentally and physically worn out. And the hospitals make good their boast with the most far-sighted combination of medical, vocational, and educational reconditioning yet developed.

As an outgrowth of the Convalescent Training Program inaugurated in 1942, several AAF convalescent hospitals throughout the country are now receiving the sick and wounded from ports of debarkation, redistribution stations, AAF station and regional hospitals and Army general hospitals. Administered by the newly-organized Personnel Distribution Command, they are strategically located at these points: Fort Logan, Colo.; Miami Beach, Fla.; St. Petersburg, Fla.; Albuquerque, N. M.; Nashville, Tenn. and Ft. George Wright, Wash. In addition, a similar convalescent center at Pawling, N. Y., now under the 1st Air Force as an adjunct to Mitchel Field, soon will be absorbed by the Personnel Distribution Command, along with several others.

The Personnel Distribution Command also has established liaison with ASF general and AAF regional hospitals by assigning especially trained liaison officers and NCOs to 120 of these installations. They perform *non-medical* service for AAF casualties destined for future assignment to AAF convalescent hospitals and redistribution stations or, in rare cases, for return to civilian life. They assist hospital staffs in handling AAF patients' problems such as records, pay, awards and decorations, and orientation prior to processing for future reassignment.

Suppose you've been a patient in a station or general hospital. Unless you're returned directly to duty or to civilian life, chances are that you will enter one of these convalescent centers. If you come home from overseas suffering from combat fatigue, you'll probably be sent to one of them immediately upon your arrival in this country. If you come from a previous hospital, you are now over the acute phase of your illness. Your definitive medical treatment is concluded and your specific injury or ailment has come to take on secondary importance to your overall condition. Also, by now you are ambulatory—you are able to walk about, if only by using crutches.

Complete medical recovery is the chief aim of the convalescent program, but medical officers know this means both physiological and psychological fitness. As a result, the SOP of any of these convalescent hospitals is a skillful blending of medical care, supervised, though not regimented, exercise, healthy play, academic and vocational training—all aimed at the recovery of the "whole man."

"One boy back from the ETO came to us with a serious arm injury—piece of flak over Bremen got him—and he was favoring the wounded arm to the point of not using it at all," says a convalescent training officer at Pawling. "His medical officer told us he must exercise those muscles or they would atrophy. Well, the boy had signed up for our farm project so we decided to have him dig those post holes we needed to fence the livestock corral. That's *one* job you just can't do with one hand. In a very short time even the MO was astonished at the improvement in the condition of the arm. When we had run out of post holes to dig, the soldier volunteered to help us clear a section of nearby woods. While he worked with us he learned a lot about the farming business—so much so, in fact, that he has decided to go in for it after the war."

"We had a lieutenant here a couple of months," says the shop foreman at Ft. George Wright. "He'd lost an arm in a booby trap in Italy. Before he went into the AAF he'd had some engineering experience and our machin shops interested him more than anything else. He came around one day to ask if there was any machine he could manage with just one hand. So I showed him how to operate a radial drill press. In a week's time he was working it like an expert. It did wonders for his self-confidence."

A corporal who had injured his back in the Southwest Pacific signs up for courses in wild life conservation at Nashville. He plans to enter this field after the war and thinks it would be a practical idea to learn all he can about game preserves, bird refuges, and stocking streams while he's recuperating.

Before he joined the AAF, a captain now recovering from leg wounds was an aviation company executive. When he goes back to his job after the war he figures the company's business will take him to South America, so he uses the

"Se Habla Espanol" in this language class, one of 20 or more varied subjects patients can study at AAF convalescent hospitals.

Anyone in a combat zone may be a casualty. Anyone in the AAF can have an accident. If you're one of the unlucky ones, with a long period of recovery ahead, here's what probably will happen to you

weeks he must stay at Albuquerque to learn Spanish by the latest conversational methods.

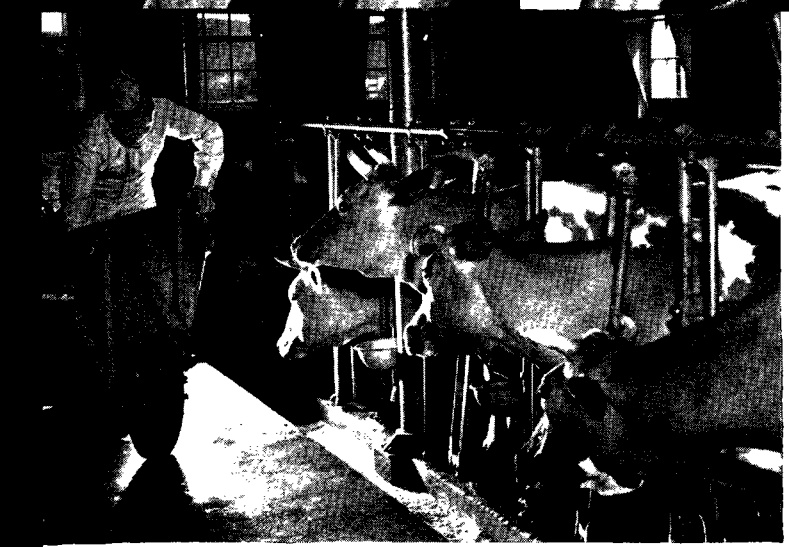
This is typical: your medical officer orders considerable exercise for those stiffened fingers. You've always wanted to play the piano, but you've never had time to learn. This is a chance for you to do both at the same time, and have a lot of fun in the bargain. Or if the piano class doesn't appeal to you, you can elect typing instead. If you have lost some fingers in combat, that needn't stop you. An instructor at Ft. Logan, for instance, can rattle out 100 words a minute through a system of his own which uses only a few of his fingers. He has taught the system to several AAF men who have lost fingers and they are becoming nearly as proficient as he.

Where possible, this same principle holds with recreation. "It's much better to have a man ride a bike around the post than it is to confine him to a bike-machine in a gym," says the CO of one convalescent hospital. "We'd rather have him row a boat on one of our lakes here than make him spend a couple of hours on the rowing machine."

What do you have to do at the convalescent hospitals once you land there? Well, there's very little you *have* to do, and therein lies one of the important rules that govern the program's operation. But you may, if you wish, climb mountains, paint landscapes, brush up on your radio code, operate lathes, learn the inside workings of a propeller, take courses in navigation, play golf, milk cows, go fishing, or train pigeons.

Added up, it spells *therapy*. It means faster recoveries, physical and mental stimulation, overall fitness. It does not mean job-training, for that is not the purpose of the program; what it does mean, however, is that the convalescent can use the weeks—usually six to ten—he's at the center in work and study that can be useful to him when he returns to the Army or to civilian life.

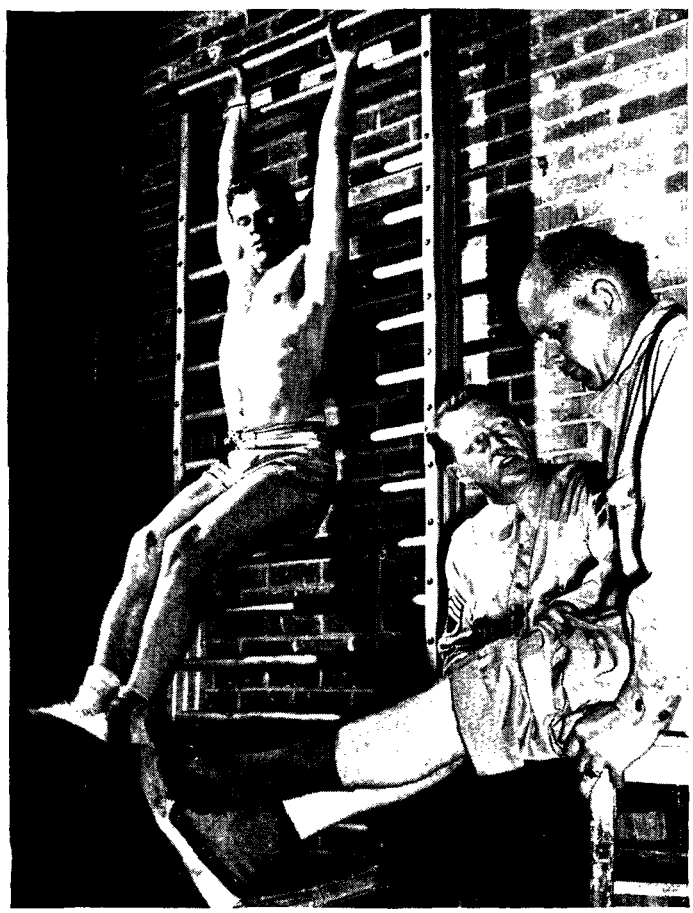
The program is not "fixed" in any sense of the word, nor are its supervisors smug about any of their accomplishments.



The "milk run" is a good antidote for combat fatigue and gives all comers a chance to learn the practical aspects of dairy farming.

Training in many types of machine work speeds convalescent time and equips patients with valuable skills they may be able to use later.

A wood block supports injured legs while this GI hammers away at a handsome aluminum tray he plans to send home when finished.



Highly-trained physical therapists outline to patients the specific exercises necessary for correcting their particular condition.

They admit all the problems have not yet been solved and they welcome new suggestions from their patients. "Maybe you've figured out a new angle on limbering up a stiff joint," they say, "Don't be hesitant even if it seems to have that Rube Goldberg touch. Develop it in one of our 'shops' here, let us know about it, and we'll work it out with you."

"This is still the Army and you will still be able to dig up some gripes," men are told upon entering, "The difference here is that maybe we can do something about your gripes. There is another difference between this and the rest of the Army. We are not greatly interested in Cpl. J. J. Jones ASN 10456784. We are a lot more interested in an individual, Joe Jones, with a personal problem we are going to work out with him."

The solution of your personal problem begins within 24 hours after your arrival. You will have confidential interviews with your vocational specialist, personal affairs officer, medical-surgical officer, and educational officer. There are plenty of the inevitable military forms to be filled out but—this comes as a distinct shock to some—you won't have to do the paper work. The consulting staff does it for you—and in easy stages—by merely asking you the necessary questions.

You will get, of course, a complete medical examination, after which you are assigned to a Flight Surgeon, your "personal physician." That's precisely what he will be, too, for the duration of your stay—*your* doctor and one who, like yourself, has also seen plenty of overseas action. The convalescent hospitals have borrowed from civil life the idea of the family doctor to get as far away as possible from the clinical impersonality of the usual patient-medical officer relationship. Here one doctor is assigned to a specific group of men. He stays with them until they leave.

Your doctor reviews your case, decides what kind of treatment you should have, explains exercises you can do for yourself, those you must do under supervision, and advises certain sports that will help your particular condition. His report also goes to your vocational and educational officers with recommendations about the kind of classes that might be of special benefit.

By and large the decision as to what classes you attend will be yours. However, if your physical condition indicates that you will, in all probability, keep your original MOS, you will be advised to take refresher courses in that field.

Classes in 20 to 30 different subjects is about par for one of the convalescent hospitals. You may sign up for art in the morning and journalism in the afternoon or you may spend the entire class time from 0809 to 1600 in the aircraft repair shop.

The fact that you are a novice, that your only experience in woodwork was whittling a piece of wood on the front porch, or that the closest you ever came to radio repair was replacing a burned-out tube, needn't deter you. You'll have plenty of company; the majority of the students in these classes are rank beginners. Your instructors, both GI and civilian, will be patient and indulgent.

"Try it a week", they'll say, "if you don't like it, change to something else next week."

"We make no attempt to throw the trades at these students," says an instructor at Ft. George Wright. "First they become interested in making something they need themselves or would like to give to their girls. Maybe it's a steel fishing rod and reel, or some ash trays made from condemned piston heads, or engraved trays from scraps of metal. You ought to see some of the really fine steel knives made by men who have never touched a lathe before. But what starts out purely as a hobby can easily turn into a desire to continue the same thing on a serious scale. And so, in purely incidental fashion, we are opening a few

post-war work opportunities for them while they are here."

A patient is allowed to make anything he wants to—and does. The completed article becomes his own personal property to keep or send away. Baby cribs for GI Junior, for instance, are among the most popular items in the woodwork class, and billfolds have top priority in leather work. If you sign up for motor repair, you can learn how to repair that car you've brought to the center with you; you can even give it a paint job if you want.

On the more serious side are courses—both beginner and refresher—in physics, mathematics, navigation, meteorology, electronics and a dozen others. If you become a qualified radio operator in the time you're at the hospital, that achievement is credited on your official service record. Link-trainer time is likewise chalked up.

Farming offers a perfect combination of medical and vocational rehabilitation, and several hospitals are making the most of it. The first—and still the most extensive—farm project in the AAF hospital program is the one at Pawling. In the heart of the Empire State's fertile Dutchess County, the hospital's 540-acre farm is quite literally what the doctor ordered: fresh air, sunshine, healthy exercise and a chance to learn the farming business from scratch. It is drawing an increasing number of patients, both former agriculture students and a surprising number of city dwellers who have long dreamed of "settling down and running a chicken farm when I get out of the Army."

These days farming is as scientific and well-planned as a bombing mission. There's plenty to learn about the intricacies of agricultural chemistry, crop rotation, breeding, or dairy farming—as any farm student will tell you. The Pawling farm gives you this know-how in the most practical way: by letting you help run the farm while you're at the hospital. You'll run it as a business, and you'll watch it pay off.

Running a farm in the AAF however is a new experience and not without its difficulties. Even pigs and turkeys come in for their share of red tape. "The whole Army is run by ARs, but so far there are no ARs which cover the number of eggs a hen should lay a month," moans one of the farm officers. "We are attached to the hospital and while it was quite all right to request a quantity of pills, it was something else again to have a load of fertilizer appear on the requisition slip. The first time we wanted to sell a calf, we had to send a formal military request through channels to 1st Air Force headquarters. By the time it finally came back to us, with seven indorsements, our calf had become a cow."

Well, you've been at the hospital for say, two months. You've worked, rested, exercised, eaten well, you're feeling strong in mind and body, you've learned to produce again, and your doctor decides it's time for you to appear before the disposition board.

You'll sit down with your vocational, educational, medical, personal affairs, and classification officers to decide on your future assignment. Where possible, you'll be returned to your previous duty. If you cannot do that job now, the board will recommend a different MOS. In eight cases out of ten you'll return to some Army assignment; in the other two cases you will get CDDs for your return to civilian life.

Whichever it is, your outlook has undergone a pretty complete change since you entered the hospital. If you're not aware of it, all you have to do on your way out is look at the new patients coming in. "Do you think those guys are not feeling low when they hit here?" ask the program's directors. "They are disgusted with hospitals; they are disgusted with themselves; they are dripping with cynicism. We don't kid ourselves into taking credit for their recovery. The real work, and the real sweating is done by the individual men who walk out. All we do is give a few tips." ☆

Each month in this section AIR FORCE *presents new titles on aviation subjects which are available to AAF personnel through the AAF Field Technical Library Service. These monthly book lists supplement the Selected Bibliography of Aviation appearing in the Official Guide to the Army Air Forces and are compiled by the Headquarters AAF Library.*

ABRAMS, TALBERT. *Essentials of Aerial Surveying and Photo Interpretation.* N. Y., MC GRAW-HILL, 1944. The methods of aerial photography and the construction of maps and mosaics.

AYLING, KEITH. *They Fly to Fight, the Story of Airborne Divisions.* N. Y., APPLETON-CENTURY, 1944. An account of the training and combat functions of airborne infantry men.

COOKE, DAVID C. *Model Plane Annual, 1944.* N. Y., MC BRIDE, 1944. 3D ED. New annual publication of the standard year-book.

CRAWFORD, WILLIAM, JR., and SAUCIER, TED. *Core and Glory.* PHILADELPHIA, MC KAY, 1944. The story of a Fortress pilot of the 19th and later the 43rd Bombardment Groups.

FRIENDLY, ALFRED. *The Guys on the Ground.* N. Y., EAGLE BOOKS, 1944. Tribute to the Air Service Command GI's.

GEMMILL, CHALMERS L. *Physiology in Aviation.* SPRINGFIELD, ILL., C. C. THOMAS, 1943. Effects of flight on the human body.

GENTILE, DON S., and WOLFERT, IRA. *One Man Air Force.* N. Y., L. B. FISCHER, 1944. The life record of one of our top aces.

GRANT, HUGH D. *Cloud and Weather Atlas.* N. Y., COWARD MC CANN, 1944. Photo record of all cloud states with their weather implications noted in the explanatory text.

GREENHOOD, DAVID. *Down to Earth, Mapping for Everybody.* N. Y., HOLIDAY HOUSE, 1944. The facts of map reading and map making for those who know nothing about the subject.

GREGORY, H. F. *Anything a Horse Can Do.* N. Y., REYNAL & HITCHCOCK, 1944. The history of the development of the helicopter, new enough to include the potentialities of the XR 6.

HEINMULLER, JOHN P. V. *Man's Fight to Fly, Famous World-Record Flights* and a *Chronology of Aviation.* N. Y., FUNK & WAGNALLS, 1944. An album and biographical record.

LeSOURD, LEONARD. *Sky-bent, Letters of a Draftee.* BOSTON, BOSTON UNIVERSITY PRESS, 1943. Letters to the home town piper on the career of a draftee through cadet training to wings.

OLSON, EVERETT C., and WHITMARSH, AGNES. *Foreign Maps.* N. Y., HARPER, 1944. A guide to foreign maps providing a key to languages and symbols that appear on maps of foreign agencies.

OTT, LESTER. *Transport Aircraft of the World.* N. Y., FRANKLIN WATTS, 1944. Illustrations and brief descriptions of today's and tomorrow's freight and passenger planes.

PAUST, GILBERT. *Here's How to Fly.* N. Y., ESSENTIAL BOOKS, 1944. Elementary presentation of the basic facts of flight, and the technique of small plane operation.

RAFF, EDSON D. *We Jumped to Fight.* N. Y., EAGLE BOOKS, 1944. A Commanding Officer's account of the training and the first combat experiences of the U. S. Paratroopers.

STERN, MICHAEL. *Into the Jaws of Death.* N. Y., MC BRIDE, 1944. A collection of first person narratives of war action, including reports from several of the crew of Memphis Belle.

STEWART, JOHN Q., and PIERCE, NEWTON L. *Marine and Air Navigation.* BOSTON, GINN, 1944. Sea and air piloting text.

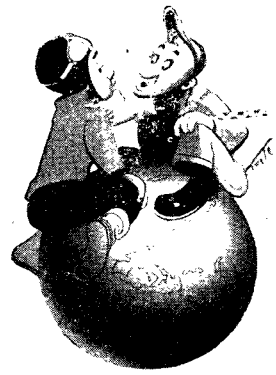
VAN ZANDT, J. PARKER. *Geography of World Air Transport.* WASHINGTON, BROOKINGS INSTITUTION, 1944. $1.00. The first volume in a series which will explore from an economic point of view the world possibilities of the new aviation.

WAUGH, E. D. J. *West Point.* N. Y., MACMILLAN, 1944. The United States Military Academy's history including a brief chapter on the building of Stewart Field and its importance.

WILSON, GEORGE E. *Aircraft Identification for Fighting Airmen.* N. Y., MC KAY, 1943. An identification handbook based on multi-view pencil drawings rather than 3-view silhouettes.

ZWENG, CHARLES A. *Zweng Aviation Dictionary.* NORTH HOLLYWOOD, CALIF., PAN AMERICAN NAVIGATION SERVICE, 1944. An encyclopedic dictionary with definitions and biographical entries. ☆

SHOOTING THE BREEZE



Burma. A Japanese light antiaircraft battery, hoping it had solved the problem of mobility in this area, mounted all its equipment on the broad backs of elephants. After months of intense training, the unit set out for jungle maneuvers. They made an impressive start, with a brass band leading the elephant herd, and the local citizenry cheering them on. But again the Japs had outsmarted themselves. A week later the battery straggled back to camp, tired, hungry, carrying one lone Bofors barrel, but otherwise gunless, equipmentless and elephantless. The Japs had failed to take into account three vital factors: 1—The presence of cow elephants in the column. 2—That there is a certain, definite season in every year, from an elephant's point of view. 3—The possibility of encountering wild bull elephants in the jungle.

England. A colonel went on a mission as an observer. The flight ran into serious opposition from both fighters and flak over Europe, and the B-17 was hit. A 20 mm shell struck the top turret, and the gunner fell to the floor, covered with blood. The colonel rushed back to give first aid, saw the boy's still form and thought he was either dead or close to dying. The officer was about to administer a hypodermic when the gunner opened his eyes. The colonel bent over him, placing an ear close to the boy's lips, expecting some last, feeble words.

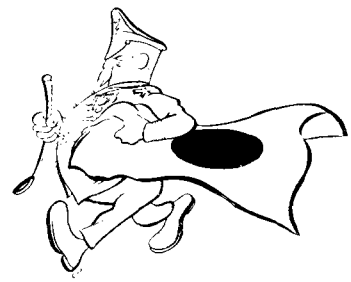
"Geez, Colonel," the gunner said, "I'm beginning to think there's not much future in this racket."

Australia. When the WAAFs (Australian air Waes) were first issued shorts, a commanding officer noticed that the new garments were generally too long, hanging rather sloppily below their knees. Hoping to find some solution, the gentleman called out the girls and lined them up for an experiment. He asked several of the more apparent cases to fold the legs of their shorts up to various lengths. Finally he decided upon the most suitable length and had all the girls fold their shorts to the same length. The officer then reviewed the results and seemed quite satisfied with his decision. So satisfied, in fact, that he didn't realize how his next command would sound: "All right, girls. Now you can let your pants down."

England. In the 9th Air Force is a B-26 whose nose will probably never catch up with its tail. It happens that a plane named Marty Marauder collided with a plane named Goatee Hell. The nose was sheared from one aircraft, and the tail from the other. Mechanics skillfully put the two ends together to produce a B-26 now known as Marty Marauder—Goatee Hell. The nose has made 51 missions, the tail is credited with 57.

England. An AAF lieutenant had golf clubs, but no golf balls. Taking his problem directly to the English public, he inserted a want-ad in a local newspaper. He received this reply: "Dear American officer, I am Peter Turner, aged 9. I will trade my four golf balls for two packages of candy or chewing gum. But if you fly a B-17 or a B-24, you can have them for nothing."

Bougainville. The Jap battle flag was soiled by muddy hands, and in one corner there was a small patch which looked impressively like blood. The transient colonel, waiting for the next plane, wanted the flag to remind him of his twelve hours on this historic ground. Something nice to have, a Jap battle flag. The officer bargained shrewdly, secretly willing to pay whatever price was finally asked. Eventually he haggled the price down to $25, and a few hours later was on his way back to the States. On the plane he displayed it proudly, unaware of the knowing glances which passed between members of the crew. Back in San Francisco, the colonel showed the flag to a friend who, ironically, could read Japanese. He happily translated the Jap characters that the GI jokesters had printed on the counterfeit flag, "Souvenir of Your Visit to Bougainville."



India. An S-2, who considers himself a student of human nature, couldn't get the aircrews in his outfit to read the weekly intelligence summaries. He tried leaving them around the dayroom and he even tried putting little squibs on the covers reading: "Study this. It may save your life." That didn't work so he thought and thought and finally tore the covers off popular magazines and put the summaries under these. That didn't work either.

Finally his sergeant suggested an answer. And it worked beautifully. What they did was get big red covers marked "FOR THE COMMANDING OFFICER'S EYES ONLY." Then they hid them in the bottom shelves of the S-2 library.

Now they have a 100% readership.

England. A major we know had heard a lot from paratrooper friends of his about the joys of jumping. "It's a feeling of complete freedom," one enthusiast told him. "Like swimming naked in the moonlight."

So the major, who happens to be a great lover of swimming naked in anything, arranged for his first parachute jump under the tutelage of the lieutenant who had sold him on the idea.

They landed at the edge of an airfield. The lieutenant got jauntily to his feet but could see no sign of movement from the major. He ran to him and immediately noticed the surprising fact that the major's leg went in *one direction, his ankle in another.*

"Hah!" said the major. "Like swimming naked in the moonlight, is it?"

"Well," said the lieutenant shakily, "wasn't it? Before you hit, wasn't it?"

"All I know," said the major with great dignity, "is that in the future I'll confine myself to the crawl." Whereupon he passed out.

U.S.A. The hazards of flight increase rather than diminish and B-29 side gunners are now enjoined to keep their parachutes on at all times. Seems that any sudden release in pressure may blow them clean out of the plane. This happened recently to Sgt. W. K. Tilman while on a training flight at high altitude. The change in pressure was so sudden that his ears were stopped up for days. "Couldn't hear a thing," he says. "Not even harps." ☆


Please...


...Pass this
copy on...

Cracked up ...in a jeep!

Months of training shot to hell. Tough on his crewmates, too. Because of his carelessness, a replacement is flying in his spot. Some of the perfection of teamwork is lost—needlessly.

Carelessess and thoughtlessness—on or off duty—are more dangerous than enemy gunners, more dangerous because more men are exposed to them. Don't take needless chances with your life or limbs. Observe personal safety rules.

AIR FORCE

THE OFFICIAL SERVICE JOURNAL OF THE ARMY AIR FORCES ☆ DECEMBER 1944

FIGHTER PILOT—Strafing Tactics, page 18

wherever they are...

This wartime Christmas finds the AAF all over the world. Here a 9th Air Force chaplain conducts a hangar tent service somewhere in France.

Wherever there are two, they are not without God; and wherever there is one alone, I say I am with him. Raise the stone, and there thou shalt find me; cleave the wood, and there am I.

·: FIFTH LOGION

Rendezvous

Mother Beckham's Boy

Dear Editor:

. . . "The B-29 and You"—a very enlightening story, but why not mention the goodlooking fellow in flying togs whose picture appears along with a picture of the B-29? He is none other than Maj. Walter Carl Beckham who is responsible for blasting 18 Jerries out of the sky over Europe while flying a Thunderbolt with the 8th Air Force. Carl had been reported missing in action since March of this year and is now interned in a German prison for American airmen. Carl and I have been friends since children and have shared a secret ambition — becoming millionaires, and if things didn't go too well in that field, flying would do. His parting words to me were: "Goodbye, Claude, wish me luck and perhaps I'll become a hero." The leading fighter ace in the ETO at the time, he was shot down while strafing a German airfield. He is probably better remembered as the fellow who radioed to his wing man to "take the boys home, George, I can't make it. I've been hit," after his plane was on fire. For the benefit of his many friends, "Mother Beckham's boy" is doing all right for himself in prison.

W/O Claude E. Jenkins, San Antonio, Tex.

Instructors' Grandchildren

Dear Editor:

. . . When you say, on the back cover of your October issue, "Let us hear from you," well . . . just glance in the mirror and see how far your necks are extended!

So I ask: What about the army of Air Force Instructors, a very important part of the top cream of young America who are helping to win the war, but who will have nothing in particular (so they bemoan) to tell their grandchildren? . .

Audrey Walls Mosley, Tulsa, Okla.

You must have missed the article "One of My Boys," by Capt. N. W. Pinney, Jr., an AAF instructor, in our May, 1944, issue. It reports what one instructor has to tell his grandchildren.—Ed.

Parting Shots

Dear Editor:

In the March 1944 issue of AIR FORCE you published an article on page 64 entitled "Parting Shots" in which S/Sgt. Ben B. Colecchi is alleged to have continued firing at Jap Zeros after the tail section of the B-24, on which he was the tail gunner, was completely severed from the rest of the airplane. That statement has aroused much curiosity in my mind, and I turn to you for an explanation.

I have doubts as to the possibility of such action, and were it not for the orders con-

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AIR FORCE

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

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Wrecking our own fields is a grim job, but sometimes it must be done.

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When the fighters were running out of fuel, the bombers brought it in.

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These aerial weathermen reduced abortives in the MTO to a minimum.

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Technique 41
Combining the technical features of On the Line, Flying Safety, Training Aids and On the Alert, plus information on new planes and equipment, maintenance tips and items on our combat ground men.

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☆ U. S. Govt. Printing Office—596129—Printed in U.S.A.

HOW SHARP ARE YOU?

A Photo Test of Your Observational Accuracy

How much do you see — and after you've seen it, how much do you remember? Look at this photograph carefully for 60 seconds, then turn to page 29 and see how many questions you can answer about it. Study it carefully; remember every detail you can; they're all important. Each question answered correctly counts ten. One hundred is perfect. Twenty-five AAF officers and enlisted men selected at random were given the test. The average score was 60. The high was 80. The low was 30.

HOW SHARP ARE YOU? Turn to page 29

Rendezvous

(Continued from Page 1)

mending Sergeant Colecchi I should disregard the article and class it as fiction rather than fact. I do not claim to be any form of authority on the Consolidated tail turret mounted in a B-24, but I did study it in gunnery school and have fired from it and to my knowledge it would be impossible to fire the guns if the tail section was completely broken away as you say. The guns are fired by a solenoid mounted on each gun and the connection between the trigger button and the solenoids is entirely electrical and receives its energy from the central power system of the aircraft. Also, because the guns are mounted outside the main turret housing, it is nearly impossible to fire them by hand without leaving the turret.

Perhaps mine is a case of a little learning being a dangerous thing, but I suggest you look into the matter a little more closely and if the story is authentic and accurate, expand upon it as I imagine there are many others who would like to know just how the feat was accomplished.

Sgt. Edward R. Dahms, Alexandria, La.

Some B-24 tail turrets are equipped with a foot-firing mechanism. If such a turret were broken off from the rest of the plane, it could be fired independently of the aircraft's electrical system. Since the ammunition feed chutes to the rear turret would be broken off also, the number of rounds would be limited to the amount of ammunition remaining in the broken off feed chute.—Ed.

Aid Society

Dear Editor:

. . . I am a corporal in the Air Corps. I want to be sure that in case something happens to me, my dependents will be eligible for benefits from the Army Air Forces Aid Society. Must I become a member of the society?

Cpl. George Smith, Chicago, Ill.

Since you are a member of the AAF family, your dependents will be eligible for benefits of the Society after the war, even though you do not join. The Society will relieve distress of AAF personnel and their dependents, including dependents of honorably retired, discharged and deceased personnel without regard to membership in or contributions to the Society.—Ed.

That Cover Girl

Dear Editor:

. . . I owned a model agency in Philadelphia for three years, but never, never have I seen a girl as beautiful as the one you have on the front cover of the October issue of AIR FORCE. Professionally, I dealt with some of America's outstanding cover girls, but not one of them can touch the beauty of your flight nurse. Congratulations. The photograph is one of outstanding work-

manship which can compare with the best in the business. If your photographer—or that girl—wants a job when the war is over, please ask them to get in touch with me.

Pfc. Edward Felbin, Scott Field, Ill.

Dear Editor:

. . . I have never written to the editor of a magazine before, but I felt this time I should. I'd like to know who the young lady is, whose picture covered your October AIR FORCE issue and whether she's actually a nurse or not? Her upturned eyes are strictly mellow looking and her lips look so soft and luscious. That's really beauty, not to mention her hair.

I certainly hope you know her.

Pvt. James Martin, Eglin Field, Fla.

Dear Editor:

. . . "Ees wonderful. Boy! ees wonderful!"

And that's only the beginning! When I saw Lt. Frances T. Sandstrom on the cover of your October issue I thought, Oh my Lord, such poise, elegance, such dignity, such a cute hairdo, lovely cute nose, those eyes; how I'd love to hold such warm tenderness in my arms and be carried out of this world by just being near her.

I'll stop going on like that but I don't want to and I'll answer your question. Oh sure I agree that the new design with all the AAF patches better reflects and so on. Megawd man! And you ask about the patches while the beauty of all beauty is beside it. "Oh ees wonderful!"

I'm just a little tech sergeant and I'm *not* worthy of a glance from her I know. When I walk down the street the women scream and the brave men turn pale, so that brings me to about 95% repulsive and 5% obnoxious. But she doesn't have to know about it and the fact that I'd give you my blood for a picture, original type, of the one on the cover, and if you could get her to autograph it putting "just a little love" on it I'd give you a mortgage on my soul. That and tell me more about her. Is she married? Oh, I know she must be, but please say she isn't.

Now I've told you the truth about everything where do you want me to send my blood?

T/Sgt. J. Brooks Boyle, Jr., Harvard, Neb.

P.S. Oh, if I weren't so repulsive and she wasn't so unobtainable; I'd be more impulsive and make her name changeable.

She's married. And she says you can send your blood to the Red Cross.—Ed.

Fisherman's Complaint

Dear Editor:

. . . I have read and re-read with considerable interest the article entitled "The Flying Dutchman" which appeared in the August issue of AIR FORCE on pages 28 and 29.

Quite likely it is none of my business, but having lived all of my life in the neighborhood of Gloucester, Mass., and having owned and operated various types of craft there, one thing in the article just doesn't jibe up right for me.

In the outline giving the standard pro-

(Continued on Page 55)

In This Issue

The fighter pilot on our cover this month is Lt. Vernon R. Richards of Feit Mills, N. Y. He looks tired and he has a right to be. The picture was shot at the end of a seven-hour escort mission over Germany. On the back of his hand is capsule information familiar to all fighter pilots: time for Start Engines, Take-off, Set Course, Rendezvous with the big friends, and the course for Home. It can be rubbed or licked off in case of bailout over enemy territory. When this picture was taken, Lt. Richards was credited with five Nazi planes: two in the air and three on the ground.

If you have glanced at our table of contents you may have noticed a few changes in our lineup. They appear in our departmental setup. We don't want to bother you with shop talk, except to say in passing that this change climaxes a series of refinements in presentation inaugurated in recent issues, and to explain briefly what the change is all about.

AIR FORCE has grouped its departmental material into three packages—This Is Your Enemy, unchanged except that it has been increased by two pages, Cross Country and Technique, which have been expanded to nine pages each.

Cross Country is our general information department, covering as many as 65 different items of interest and importance to AAF men. It includes non-technical subjects of the type found in the former On the Alert, Flying Safety and Training Aids departments, plus a lot of extras. It also has four special sections: a review of AAF policies and procedures, a listing of new training aids available to the field, two columns of flying boners and comments by safety experts, and a listing of new aviation books.

Technique is our technical department, as always. It now covers the maintenance and supply as well as the development of aircraft and equipment. It includes the technical material formerly found in On the Alert, Flying Safety, Training Aids and On the Line, and also has four special sections: a report on new technical developments, tips on maintenance, experiences with mechs around the world, and the old standby, What's Wrong with This Picture?

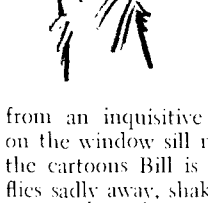
This new departmental pattern gives us more flexibility for handling subjects that deserve discussion each month, permits us wider coverage of AAF activities, and, we trust, makes for greater readability.

Whenever we start a new feature in the magazine, we turn the premises into a guinea-pig sty (is that the right word?) and try the innovation on everybody within eyeshot. Latest uproar was caused by the "How Sharp Are You?" test which appears this month on Page 2. Judging from the scores, a couple of pfcs and majors around here ought to trade places.

Our overseas staff had their hands well into this issue. First of all, Maj. Herbert Johansen, our staff correspondent in the Southwest Pacific, was in on the Philippines invasion, landing on A plus 2 with the First Air Task Force on Leyte. He promptly put his notes together about the initial action by AAF men, and the result is the lead article "Back to the Philippines," which Johansen cabled from Leyte.

The article "Striking Oil," Page 31, called for collaboration on the part of two of our overseas men. From Great Britain staff correspondent Maj. Charles Frazer sent in his report on the 8th Air Force campaign against Nazi oil targets in northern Europe, and from Italy staff correspondent Capt. Lawrence Bachmann dispatched his report on the 15th Air Force campaign against the Ploesti refineries.

In like manner, two other staff men, although separated by some 10,000 miles, put their heads together for the article "All in a Night's Work" on Page 8. After receiving our call for combat experiences of the new P-61 night fighter, correspondent S/Sgt. Mark Murphy ambled over to a Black Widow squadron near the front lines in Belgium, and climbed aboard a P-61 for the night mission report leading off the article. In the Southwest Pacific, correspondent Capt. Manford Susman hurriedly put together a cable on some experiences of the P-61 in that theater before taking off on a mission into the interior of New Guinea which we expect him to tell you about in a future issue. Staff artist Capt. Raymond Creekmore, just arriving in the Central Pacific, barely had time to scratch off the Black Widow drawing which accompanies the night fighter article, and add the little sketch of the Hickam Field "creep" on Page 28 of the new Cross Country department. You'll see more of Creekmore in future issues.



One of our favorite AAF characters is introduced in this issue. He is Homer, Capt. Bill Lent's hilarious pigeon. Bill says he got the idea partly from the October article on "Our Pigeon Air Force," partly from an inquisitive local bird that lands on the window sill now and then, looks at the cartoons Bill is working on, and then flies sadly away, shaking his head and muttering to himself. Whatever the origin of Homer, so far as we're concerned he's a dream bird. You'll find him twice this month in the Cross Country department. Next month he'll be flapping around again.

Back to the Philippines

PART I: THE GI'S COME THROUGH

BY MAJ. HERBERT O. JOHANSEN

AIR FORCE Overseas Staff

—By Radio from the Philippines

The re-establishment of the AAF in the Philippines was unheralded by the roar of mighty planes, of bombing and strafing. "A-day" (invasion day) was October 20. On A plus 2, a Coast Guard LST nosed shoreward and deposited on White Beach, Leyte, personnel and equipment of the 308th Bomb Wing (H), which constituted the First Air Task Force of Lt. Gen. G. C. Kenney's Far East Air Forces.

The only Army airplanes in sight were two L-5s and one L-4—and all three of these were in crates. For practical reasons, including the important element of surprise, land-based aircraft were not employed as a prelude to the actual landing.

But the role played by sweating Air Force GI's in a frantic, nerve-wracking, five-hour emergency grind on the Tacloban strip near Leyte Beach will become a classic of the Philippine Campaign.

It happened on A plus 5. For three days the ground echelon of the 308th had been slaving through the turmoil and confusion of a beachhead landing, the battle of trucks and jeeps with mud and mire, the threat of air raids without means of retaliation, the utter dependence on the infantry and artillery of the Sixth Army slowly pushing the Japs back beyond a sniper-wide perimeter. To carrier-based planes had been assigned the role of supplying air cover for the first few days of the invasion. With the 308th had come no combat planes, but with it was the operational and planning organization, the brains and nerve center that would finally direct the land-based air assault against the Japs.

On A plus 5, Tacloban strip was the only landing field available in the area. Aviation engineers assigned to the Air Task Force had been working on it feverishly for three days. On the night of October 24 it was decided to widen and raise the runway. All night the engineers unloaded hundreds of truckloads of soft dirt along the length of the strip. Early in the morning their heavy scrapers and bulldozers were in a fever of activity. It was a rush job. The strip had to be made ready to receive AAF fighters that were due two days later.

Then, shortly before 0800, their control with the 7th Fleet flashed an urgent priority message to 308th Bomb Wing. There had been an encounter off Leyte Gulf with a Japanese naval task force. Three "jeep" carriers were being shelled. The carrier planes operating in the air had no place

ILLUSTRATION BY CPL. LOUIS S. GLANZMAN

The gallant part played by the ground echelon of our First Air Task Force on the strip at Leyte is one of the most dramatic stories of the war

to land and those still on the carriers were taking off immediately to escape destruction. They would shortly be out of gas, bombs and ammunition unless they could come in at Tacloban strip. The other alternative was to crash land at sea. The first demonstration had come that the Jap was going to put up a desperate fight for Leyte and the Philippines.

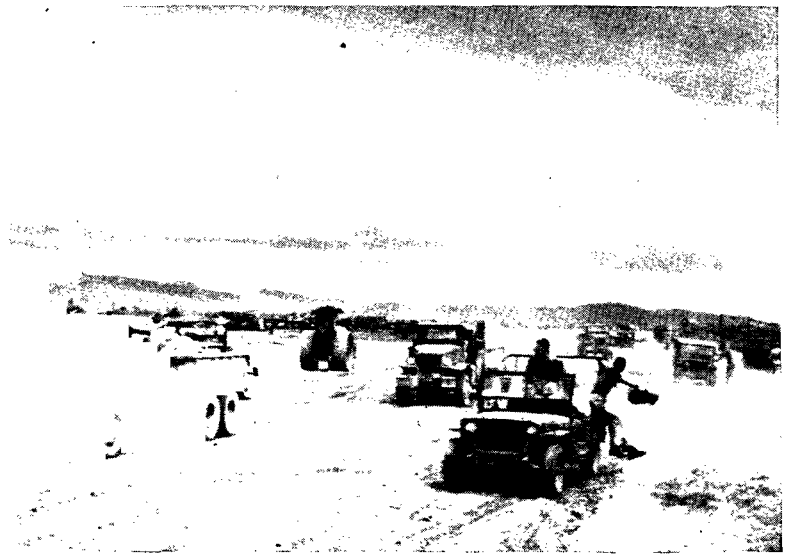
Due to the night's work on the strip, it was in no shape to take planes of any sort, but the best had to be made of a critical situation. The engineers did what they could to work over the rough spots. A service squadron of the 5th Air Force was camped along the beach waiting orders to move forward to another strip the moment it was taken from the Japs. Its personnel were alerted. Refueling units, crash trucks and ambulances were made ready. Intelligence, supply and operations officers scattered over the area to unearth bombs and ammunition. A radio chief of a 5th Air Force Fighter Control Sector and another of the Army Airways Communications System rushed to the beach and set up their portable communications equipment to guide the planes. In 15 minutes after the warning had been flashed to the strip, the first plane—a torpedo bomber—circled overhead. The emergency communication setup did not have his frequency. The pilot came in unassisted for a nerve wracking but miraculously safe landing. He related how he had just returned to his carrier when the shelling had begun, taking off again without refueling or bombing up.

As he announced that the other planes would be arriving any minute, a roar came out of the north. Ten, twenty, thirty Navy planes appeared. The sky was full of circling fighters and bombers. The first pilots had given their radio frequency, but before communications could be established several planes, their gas exhausted, came in one on top of the other. Soft spots on the strip took their toll of planes. Most of the pilots and crew walked away from their wrecks. Crash trucks raced up and down the runway while crews hauled wrecks out of the way under the wheels of other incoming planes. Flares were sent up to mark the end of the strip. Men frantically waved white flags to indicate bad spots and to warn incoming planes of the debris in their path.

Gradually some sort of order came out of chaos. Planes were being brought in at the rate of about one every two minutes. Then all hell broke loose as the Japs staged the first of several sneak air attacks.

The planes aloft were helpless—their guns empty, their gas tanks almost dry. Still, amid Jap strafing and solid curtains of ack ack, they continued to land. Crews on the ground refused to be turned from the task. A plane would hardly maneuver into place along the edge of the strip be-

Tacloban strip was not serviceable, but over 100 planes bounced and skidded in on the rough field, some ending up like this Wildcat.



Frantic activity on Tacloban strip is shown in this photograph taken by Major Johansen who also snapped other photos on this page.

Sunbaked engineers worked furiously to finish the strip in time for the first AAF landings. Photo shows job just about completed.

fore a refueling truck was alongside. Service crews were on the spot with bombs and belts of 50 caliber ammunition. Others pitched in to make emergency repairs to damaged wheels and wings. Armorers defuzed bombs in crashed planes even while they burned. Whenever there was a brief letup between landings, engineers went out across the strip with graders and rollers, pulling off only when the wheels of incoming planes touched the ground yards away. An emergency control tower was in operation less than two hours after the construction had begun. For more than five hours operations personnel sat atop the unprotected platform ignoring ack ack and enemy strafing. To get them in and get them into the air again in fighting condition was the single thought of hundreds of working GIs, and they did.

The first plane had landed at 0830. Two hours later 59 planes were ready to take off again, gas tanks filled, repairs made, with bombs and ammunition for their guns. During a period of less than 20 hours Tacloban strip, which had been declared unserviceable that morning, had handled more than 200 landings and take-offs.

But there was more to be done by the aviation engineers who had lost a day in addition to the setback caused by the wear and tear on the strip. Another night of labor faced them, with the task of laying several thousand feet of landing mats that had been rushed ashore from ships in the harbor. Nor was there rest for the service squadron and ground crews. Numerous planes had still to be made ready for take-off, major repairs effected, parts salvaged from wrecks to patch up the less seriously damaged. It was a grim night, for reports came in that the naval battle still raged. If the Japanese task force got through it might well have seriously impaired the entire Philippine landing operations.

The Navy pilots and their crews were grim too as they took their first food of the day at the 308th mess. They were grateful for the generous rations of wine that somehow materialized from nowhere. Not one of them blamed the condition of the strip for their crackups. Their apology was that most of them had not used a land strip for six months or more. The unanimous comment of all the AAF boys was, "Those Navy guys sure can handle those planes."

That Wednesday and the following day were important ones in the Pacific war. Navy pilots returning from missions at sea the second day reported that the Jap Naval Task Force had been turned back, badly battered. Our hold on the Philippines was secure from sea attack.

Friday morning, October 27, was another day of memorable activity for Tacloban strip. The last of the Navy planes had taken off and headed for their carrier bases as gangs of aviation engineers, naked to the waist, sweat rolling off their sun blackened backs, laid landing mats at a furious rate. As noon approached some few feet separated the two ends of the strip. The gap lessened, and as the last section was fastened into place a loud cheer filled the air. The weary engineers joined in turning their heads skyward. A formation of P-38s had come out of the south and was beginning to circle overhead. After two and a half long years, AAF planes were about to land on the Philippines.

The first P-38 came in with one engine shot out and Jap bullet holes in a wing. The others circled, broke formation, buzzed the field, circled again over the mountain to give the entrenched Japs a good look at what awaited them and to let our front line troops know that they now had a partner in the sky. At 1215 the P-38s—two squadrons of the 5th Air Force 49th Fighter Group—began coming in to the cheering of gayly dressed Filipino ground troops, engineers and air force troops. Generals MacArthur and Kenney were there to welcome them. Our planes had returned to the Philippines to stay until the Japs were driven out. ☆

PART II: OUR AIR TASK FORCE

The origins of the First Philippine Assault Air Task Force go back to the Buna campaign. Here's how this streamlined organization works

When the first AAF combat planes—a squadron of P-38s—arrived in the Philippines they found an operational and service organization already established. From the moment of landing they were able to go into operation against the enemy.

An hour after landing on A plus 7, the first P-38s, refueled and serviced, took off on patrol. Among them was Maj. Richard Bong, who got his first Jap over the Philippines within the hour, got two more a few days later, bringing his score to 33 enemy planes destroyed in aerial combat. During their first day the Lightnings downed six Jap planes. On the following day, October 29, this handful of fighters took over air cover for the Philippine Island operation. Before a week was out their score was an even 50.

This was possible only because the 308th Bomb Wing, serving as an air task force, had laid the ground work, set up operations, established service and supply facilities, gathered intelligence, and was operating a complete communications network. An airdrome squadron was on the job. An air force surgical hospital capable of performing major surgery was ready. The air liaison party with the 308th had been set with their air-ground communication since A plus 4, and contact had been established with five air liaison parties attached to various infantry and artillery units. Intelligence on enemy activities and air strength had been accumulated. Around this nucleus was being built the First Philippine Assault Air Task Force.

The first few days, our fighters were constantly in the air. Several important reconnaissance missions were flown at the request of our ground troops. Concentrations of enemy troops were bombed, and escorts were furnished for small Naval craft on coastal operations. Advice from the front line that a Jap Photo Joe had covered a strategic highway was passed on to the fighters, enabling them to be on the alert for a bombing attack. The first Jap bomber force in strength was turned back by four P-38s which downed three escorts.

Weather delayed the arrival of other air units from the 5th Air Force. It wasn't until A plus 11 that C-47 transport planes came in escorted by our P-38s from the southern Philippines. Their cargo was food for the fighter units, their return mission the evacuation of seriously wounded. Later in the day came the first contingent of P-61 night fighters. Two more strips had been secured. Aviation engineers under armed convoy fought their way through a sea of mud within range of Jap snipers to reach them. Landing strips had to be filled in, operation control set up, service facilities brought up. The air task force was showing its normal growth from fighters to light bombers and then to medium bombers.

The morning of Nov. 2 an intelligence report came in that some 60 Jap bombers with fighter escort were on their way. Nine P-38s scrambled to meet them. Everyone raised his eyes to the skies, waiting for the aerial devastation that seemed to be inevitable. Nothing happened. Then came the heartening message that our few fighters had met a strong formation of P-38s enroute to reinforce Leyte. The two joined forces. Three of the Japs were shot down over Leyte Gulf, the others turned tail.

All this was an air task force in operation. Air battles must be based on plodding work on the ground, building up the battle operational organization without which an air force can neither fly nor fight. The initial mission of the 308th's operational organization of the First Air Task Force was set forth by its commanding officer, Col. David W. Hutchinson, in a terse order of the day. First, in conjunction with carrier based planes, the ATF will provide local cover over Tacloban and Dulag areas. Second, furnish air-ground co-ordination with the Sixth Army when requested. Third, conduct night fighter patrol. Fourth, furnish courier service. Fifth, furnish cover for PT boats.

The air task force originated with General Kenney at the time of the Buna campaign in early 1943. The original was called the Buna Air Task Force. By February 1944, three air task forces were operating, and three bomb wings—the 308th, 309th, 310th authorized as their operations headquarters organization.

The need for air task forces came with the rapid advance of our air forces through New Guinea. In order to correlate activities of GHQ, the Allied air force, and the Australian Imperial Forces, General Kenney found it essential to maintain a headquarters in Brisbane. As air activity spread from Australia into New Guinea, the Brisbane headquarters became too remote for efficient operational control. To remedy this an advance echelon of the 5th Air Force, "ADVON," was established at Port Moresby, with Maj. Gen. Ennis C. Whitehead as Kenney's deputy commander. Our advance gained momentum, and January 1943 saw the fall of Buna. A more forward operational base was required to correlate the activities of the advance air combat units. ADVON already found itself too far in the rear. The Buna Air Task Force was created in March 1943 operating out of Dobadura. This obviated crossing the Owen Stanley range, which eliminated 75 miles of treacherous, towering mountains and added considerably to the operational efficiency of our combat elements. So successful was this innovation in the air war that the air task force became an integral part of the Southwest Pacific Air Force.

As conceived by General Kenney, an air task force has no rear echelon. It is purely an operational organization streamlined to the utmost, having no administrative functions. Flexible, not burdened with the routine and details of administration, its organization can perform an air force mission more efficiently and with fewer aircraft, aircrews and ground crews. Organization is of the cellular unit type. Air echelons and service units are added as the practical need arises, far from the 5th Air Force. These units are attached to the air task force for a particular operation only. When an area has been secured for routine air activity, the attached air and ground units return to their parent organization. The air force takes over the operation. The air task force retires for a brief rest to prepare for the next aerial threat.

During its period of activity the air task force assumes operational control of all air activity inherent in an air force, including a prelude of saturation bombing where necessary, air patrol, attacks on shipping, reconnaissance, tactical bombing and strafing. An air task force has all the functions of an air force proper except those of administration, which are prone to make a headquarters topheavy and operationally clumsy. It has the basic headquarters, engineering, chemical warfare, psychological warfare, signal, ordnance, medical and

(Continued on page 40)

Black Widow "Moonhappy" shoots down Jap bomber over Saipan despite Zero escort.

All in a Night's Work

By AIR FORCE Overseas Staff Correspondents

ILLUSTRATED BY CAPT. RAYMOND CREEKMORE

The Battle Ax stood at the end of the runway, her two engines purring gently in the fading twilight of the Belgian evening. From the tower she had the outline of a P-38, but in Europe the Lightnings fly with silver coats and the Battle Ax was shiny black. Lightnings also fly by day and seldom take off into the gathering darkness with the ceiling barely higher than the hangar roof and with cold fronts zig zagging all across the weather charts.

The Battle Ax was a P-61 night fighter. Her pilot was First Lt. Eugene Axtell, a former baker in Excelsior, Minn. Their job was to prowl over Germany between darkness and dawn and shoot down any Nazi bombers that might be trying to sneak across the lines into Allied territory.

Night fighting is a highly specialized job, and the Black Widow is a highly specialized plane. She is an all-metal, three-place monoplane with twin-tail booms. She has a rapid

The Black Widow is making night flying very uncomfortable for both Germans and Japs

rate of climb and can knife through the sky at a very effective speed. Lurking in the dark and attacking unseen, the P-61 has plenty of firepower to expend in the few, crucial seconds of night intereception. Her armament consists of 20 mm cannon and four 50 caliber machine guns in a remote control turret above, or other combinations.

By means of newly-developed equipment, ground controllers can pick up enemy raiders at considerable distances and vector a P-61 close enough for intereception. There is good reason for the shiny black camouflage paint on the Battle Ax and her sister planes that are flying over Europe and in the Pacific. It would seem that dull black paint would be harder to see at night. Actually, dull black looks almost white in searchlight beams. Experience proved that when the searchlights pick up a shiny black airplane they seem to bounce right off, making the plane almost invisible.

S/Sgt. Mark Murphy, AIR FORCE correspondent in France, climbed into the Battle Ax with Axtell and his radio man, Flight Lt. Joseph F. Crew, of Lake Mahopac, New York. These two had shot down a German plane a few weeks before and were anxious to pile up a few more victories. They had no misgivings about the weather, which usually is so bad that sometimes you encounter three kinds of fronts in a night. On nights you don't have fronts you get what the weather men call an unstable air mass, which means it rains and blows most of the time.

Axtell flew the Battle Ax into and above the cloud cover, climbing fast. The Black Widow leaves the runway after a very short take-off and goes up very much like an elevator. Axtell didn't circle but headed straight toward Germany.

A few miles out he switched the radio over to the ground controller.

"Looks like a quiet night," the controller said. He instructed Axtell to go up to 12,000 and patrol.

Axtell looked disgusted. "Nuts," he snorted. "We're getting another dry run."

The Battle Ax moved over the front lines and deep into hostile territory. It was eerily beautiful above the cloud cover, with the stars seeming somehow to be in different positions than when seen from the ground.

"See why we like this night stuff?" Axtell said over the intercom.

Through a break in the clouds a few scattered lights were visible and a few towns were burning because there had been several heavy bomber raids during the day.

The controller vectored the Battle Ax here and there. Suddenly one of the clouds became luminous.

"Look at the canopy, Joe," Axtell said. That meant that the Germans, for some reason, were lighting up a closed-in airfield by throwing searchlights to a point in the clouds.

Once, the controller reported excitedly that something was nearby. They turned and started to chase. After a few minutes word came that the object was friendly. They guessed it was probably one of their own planes. There is little danger of shooting down a friend, because a night fighter makes positive identification before letting go at anything. This sometimes calls for flying within 50 feet of a plane to make sure what it is. Night fighter pilots are recognition experts and sometimes while waiting around they will quit a blackjack game to make bets on how many planes they can recognize from quick shuffling of a pile of recognition cards.

The Battle Ax kept flying at 12,000 throughout the night on various courses but the Luftwaffe evidently was taking a holiday. The ground controller didn't report any hostiles and when the eastern horizon started to lighten Axtell asked him to vector them home. It was uncomfortable being a lone plane over enemy country with lots of accurate flak.

Halfway home, they spotted a train going around a curve, smoke pluming behind.

"Let's get it," Axtell said.

Axtell told the controller he was taking the plane down, and then asked Crew: "How shall we do it, front or back?"

"Back," Joe advised.

Diving at 45 degrees, Axtell aimed the Battle Ax at the train. He pulled out a few hundred feet above the tracks and the plane shook as the guns started firing. Bright cherry-red flak ripped at them from the left. Then something bounced them 100 feet into the air. Axtell eased the Battle Ax back toward the deck.

"Get the hell out of here!" Joe shouted.

Miles later, Axtell asked Joe what had happened.

"It must have been ammunition," Joe said. "The whole damn train blew up."

In a few minutes they were close to their field.

"Thanks," Axtell told ground control. "It was nice to work with you." He switched to the tower.

"There is a slight ground fog coming up over the edge of the field," the tower said.

It was understatement of the worst kind. When they got over the field it was closed in tight. Axtell tried several passes. Tower said they were lighting flares and were sending up a rocket. They still couldn't see anything.

Axtell then went down to the deck and once in a while a patch of fog would blow away and they could see the ominous outline of trees at their level.

They went back over the field and by this time all the red lights were showing on the fuel gauges.

"We'll make one more pass, then bail," Axtell said.

"Don't bail," Joe broke in. "Belly it someplace."

Sergeant Murphy didn't care for the trend of the conversation.

They made the one pass, wheels down, ready to land. Suddenly a wisp of mist blew away and right below them at an angle was the runway. Axtell made two incredible vertical banks at what seemed to be zero altitude. Quickly he jerked the wheel up and let out the flaps. The Battle Ax hit the runway at high speed and skidded along. Smoke poured up through the fuselage. But they were safe.

"We sure as hell pranged that airplane," Axtell said when he climbed out. The Battle Ax was bent a bit but reparable.

It was all in a night's work for a Black Widow squadron, and many such squadrons are rising during the hours of darkness over the battle areas of Europe and the Pacific.

Aerial night fighting is both an offensive and defensive tactic. Offensively, night fighters intrude on the enemy in various ways. During

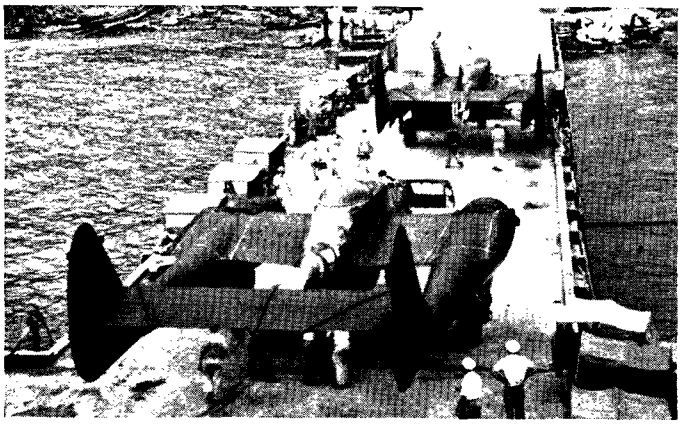
Pacific P-61 crew: Lts. R. C. Williams (pilot), and C. W. Bjorum, and S/Sgt. H. Bobo.

the Battle of Britain, RAF intruder planes would hover over German bomber bases in darkness and attack the enemy aircraft as they entered the traffic pattern. Intruder missions by night fighters also are aimed at destroying trains, shooting up shipping, bombing airports, ammunition dumps and other military targets. In Normandy, Allied fighters and fighter-bombers denied the Germans the use of roads and railways during daylight hours. After dark, the night fighters continued the bombing and strafing and inflicted further punishment on retreating enemy columns.

On the defensive side, the job of the night fighter increases as the ground forces push deeper into enemy territory. As we close in on the enemy, he is able to strike back harder and more frequently. Each forward move must be protected by the night fighters, particularly in Europe where the Luftwaffe seldom dares to show itself in daylight.

The P-61 is the first American airplane designed and built to fly at night both as an offensive and defensive weapon.

It was hatched from the recommendations of Army observers who had watched the Battle of Britain. During those critical days, the RAF was forced to rely on converted pursuits and light bombers for defense against night raiders. What was needed was a new type airplane capable of prowl-



Black Widows destined for the 13th Air Force are unloaded from transports and towed to the assembly strip where wings will be added.

ing in the black skies, intercepting enemy bombers before they could reach their objective, of shooting them down as they attempted to return to their bases, and to intrude on the enemy and his installations by night or on days too murky for the average plane to fly a mission.

The first experimental P-61 model was finished in May 1942 by Northrop Aircraft, Inc. Two years later, the P-61s made a spectacular debut in France. On their first mission they wiped out four German raiders. One downed a ME-110 after a 23-minute battle at such close range that the two planes sideswiped each other.

Over in the Southwest Pacific, AIR FORCE staff correspondent Capt. Manford Susman reports that AAF pilots who first tested the P-61 in this area were disappointed when it failed to live up to expectations. They thought the Widow was sluggish and unresponsive in maneuvers. They were, they admitted, flying her in strict accordance with tech orders. Representatives of the manufacturer watched the tests and found out what was wrong. The pilots were told to throw away the book and push the plane to the utmost. Immediately, the pilots found that they were handling an entirely different airplane. The tech orders had been too confining. They had not given the Widow the break she deserved.

Since then one Pacific night fighter pilot has reported: "The P-61 is the most forgiving airplane I have ever handled. You really have to be off the ball to make errors. The Widow works alone in the night sky and the success or failure of an interception depends upon the degree of coordination of the three-man crew."

Black Widow pilots in the Pacific already have had some unusual experiences. One concerns a double play with a Jap assist, disclosed by a P-61 pilot, Lt. David T. Cort:

"I sighted a small light, apparently a plane's wing light, on the starboard side northwest of my P-61. I started to approach the light when ground control interception told me to continue orbiting as there was a second night fighter in the area. When my plane returned to the orbit, I received a call from my colleague informing me that it was not his light I had seen, as he was completely blacked out. The fact that tracers were passing five feet behind and two feet below the tail of our plane indicated that it had been an enemy.

"A few minutes later another of our pilots reported that he had seen an enemy plane go down in a ball of fire into the water and explode on impact. He was about to congratulate me on a kill when I told him that I hadn't even fired my guns. Later we decided that the Jap plane whose light I had first spotted had seen me too, and let go his guns. In the confusion of my orbiting, he had shot down one of his own planes."

Five minutes later, however, Lieutenant Cort's gunner did shoot down a Jap plane. Two Bettys were credited to the Black Widows.

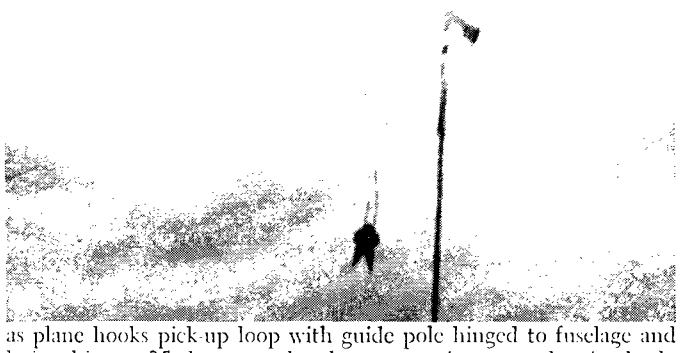
Captain Susman notes that ground crews in the Pacific are faced with problems all their own. Often the planes have to be readied for take-off in the total darkness of a blackout. Sometimes the Jap slips in undetected and the night fighters have to scramble while enemy bombers are dropping their bombs. There is no security of a fox hole for these grease monkeys. Signs in the revetments read "Fox holes are where you find them." One crew chief remarked, "I found that I could crawl all the way into a steel helmet with only my feet sticking out."

Things are not quite so rugged at the P-61 bases in Europe, although here the Black Widow squadrons have problems peculiar to their operations. The base in Belgium from which Lieutenant Axtell and his Battle Ax operate is fairly typical.

Although the night fighters in Europe are established in squadrons they have group functions. They require a large quantity of instrument and radio equipment, but Lt. Col. Oris B. Johnson, who commands the squadron, has some expert scroungers and they help keep the equipment stockpile up. The night fighter missions always are likely to produce the unexpected and no one ever knows what will be encountered in the darkness. When the outfit was still flying from British bases, one of the Widows spotted a robot bomb winging its way across the Channel. Capt. Tadas Spelis and his radio man, Lt. Eleutherious Eleftherian, economically called "Lefty," flew right through the 1500-foot explosion caused when their bullets touched off the buzz-bomb's war head. Spelis was blinded momentarily and the plane started to spin. He finally brought the Widow under control. When they landed it was found that most of the controlling surfaces had been badly burned.

Wherever they are, the boys who fly the Widows agree that it's a different type of fighting. Sometimes it's on the monotonous side. Often they do a lot of flying without finding anything to shoot. Already the Japs have so much respect for the P-61, according to Captain Susman, that an average of one enemy plane is encountered for every 50 missions flown. But in the blackened skies, the prospect of danger and action is always present. And whenever the enemy exposes himself, the Black Widow is ready to strike for the kill. ☆

HUMAN pick-up



Man picked up in photos above wears winter flying suit, parachute, and special harness attached to rope between poles. He doubles up as plane hooks pick-up loop with guide pole hinged to fuselage and hoists him at 35 degree angle, thus preventing ground swing-back.

The AAF has perfected a "human pick-up" system which offers numerous possibilities in the aerial rescue of men in inaccessible terrain and behind enemy lines.

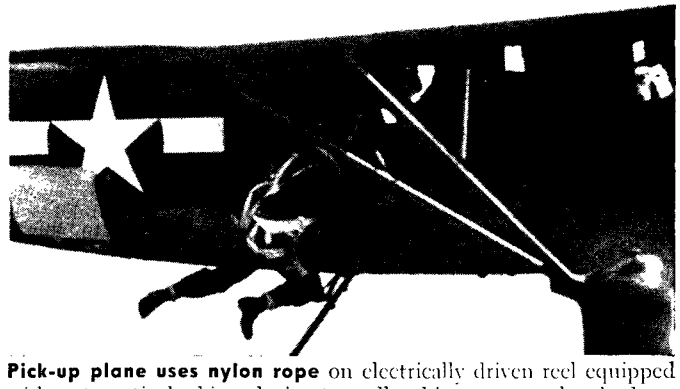
The system, resulting from extensive experimentation at Wright Field, enables a pilot to swoop low over the ground, hook a nylon loop and pick up a man with less strain than a parachute jump. Early experiments were conducted with dummies which frequently smashed back against the ground before the pick-up plane could gain altitude. Perfection of flight procedure finally eliminated the danger of the ground swing-back, and sheep were tried in later tests.

The ground equipment used was similar to that used for glider snatches: two poles that supported a nylon rope loop which was attached to the strap harness of the sheep.

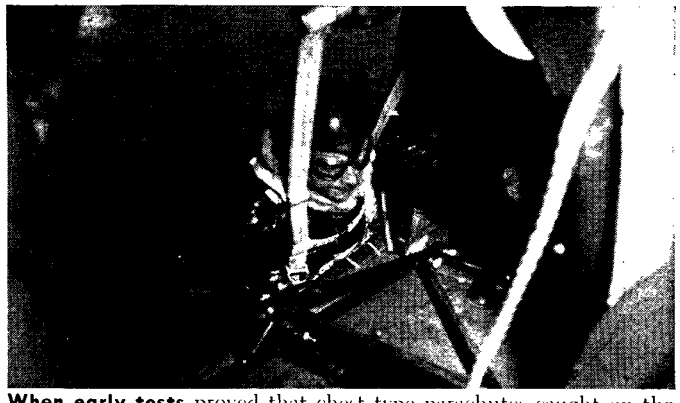
On September 5, 1943, Lt. Alexis Doster was yanked from the ground, hurtled through the air and safely pulled into a Stinson Reliant. Lieutenant Doster thus became the first airborne pedestrian in history. He reported that his sensation was "a smooth whir of air around me and then the ground disappeared underneath. If I hadn't heard the wind I wouldn't have known I was moving."

Although initial tests on dummies revealed a force of from 10 to 17 Gs, changes in the tow rope and harness cut this to 3½ to 7 Gs for less than two seconds, well within physical safety margins, after which the braking system drops the G force to 1.7. As soon as the subject's body reaches the speed of the towing plane, the G drops to 1.3.

At the present time, human pick-up is limited to lightweight, highly maneuverable airplanes although experiments are being conducted to develop techniques for the use of this equipment with high speed combat planes. ☆



Pick-up plane uses nylon rope on electrically driven reel equipped with automatic braking device to pull subject up to plane's door.



When early tests proved that chest type parachutes caught on the edge of airplane's door sill, simplified back type chutes were adopted.

THIS I

Underground. A group of worried men sat around a table at the home of a generalleutnant in Berlin. It was early in 1944. The Allied air forces were engaged in an all-out attack on German aircraft production. Leaders of Germany's 10 leading aircraft firms had been assembled to figure out how to save their aircraft plants from obliteration. The German Air Force had become ineffective in defending these installations. Dispersal and camouflage of factories had failed. Every day of good weather meant that German aircraft plants would take a beating—and each beating was worse than the last.

So it appeared that the only way to stop them was to move the German aircraft industry completely underground. That was the topic for discussion at the meeting.

Some of the manufacturers objected. They argued that it would be too great an undertaking in the midst of war. They pointed out that the psychological effect upon German workers would be bad, that it was too much like rats being driven into their holes. It meant a tremendous labor-using program of excavation. It meant replanning and reorganizing, relocating workers, building new barracks, rerouting supplies. It meant a step-by-step transfer, with irreplaceable machinery moved first. It would have to be an industrial evacuation by stages; moving an entire nation-wide, vital and complicated industry. The task at best would require at least a year.

Yet nobody offered anything better. It was decided. They adopted—with reluctance—the underground proposal.

They called for maps and spread them on the table. The first step obviously was to choose underground sites. They selected mines, tunnels and caves. They decided to make FW-190 parts in deep caves near already well-established factories; assemble JU-88s in a section of a subway, set up other assembly lines in the Paris subway. And what could be salvaged from the bomb-stricken Messerschmitt factory at Regensburg was to be moved to a highway tunnel and a cave.

It was dawn when the conference ended. The confreres filed away. They had devised a way they hoped would protect Germany's life breath by moving her aircraft plants safely away from Allied bombs.

Nine months have passed since that Berlin conference. Was it successful? Has the German aircraft industry been saved?

The answer, of course, is no. But Allied strategists agree that had the plan been undertaken a few years earlier, the course of the war might have been changed greatly. Germany had planned 20 years for the *waging* of war; she had not planned so long for *defense*. Her movement underground in this war was not only too late but, as her industrialists feared, too big a job. Among other difficulties, the shipping of equipment was complicated and snarled by our bombing of German transportation.

Yet much was done to complete the plan. By the time our ground troops got there, parts of the Paris subway were nearly ready for manufacturers' use. An underground location was nearly ready in the Moselle Valley sector; it was taken over by General Patton's troops.

But the plan upon which the German aircraft industry that night in Berlin staked its last great gamble for life will fall before its No. 1 enemy. That enemy is time.

Button Up. Some people still believe that there is no such thing as an enemy agent. Yet in late 1943, despite our highest security measures, the Japanese published a document giving much data on the B-29. The report concerned horsepower, bombload, speed, range and rate of climb. Although much of the report may have been filled in by guess and some of it may have been wrong, the probability remains that somewhere there had been loose talk or careless handling of papers.

Still Kicking. It has been on the ropes time and again. It has gone down at times for a short count. It has often been groggy. But the German Air Force still has the wind to come back fighting hard.

It is true that an impressive proportion of the enemy's fighter factories, once main production centers, are now largely inoperative; that a larger percentage of factories, dispersal airfields and experimental stations have been seriously damaged.

It is true that the enemy suffers from fuel scarcity. Romania's fall in August deprived the Germans of 39 percent of their oil supply and 33 percent of their gasoline supply.

And what's equally important to the GAF pilot, his homeland operational conditions are in some respects distressing. The enemy, expecting to fight most of his air war from bases beyond his homeland, developed bases in the occupied countries, neglecting the ones within Germany proper.

In France and the Lowlands, he had built large hangars, concrete runways, spacious dispersal areas, bomb-proof revetments and good repair shops. Each major field became a massive, modern military establishment, usually with satellite fields nearby.

But most of the fields in Germany proper are 1939 versions, with closely grouped hangars, repair shops and barracks. They are vulnerable targets. There is a lack of dispersal space because in 1939 the enemy did not expect to be under attack as he is today. So acute is the need for

YOUR ENEMY

auxiliary landing strips and dispersal areas that the enemy has been compelled to use for these purposes his autobahns or super-highways.

Yet the Hun flyer's fighting spirit is notches higher than that of the German ground soldier, and here are some of the reasons:

German flyers still live in comparative comfort. Most of them never have known the grimness of the front line. Many German pilots even now consider flying an exciting "sport."

Luftwaffe personnel has been encouraged by promises of jet aircraft. Some crack fighter units have been withdrawn for conversion to jet planes, and the high command sees to it that rumors tell of jet "successes."

German propaganda remains good enough for the gullible to accept the myth of invincibility. The attitude is "We shall win because we must."

GAF crews feel they must fight with desperation to save their country's neck, yet they are made to believe that their strength is being carefully preserved.

As long as the Hun can maintain such fighting spirit and can, as he did five times in one week, run from 100 to 450 fighter sorties against our bombers, the air war will be hard. The enemy is hurt, but he is not down.

RHIP. German soldiers below the rank of major are forbidden to touch Allied pamphlets dropped from the air. Violators are punished severely.

Parachutes and Cables. Both Germans and Japs have devised ways to put wires or cables in the air as hazards to our aircraft.

The Germans have a shell which, fired from the ground, opens at about 8,000 feet and blossoms into a parachute, from which is suspended one or more thin steel wires which may foul propellers, wings or control surfaces of low and medium-flying aircraft. Explosive charges are attached to some of the parachutes. Another apparent purpose of parachutes of this kind is to impede the vision of bombers seeking a target.

The Jap method is to drop from airplanes 150-foot lengths of thin, twisted steel cable. At one end of the cable is attached a one-pound bomb and, at the other end, two small parachutes to keep the cable vertical as it drops.

The bomb, cable and parachutes are packed in a can 7 by 3½ inches, constructed in two halves, hinged across the bottom. The bomb is a cylinder of cast steel, 2½ by 2 inches, filled with explosive. The fuze functions on impact from any direction.

As the can drops, it flies open and releases the cable and parachutes. Besides the danger of the bomb exploding upon contact with our bombers, the cable presents a definite fouling hazard.

Army Game. Our forces in France have found that a German rifleman sometimes uses two connecting foxholes, only one of which is visible to an approaching force. After firing from the visible foxhole, the rifleman crawls to the hole which is concealed from view. When an Allied soldier opens up on foxhole No. 1, the German returns fire from foxhole No. 2.

The Spectators Were Tearful. The Japs believe that the life of a young, poorly trained boy in a flimsy aircraft is a small price to pay for destruction of a U. S. heavy bomber and a skilled crew. "Inspirational" radio broadcasts seek boy volunteers willing to die by crashing into our aircraft in mid-air.

The Japs make national heroes of these suicide pilots. Tokyo radio recently told the story of one of them, and broadcast a transcription of a speech he had delivered at a "Youth All Rise to Action" rally a few months before his death. The radio said the youth was one of three "body crashing heroes" who had downed B-29s over Northern Kyushu. (This was untrue. One B-29 had been lost by Jap suicide tactics, but not on that mission. Ed.)

Other young Japs are praised because they take off their parachutes while engaging in combat. This is presented as being heroic and in significant contrast to Allied pilots.

Increased emphasis is being placed upon the training of air-minded Jap boys. One day recently, the Japs held 64 "air rallies" for youths. These are recruiting drives for boy

volunteers between the ages of 11 and 13 who take a four-year training course for the air force in a Civilian Crew Training Institute. After graduation they go into the army.

An official Jap observation: "These midget soldiers have a conscientiousness that makes spectators tearful."

Night Fighter. A JU-88 night fighter recently captured in France was armed with three 7.9 mm guns and four 20 mm cannon. The latter were located in a streamlined ventral gondola beneath the fuselage.

Revised Opinion. A speaker at a recent conference of Jap air force officers uttered these remarkable words:

"We Japanese used to think that, because of our great strength, one Japanese could oppose 1,000 of the enemy. We had no fear. Now we realize that this is a dangerous attitude. For instance, if the enemy sends 1,000 planes to bomb us, and we send up only one plane, it is certain that our plane would be destroyed and then the enemy would be free to bomb the remaining 800 or 900 Japanese planes still on the ground.

"It is true that we would not have to send up a full 1,000 Japanese planes to oppose 1,000 enemy planes, for our technique is superior, but we should of course send up a reasonable quantity of planes so as not to give the enemy undue advantage."

Believe It or Not. According to the Berlin radio, the current terror of the Eastern front is a 22-year old oberleutnant named Erich Hartmann. A year and a half ago, he claimed to have shot down only 16 opponents. Today he claims more than 300. Hitler has pinned on his chest the German High Command's highest award, the Oak Leaves with Swords and Diamonds. Hartmann's bag, said the radio, "often includes 8 to 11 enemy aircraft per day."

Suicide Souvenir. A rain of small bombs recently was dropped by the Japs upon one of our airfields in China. Some of the bombs exploded, causing minor damage. Some of the bombs didn't explode.

Two Chinese coolies sought to remove some of the small unexploded missiles from a runway. As soon as the bombs were picked up they did explode—killing the two Chinese. A short time later a GI was foraging through a crashed P-40 in search of souvenirs. He inadvertently *touched* one of the small Jap bombs. It, too, exploded, killing the GI.

It seems that some of the bombs had been set with delayed fuzes which prevented an explosion when they hit the ground. But the fuses did cause the bombs to explode when they were later *touched* or *moved*. In other words, combination bombs and booby traps.

Trickery. An Allied plane flying over an enemy-held section of New Guinea saw the letters POW laid out in white strips on the beach and a number of men, one waving a white cloth. The Allied pilot summoned surface vessels by radio to attempt rescue of what he believed were escaped Americans. PT boats, going in close to the shore, were fired upon by 75 mm and 40 mm guns. One boat was hit.

Mess. How well does the Japanese soldier eat? By American standards his pickings are pretty slim, but by Japanese home standards he is an extremely well fed individual. On the basis of variety and abundance, a soldier in an adequately supplied garrison eats perhaps twice as well as his family.

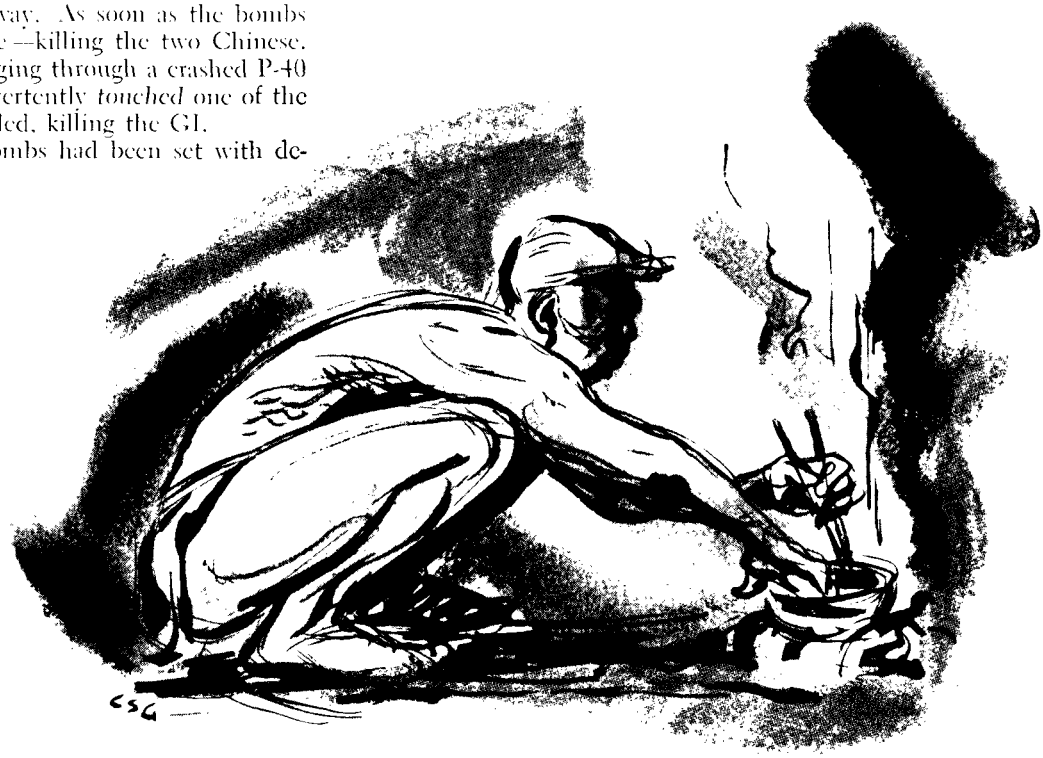
To the Jap soldier, as to the folks at home, rice is still the most important food. The average Japanese family eats but little meat, the daily diet revolving around the basic rice-fish-vegetable diet. This combination has been supplemented for the fighting man with some meat, fruits, extra vegetables and sweets. These extras, however, are used chiefly to flavor and vary the rice-fish staple, and do not provide a complete change of ration from one day to the next.

The Japanese army, even in rear echelons, has nothing comparable to our company or squadron mess. Each soldier is his own cook, and he usually prepares enough at one time to supply him for the next 24 hours.

The Japanese field rations include canned meat such as beef, pork and stew; canned fish; canned vegetables, including beans, bean sprouts, peas, bamboo sprouts, spinach, water chestnuts and cooked rice; canned fruit; canned eggs; dehydrated vegetables, including most of the familiar varieties plus such items as edible seaweed and a starchy tuber known as taro root; dehydrated fish (bonito); condiments; staples, such as rice, granulated sugar and salt; beverages, including tea, condensed or powdered milk, cider and whisky, and chocolate or other candies.

The Jap soldier going into combat usually carries rice and bags of small, hard biscuits. Whenever possible, he carries canned meat. In addition, there are two types of especially packaged rations, a package per meal. In one type, the package contains cakes of compressed wheat or barley, sugar, cakes of dried fish and cakes of salty dried plums. The other type contains two cakes of compressed fish and vegetable mixture and a sack of pre-cooked rice flour. Jap soldiers mix the flour with water to make a dough, which they eat cold.

There are several types of emergency aviation rations. One includes dried bonito, biscuits, pickled plum, peas, hard candy, caramels, chocolate and whisky. Another air ration



includes rice cakes, hardboiled eggs, canned meat and vegetables, canned pineapple, cider, chocolate and whisky.

It is important that captured enemy food be inspected and approved by a U. S. medical officer before our troops eat it. In emergency circumstances, when there is no way to get it inspected, it is well to keep in mind that the safest of all would be canned foods, provided the can does not bulge, that the can is not badly rusted and that the contents do not yield any kind of questionable odor.

Smoke. The following advice was issued by the 12th SS Panzer Division to its motor transport drivers:

"If your vehicle is attacked by an Allied fighter-bomber, drop a smoke bomb (Rauchkoerper or Nebelhandgranate) close to your vehicle but not too close or your vehicle will catch fire. This will make the pilot of the fighter-bomber think he has hit his target, and he usually shears off.

"Never drop smoke bombs before the first burst of fire from the plane, or the pilot will notice the trick.

"In the future every vehicle is to be equipped with two smoke bombs."

The Thirteenth. One U. S. squadron in the South Pacific has had its base attacked by the enemy at five minutes to midnight on the 13th of the month for 13 months.

Ships in Hiding. Heavy losses in barges and small craft at exposed advance bases have compelled the Jap to give these targets high camouflage priority. Now, because of wide ranging Army and carrier strikes, he has had to extend his camouflage to larger transports and auxiliaries.

The Japs are adept at concealing vessels along island shores. One U. S. photo interpreter reports:

"This method provides for entirely covering ships, even sides of the hull, with vegetation. Vegetation appears natural in all cases. Then ships are moored close inshore along steep banks to blend with the background and take advantage of shadows."

A ship then looks like part of an island to the naked eye. But not to a camera, which can detect the hull's outline beneath the vegetation and also shows any difference in elevation between ship decks and adjacent shore.

Japs also have used cleverly constructed dummy ships. One such ship was made from a barge, to which a sham bridge and funnel were added. Photographs discovered the trick.

Not Even a Good Lie. Radio Tokyo recently gave U. S. listeners the names of six lieutenant colonels and one major, who, the radio said, had "crashed in a B-29 over Japan." At the time of the broadcast all of these officers were safe and well at their home bases. Five of the six did not even fly on the mission.

Easy Does It. From his command, the Jap pilot gets this bit of advice on how to attack U. S. bombers:

"Aiming points: fuel tank, bomb bay. The enemy's accuracy of fire is excellent. As soon as you discover the enemy, approach from an advantageous position and quickly shoot him down. Even if you have no advantage of position or are at a disadvantage, engage the enemy and shoot him down."

High Jitters. Indicative of the Jap official state of mind are the activities and utterances of the high command. Recently, Jap Brass Hats have:

Ordered "absolutely safe" disposition of aircraft at all bases.

Set up procedures for fueling and flying away aircraft upon the approach of Allied airplanes

Prepared for the preservation of important documents during air attacks.

Ordered construction of slit trenches for all airbase ground personnel.

Spoken urgently on the need to get lookout and fire-fighting facilities in order.

Established precautionary measures for airplanes returning to base during an Allied attack.

Issued instructions on the draining, unloading, stripping and dispersing of airplanes left on the ground when bases are attacked.

Getaway. Pilots who are fighting Oscars and Hamps report the Jap's use of straight, steep dives followed by pull-out as standard evasive maneuver. Recent specific comments from CBI say that when the Oscar is chased in level flight below 5,000 feet, instead of flipping and pulling up in a steep climb, it will push straight down and make an abrupt pull-up close to the ground. Pilots of the Oscar I and II, as well as a few Hamp pilots, have attempted regularly to break off combat by diving down and out at full throttle, frequently without regard to altitude.

Camouflage. The Germans attempted to make their airfield at Cormeilles en Vexin in France look from the air like a small town. Hangars and shops were covered with sacking and designed to resemble houses or small buildings. False windows were painted on the sides, and gardens were "planted" outside.

But as an Allied advance pressed close, the Germans deserted their playhouse. They set fire to three ME-109s, four FW-190s and two JU-88s because they could not fly them away.

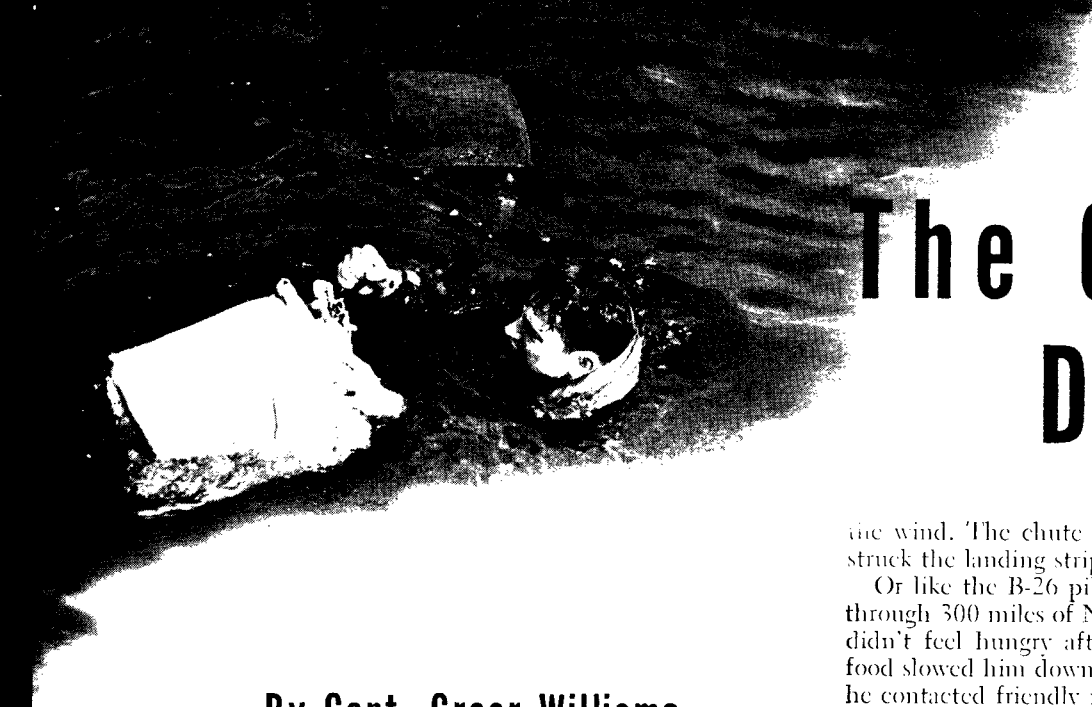
Jap Odds and Ends. Tokyo Broadcast to the U. S.: "Not one of the 20,000 Japanese residents of Davao will leave the island of Mindanao. Their ardent desire to defend their home island was at last granted when on August 1 they were ordered to offer their services as military employes."

Jap explanation to natives of a Pacific island who wanted to know why Allied airplanes were not being shot down: Allied planes have been armored on the underside with rubber, from which Jap bullets bounce off.

Domei News Agency: "Shows for enjoyment are banned in Toyko theaters, and the subject matter . . . will be renovated so as to contribute toward uplifting the people's morale and increasing fighter strength."

Tokyo Domestic Radio: "Admiral Shiro Takatsu, war councillor, received a dozen bottles of grape juice from the Emperor at the Tsukiji Naval Hospital at 9:50 last night. The admiral died at 6:30 a.m. today."

Heard in a Tokyo broadcast during September: "There is not one soldier on the front lines who is worried about the outcome of the war for Japan." Quote from a Jap soldier in the combat zone: "How unfavorable the war situation is . . . I would like to see, just once, a situation in which the enemy would be pushed back and defeated." ☆



The Careless Die Early

By Capt. Greer Williams

Air Surgeon's Office

If you are a flyer who never makes a mistake, you can sleep through this one.

On the other hand, you may be human, like the joker who slept through a class on ditching. On that unlucky day when his airplane had to ditch, he didn't know how to open his one-man life raft. He drowned.

Or like the pilot of a B-17 in which half the crew, including the bombardier, were unconscious from oxygen want during the bombing run. The pilot saved their lives by leaving the formation and diving from 25,000 to 5,000 feet. But that didn't correct the leaking oxygen system which had given his crew trouble on a previous mission. Nor did it help in a subsequent mission when the whole right half of the system went out completely.

Or like a pilot who got his shot-up fighter back to the base but couldn't land. He bailed out all right, but landed facing the wind. The chute jerked him over backwards. His head struck the landing strip and he was killed.

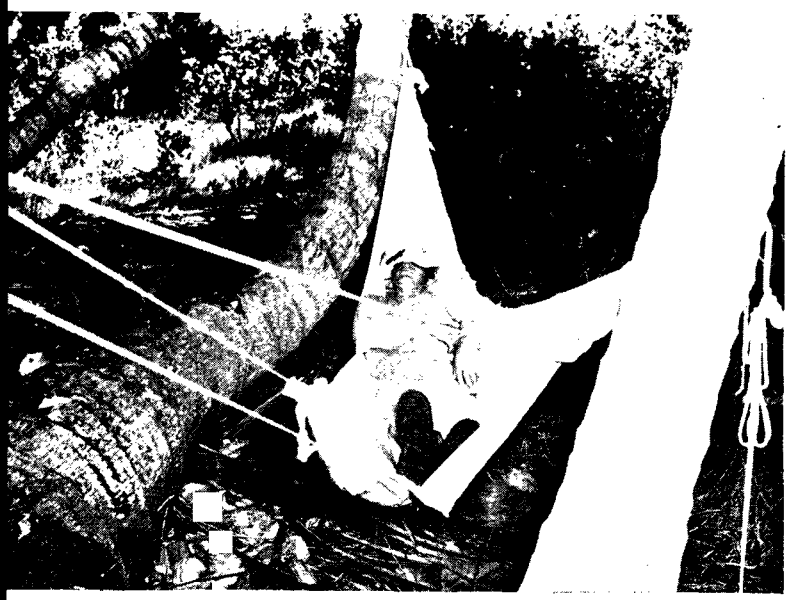
Or like the B-26 pilot who tried to walk back to his base through 300 miles of New Guinea jungle without eating. He didn't feel hungry after the first two days and looking for food slowed him down. He was definitely slowed down when he contacted friendly natives 14 days later.

Or like the airman who used his electrically heated boots for overshoes because of the snow and slush on the ground. His toes were frostbitten when the battered wires failed at high altitude.

Or like the four crewmen of a B-17 which ditched in the South Pacific. They failed to assume ditching positions and were never seen again. The other six got into the rafts and, as soon as they were bonafide castaways, ate all their emergency rations and drank all their water. They were shot with luck because, although no one had thought to bring the Gibson Girl or a Very pistol, a PBY spotted them after seven hours.

Maybe the burdens of discipline and the hazards of combat flight make you feel like leaving everything to luck. Luck is a good thing but any gambler will tell you that to stretch it you have to give it a little expert guidance.

The man the AAF has delegated to help you become an expert in stretching your luck is the Personal Equipment Officer. The Air Transport Command calls him a Flight Emergency Officer and the Navy has named him the Aviation Equipment Officer, but whatever you call him, PEO or



Considerable realism is put into this demonstration of sleeping in a hammock made of parachute with shrouds attached to trees.

This "A" type lean-to shelter is made of poles bound with palm fibers and covered with mats woven of palm fronds. It is waterproof.

Introducing your survival salesman, the personal equipment officer, who is a guy well worth listening to. His job may be a headache for him – but it can mean all the difference between life and death for you

Having inflated his tiny raft and climbed aboard, the pilot is now ready to paddle away. Flyers have survived 28 days in this craft.

Survival Joe, he's a fellow you may want to know. They threw the book at him when they wrote the directive establishing the Personal Equipment Officer—AAF Regulation No. 55-7, dated 28 October 1943. This made a non-flying officer in each squadron, group, wing, air division and air force responsible for the proper care and use of all personal and emergency flying equipment in each unit. In fact, the directive states that the squadron or group PEO has 32 specific duties.

The list of duties—covering the issuance, servicing, inspection, storage and intelligent use of such items as oxygen masks, heated flying suits, fire extinguishers, parachutes, first-aid kits and air-sea rescue equipment—makes him a cross between an engineering officer, supply officer, and flight surgeon. But, if he's eager, he's more than that. He's a salesman, continually trying to sell you anti-goof insurance—use your shoulder harness, preflight your oxygen equipment, run through your dinghy drill, wear your oxygen mask but don't turn on the emergency valve unless sick or wounded, don't be indifferent. He's a Boy Scout with a knife and a compass and a big "Be Prepared" motto over his lean-to. He's a worry-wart and a trouble-shooter, always reminding you of unpleasant things.

But if he doesn't spend too much time in the sack, you will learn to respect him, even though he seemed an afterthought in training back in the States. Once you learn that in combat the careless die early and the careful keep coming back, you become a firm believer in the survival gospel.

It was in combat that the Personal Equipment Officer was born and, to quote Col. Harry W. Holden, commandant of the AAF School of Applied Tactics, "born in a hell of a hurry." The need of an officer to enforce oxygen discipline was recognized by Maj. Gen. David N. W. Grant, the Air Surgeon, in the establishment of the old Unit Oxygen Officer (AAF Regulation No. 55-7, dated 30 May 1942). When the 8th Bomber Command began operating from England, however, it found two things wrong with the Unit Oxygen Officer. In the first place, he was a flying officer and, therefore, exposed to the combat attrition rate. In the second place, his duties were not broad enough. In addition to oxygen accidents, there were the big problems of frostbite due to heated suit failures and of air-sea losses in the North Sea and English Channel. In early 1943, the 8th Air Force established the non-flying job of Personal Equipment Officer. Modelling him after a similar position in the RAF, it recruited engineering officers, supply officers and grounded flyers for quick training by the Central Medical Establishment—and quick results. The PEO was given an office between the briefing room and the ready room and put on 24-hour duty in the locker rooms for parachutes and clothing. He shared mightily in the dramatic reductions of oxygen

(Continued on page 57)

This is the two-rope climbing method used to gather coconuts for food. The improvised leggings are made of palm cloth and vines.

This student eats a jungle survival meal of yucca flowers, palm cabbage and mussels. The stew in leaf tureen was cooked in bamboo.

Flaming debris of exploding Nazi ammunition truck fails to stop 8th Air Force Thunderbolt during strafing mission over France.

"Surprise, speed and a variation of the attack — these are the things to keep in mind when strafing an airdrome," says Col. Donald J. M. Blakeslee, commander of the highest scoring Mustang group in Britain.

"When my group is assigned to strafe a particular target I ask for all the photographs available. I want my intelligence officer to get the best information he can on the defense, the pinpoint positions of flak posts, and how many aircraft are reported to be on the field. I want to know what the terrain around the airdrome is. With this I can plan the approach best calculated to achieve surprise. I use terrain— hills, gulleys and trees— for cover, and airdrome installations such as hangars, to screen my approach. I never come right in on an airdrome if I can help it.

"But once I hit the drome, I really get down on the deck. I don't mean five feet up; I mean so low that the grass is brushing the bottom of the scoop. I prefer to get down low and shoot up at any aircraft on the ground rather than come in high and shoot down. Usually I fire a short burst from long range and correct for it as I come in.

"After the attack on the field stay on the deck for a good mile beyond the drome before pulling up.

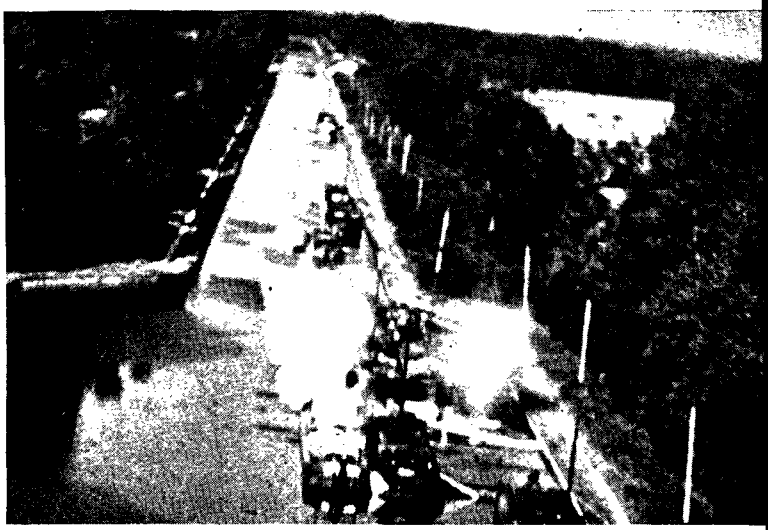
"Vary the plan of your attacks, if possible. You can't use the same plan twice. For targets such as convoys or trains, I usually let down to about two or three thousand feet. I get directly over it and go down in a 20 to 30 degree dive. I feel this enables me to concentrate my fire. I do not consider barges a worthwhile target unless intelligence indicates they are explosive targets. Machine gun fire on barges is rather ineffective. Also, I personally would not deliberately pick a flak tower for a target unless it were in my way. A flak tower not firing is probably not in use and there is no sense in attacking it anyway."

Col. Joe L. Mason, commander of another P-51 group, thinks that the greatest tendency when shooting up ground targets is to waste bullets.

"When making an airdrome attack," Mason says, "I think it's OK to start shooting way back and shoot all the way through. You might waste bullets but all these bullets flying around slightly disrupts the ground fire.

Here are the do's and don'ts of ground strafing from combat reports of fighter pilots of the 8th Air Force. There is some variation in the advice they offer, but all of it is battle-tested

"A good steep approach gives an extremely heavy concentration of bullets in one spot." Enemy vehicle wrecked by fighter strafing.



"Barges make the best targets when Intelligence indicates they carry explosives that can be touched off with machine gun fire."

"But on trains and convoys where you encounter no return fire, you must make every bullet count. We lost some ME-109s one day because not a damn soul in the group had any bullets left."

Col. Avelin P. Tacon, Jr., also a Mustang group commander, permits his pilots to work out their own tactics in strafing ground targets.

"On the mechanics of strafing there are as many opinions as there are pilots," according to Tacon. "Some believe in surprise at the sacrifice of speed. This is accomplished by getting down to daisy-top level several miles from the target and following a road or other landmark into the target. These boys like to avoid all villages and pop over the trees, shoot up the target and get the hell away on the deck, reforming and regaining altitude some five or ten miles away.

"The other school of thought likes to come around the target at about 4,000 feet, look it over, and then dive in with around 450 on the clock, shoot up the target, stay low, and get away, reforming away from the target. Both systems have their advantages and disadvantages. Inasmuch as it's his own neck we let the pilots do it the way they prefer.

"But one thing that everybody agrees on is the absolute necessity of aimed fire as opposed to 'hosing the area'."

Certain types of ground targets should be avoided particularly if the objective isn't worth the risk, according to Col. Roy W. Osborn, commander of a Lightning group.

"This in my opinion, is the most important lesson we can learn about ground attack," he says. "A questionable target that offers only a small chance for success should be avoided. It is a hard lesson to learn but our group learned it the hard way. One day, one of our flights went down to strafe an airfield in France. No aircraft were visible, but the attack was made anyhow. Out of the four aircraft attacking, three were lost including the flight commander, and the fourth was badly shot up and came home on one engine. There were no claims; there had been no target to warrant the attack. There must always been a 'down to earth' sense of value in regard to targets to be attacked and losses to be risked."

Maj. Kenneth W. Gallup, member of a Thunderbolt group, believes that in areas where there is little flak or

"Train busting is great sport, but it is a wise precaution to look over every train carefully and neutralize any small-arm defenses."

"Airfields are the most difficult and dangerous of ground targets. Pick out a target as you go down—a plane, a hangar or a gun."

ground fire the pilot should look for his targets from 4,000 feet altitude.

"By maintaining this altitude," he explains, "I find that I have an excellent view of the countryside and am able to see far enough in front of my flight path to avoid heavily defended areas, such as the larger towns and airdromes. This not only enables me to study a particular target long enough to decide its worth, but also affords ample time to plan my attack.

"A few thousand feet above the terrain gives more protection for the pilot by making it possible to get the hell out of there in a hurry if a big concentration of ground fire is encountered. In addition, I am in a position to trim my plane for the higher speed caused by the diving pass and at the same time can make a good steep approach which gives an extremely heavy concentration of bullets in one spot."

The majority of mistakes made in ground strafing are due to the pilot disregarding his training in ground gunnery, according to Capt. Wayne K. Blickenstaff, member of a P-47 group.

"Too frequently the novice puts the pip directly on the target and attempts to judge his error by watching his strikes," he says. "The result is that in the beginning of the pass he shoots below the target and his attempts at correction results in spraying bullets above and around the target. This habit can be corrected by leaving the pip above the target at the beginning of the pass and as the range decreases allowing the pip to drop on to the target.

"Train busting is a great sport. Two precautions are worth mentioning. First of all, a train needs very little if any leading and can be considered as a stationary target. Secondly, it is well to look over every train carefully and neutralize any small arm defenses, if present; then the locomotive is easy meat."

There are several steadfast rules pilots should observe in attacking airfields and trains, according to Lt. Horace Q. Waggoner, a Thunderbolt flight leader.

"Airfields are the most difficult and dangerous of ground targets," Waggoner says. "The initial pass on any field should be made from an altitude of from 6,000 to 8,000 feet. Come out of the sun or through a cloud if possible. Have a target picked out as you go down—a plane, a hangar or a gun position.

"An airfield should not be attacked line abreast, nor should the approach be made on the deck. For the getaway, stay flat on the deck until clear of the field a half to a full mile, then pull up and climb back to 6,000 to 8,000 feet for another pass, if necessary.

"For attacking trains, and here is a place for one steadfast rule, always take the engine first from 90 degrees. This gives you a chance to look over the train and see if it is to be thoroughly beat up or left alone."

Capt. William J. Maguire, another P-47 pilot, is of the opinion that many new pilots think that ground strafing "is just a simple matter of putting his plane in a dive and squeezing the tit."

"The fact is," Maguire insists, "there are probably more things to consider in ground strafing than in air-to-air combat. The pilot must take into consideration the type of target he is going after, his angle of dive, his airspeed, the position of the sun and just what evasive action he is going to take from ground fire.

"If you find an airdrome that you know little or nothing about, feel the place out; do not send more than two planes in for the first pass. Never send more than four planes across any drome at one time."

Of all the pilots who have flown with the 8th Air Force perhaps one of the most experienced in the art of low level attacks is Capt. B. M. "Mike" Gladych, a native of Warsaw, Poland. Captain Gladych has been in action with five air forces. Since 1939 he has flown for Poland, Finland, France, England and the United States. As a member of the high scoring Thunderbolt group formerly commanded by Col. Hubert Zemke, Captain Gladych has drafted what he considers the ten commandments of ground strafing:

1—Before you make an attack be sure that there are no enemy aircraft in the vicinity.

2—Make an approach into the wind because the sound is killed.

3—Watch out for the gun positions and remember they are difficult to spot before they open fire.

4—Remember that the closer to the gun you fly the safer you are.

5—Pick out the target, give full throttle, half a ring elevation, aim carefully and steadily and open fire from about 1,000 yards.

6—At 300 yards cease fire, get as close to the ground as you dare. Forget about the target and concentrate on flying only.

7—When attacking a gun remember that you have the advantage of fire power. Concentrate on one gun at a time. Go in and kill the crew.

8—Take the initiative, strike first; don't wait for them to open fire.

9—Don't become overconfident because you are not hit in the first attack. At first the enemy gunners usually underestimate your speed, but it doesn't take them long to spot their error.

10—Never expend all your ammunition. ☆

AIRMAN'S PSALM

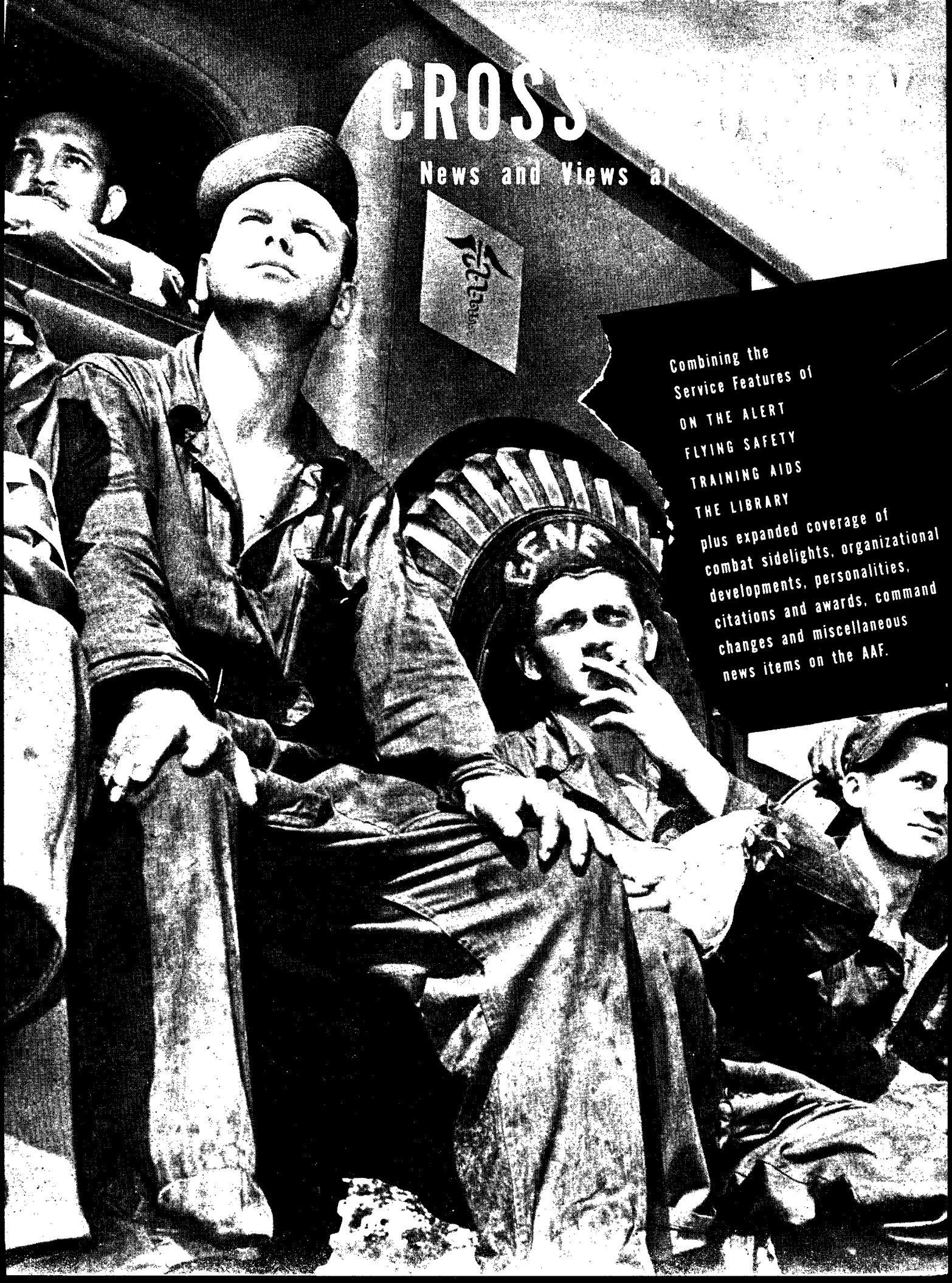
The Lord is my Pilot. I shall not falter.
He sustaineth me as I span the heavens;
He leadeth me, steady, o'er the skyways.
He refresheth my soul.
For He showeth me the wonders of His firmament
For His Name's sake.

Yea, though I fly through treacheous storms and darkness
I shall fear no evil, for He is with me.
His Providence and Nearness they comfort me.

He openeth lovely vistas before me
In the presence of His Angels.
He filleth my heart with calm.
My trust in Him bringeth me peace.

Surely, His Goodness and Mercy
Shall accompany me each moment in the air,
And I shall dwell in His matchless heavens forever.

—FROM THE OFFICE OF THE AIR CHAPLAIN


CROSS
News and Views a
Combining the
Service Features of
ON THE ALERT
FLYING SAFETY
TRAINING AIDS
THE LIBRARY
plus expanded coverage of
combat sidelights, organizational
developments, personalities,
citations and awards, command
changes and miscellaneous
news items on the AAF.

A Lad on Leyte

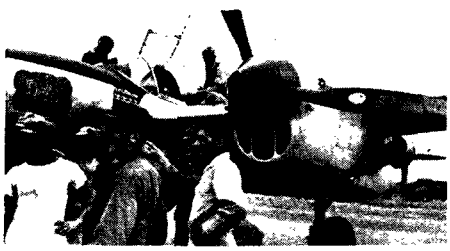
The day after he landed with the Air Task Force on Leyte, our staff correspondent, Maj. Herbert Johansen, happened on a young Filipino for whom the AAF's return to the Philippines was a very personal triumph.

It was A plus 3 when Major Johansen and a group of friends were visiting a Tacloban family, the head of which was Boy Scout Commissioner for the area. "About the time we arrived at the home," Major Johansen reports, "another caller appeared, a lad of about 18 or so who greeted us with boundless enthusiasm when he observed our air force shoulder patches.

"Excitedly he reached in his pocket and pulled out several dog eared photographs. The first he displayed was the familiar one of the Randolph Field tower with plane formations appearing in the sky on either side. He then showed us a group picture of the Randolph graduating class of 1937 and proudly pointed out his brother in the photograph. It seems that his brother was in the fight when the Philippines were taken by the Japs and had joined the guerrillas in the hills.

"The lad said he cried at first when the Americans came, then grinned. It was the first time he had smiled in more than two years, and now he was grinning all the time.

"His most eager question was when were our P-38s and [illegible]."



FIRST AAF FIGHTER LANDS ON LEYTE

New Command Assignments

Recent changes in command assignments among air officers include:

Lt. Gen. Joseph T. McNarney, from Deputy Chief of Staff, U. S. Army, to Deputy Supreme Allied Commander, Mediterranean Theater, and Commanding General, North African Theater.

Brig. Gen. Charles P. Born, from Operations Officer, 15th Air Force, to Deputy Commander, 15th Air Force.

Maj. Gen. Robert B. Williams, from Commanding General, 1st Bombardment Division, 8th Air Force, to Commanding General, 2nd Air Force.

Maj. Gen. W. O. Butler, from Commanding General, Eastern Flying Training Command, to Commanding General, 6th Air Force.

Brig. Gen. Donald Wilson, from Deputy Chief of Air Staff, to Assistant Chief of Air Staff, Operations, Commitments and Requirements.

Stripe Talk

Heavy hangs AAF Regulation 35-54 over the heads of GIs bucking for stripes. In zone of interior establishments of the AAF, minimum prerequisites of total service and period in grade have been established, which prohibit the rise of an enlisted man by more than one grade at a time. To rate three stripes and a rocker, for example, he must have seen 15 months of service, with at least six in grade as sergeant. Thirty-six months, 12 of them as technical sergeant, are required before a man may be advanced to master sergeant. The regulation also specifies maximum enlisted grades according to military occupational specialty.

From Prison to Home Pronto

Freed American prisoners of war are being given priority on transportation home over all other combat returnees except the sick or wounded. Under a new War Department policy, all personnel who have been prisoners for 60 days or more, or whose physical condition requires it, will be returned to the States as soon as possible unless they prefer to remain overseas.

Prime example of the speedy work being done was the return of 1,015 American airmen who had been prisoners of war in Romania (AIR FORCE, November, 1944). Many of them were in New York ready for furloughs little more than a month after Romania surrendered. Similar transportation arrangements were made for those held in Bulgarian prison camps at the time of that country's capitulation.

New York to Paris

Not too long after the Stars and Stripes replaces the Swastika on Unter den Linden, we expect to report that a C-54 has settled down on an airdrome of Germany's capital city to complete the Air Transport Command's inaugural New York-Berlin run.

The fact that ATC is flying New York to Paris on a regular schedule seems to be just another demonstration that ATC can go anywhere in the world where a friendly landing strip can be found. Berlin should come in stride.

That first run to Paris was a top secret mission, and the take off on October 1 from LaGuardia Field was virtually unnoticed by more than 5,000 spectators who had gathered to witness dedication ceremonies of a new commercial air link to Washington. Only five persons on the ground knew the score about the Paris flight.

The premiere hop wasn't much of a trick for ATC. Heavy sweating by several hundred AAF engineers and civilian workers long since had made a useable strip from what was left after airmen and infantrymen had driven the Germans from the airport. Of course, plenty of dickering had to be done with Allied ground defense batteries before a route over Europe was agreed upon. The transport flyers have a healthy respect for the ack ack boys.

But exactly 67 days after German resistance ended around the Place de la Concorde, the first regularly scheduled ATC cargo flight from the States to the European Continent was completed at Orly Field just south of the French capital, after stops en route at Newfoundland and the Azores.

The ATC Ferrying Division crew that drew the first hop and sampled French champagne a few hours after drinking American milk shakes was headed by Capt. Dallas Taylor. The others were Capt. DeOrr E. Holmes, copilot; 1st Lt. Allen L. Schaeffer, navigator; Pfc. David Pollack, engineer, and Pvt. Joseph Frimack, flight traffic clerk. The Paris-bound pioneer had Maj. Lynn C. Mahan, public relations officer of the ATC's North Atlantic Division, two OWI representatives and a dead head crew as passengers, and some 3,000 pounds of mail and extensive map making equipment and medical supplies as cargo.

They all were greeted at Orly Field by eight base officers, who shook hands and then went back to work. Within two hours, the plane took off with another crew for the return trip to the States.

A few days later, on October 6, General Marshall, War Mobilization Director Byrnes and members of General Marshall's staff completed the first non-stop wartime passenger flight from the States to Paris. The U. S. Army Chief of Staff had scarcely stepped from the plane before he was in conference with General Eisenhower.

"Seeing the generals there together, less than 20 hours after the plane had taken off for its 3,000 mile run, made the Air Transport Command look remarkably useful in expediting the movement of men as well as supplies," says Major Mahan.

The Paris service has progressed just like any other wartime supply system, a little at first and then, as the kinks were straightened out, a lot. A few trips a day was the early estimate, but the ATC is not ready to tell the enemy just how many are being flown today. All the enemy knows is that the ATC can fly to Paris just as often as it wants to, and that if General Eisenhower radios today that he wants five tons of biedelscrews for his ikonopedes, or 23 technicians, fifth grade, for a new project, he can have them in Paris tomorrow, someday in Berlin.

Winged Victory

The AAF stage production, "Winged Victory," (AIR FORCE, January, 1944) is now on the road, adding to the huge sum it raised for Army charities during its seven-month sellout run in New York. A 26-week tour of 13 principal cities was begun auspiciously in Los Angeles October 9 with an advance sale of $70,000 for the three-week stand there.

After three weeks in San Francisco, four days in Denver and a week each in Kansas City and St. Louis, the play is slated to open a five-week run in Chicago early in December. The remainder of the itinerary: Detroit,

two weeks; Cincinnati, one week; Pittsburgh, two weeks; Cleveland, one week; Philadelphia, four weeks; Washington, two weeks, and Baltimore, one week.

Set for early release is the movie version of the play which the cast completed at 20th Century-Fox studios in Beverly Hills, Calif., shortly before beginning the current road tour. Proceeds from the film also will go to Army charities. The world premiere of the picture at the Roxy Theater, New York, December 20, will be attended by high ranking AAF officers, and there also will be official participation in the movie's openings in other principal cities during the following two weeks.

Bug Patrol

Commanding officers have been directed to cooperate with health and quarantine officials in the States and overseas by providing for adequate inspection and disinsectization of AAF planes operating in or returning from areas infested by disease-bearing insects. Disinsectization methods are prescribed in AAF Regulation 61-3.

Just Testing

Capt. Willard Zens puts in a lot of pilot time in fighters near the front lines in France, and each time Jerry happens along, he streaks hell bent-for-leather in the opposite direction.

The captain is a test pilot for the 9th Air Force. The planes he flies are unarmed fighters that have been repaired and overhauled after cracking up.

Unlike most pilots who fly one type of plane day after day and get used to its quirks, Captain Zens has had to handle dozens of different brands, and he has been introduced to many of them just after they've left the repair line. But he says he has plenty of confidence in the AAF mechanics.

Averaging two runs a day, the captain has tested more than 600 planes. All but one functioned without a hitch and were reclassified 1-A and returned to combat duty. The single exception had its ailerons hooked on in reverse and, after a short, erratic flight, during which it turned left when steered right, it crashed and was relegated to the salvage heap.

A thorough test flight lasts about an hour and takes the captain almost up to the front lines and back. From the ground, he appears to be staging a mock dog fight.

"You might call it high-altitude shadow boxing," he says.

Evacuation School Evacuated

The School of Air Evacuation, located for two years at Bowman Field, Ky., has been transferred to Randolph Field to become a part of the AAF School of Aviation Medicine. The last class at Bowman was graduated on October 3, and the transfer became effective October 15. Under jurisdiction of I Troop Carrier Command while at Bowman, the school organized and trained air evacuation squadrons which now are operating in combat theaters throughout the

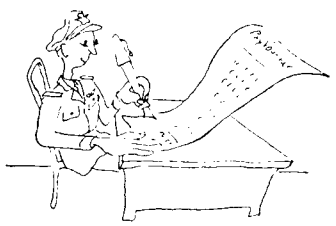
DIRECTIVES

On Questions of Policy and Procedure

Q. In computing flying time, when does the flight officially begin and end?
A. *An aerial flight commences when the aircraft begins to move forward on the take-off run and ends when sufficient momentum is lost on the landing run so that the aircraft either comes to a stop or power must be applied to continue motion. It does not include taxiing. (AAF Reg. 15-5B)*

Q. Is it permissible to reduce the grade of an enlisted woman for the purpose of filling an overseas requisition?
A. *No. Voluntarily or otherwise, no enlisted woman will be reduced in grade for this purpose. (Sec. XI, Cir. 350, WD 1944)*

Q. Is an officer responsible for seeing that all allotments are properly entered on his pay voucher?
A. *Yes. This responsibility cannot be shifted to the personnel officer or to the disbursing officer because of the assistance rendered in the preparation and processing of pay accounts. Before signing his voucher, each officer should check it to see that all data thereon is correct. (Cir. 315, WD 1943)*



Q. May wives of AAF personnel overseas make purchases at a base commissary in the United States?
A. *Yes. It is the desire of the Commanding General, AAF, that dependents of overseas AAF personnel be authorized to buy at AAF commissaries insofar as the capacity of the stores will permit. (AAF Ltr. 35-135)*

Q. When is the designation "Air Corps" proper? "Army Air Forces (AAF)?"
A. *"Army Air Forces (AAF)" is used except when referring to commissioning or enlisting individuals in the Air Corps (Sec. II, Cir. 372, WD 1944). AAF Memo. 80-8 provides that the abbreviation "AAF" will be used in all cases in place of "Army Air Forces," unless prohibited by Army Regulations. "AC" is used in connection with signatures.*

Q. May the field jacket be worn while on furlough?
A. *No. Par. 37, AR 600-40, provides that "the field jacket may be worn within the limits of posts, camps or stations, and then only when prescribed by the commanding officer of the unit involved. It will not be worn outside the limits of the post, camp or station except when appropriate to the discharge of an assigned mission, and then only when prescribed by the commanding officer thereof."*

Q. Are chevrons with the propeller insignia of the AAF authorized for noncommissioned officers?
A. *No. Insignia of grade for enlisted personnel are as prescribed in Par. 27d, AR 600-35.*

Q. What address should be designated in purchasing war bonds?
A. *Purchasers should designate a permanent address which will not be changed upon transfer. (Par. 11, Cir. 290, WD 1944)*

Q. May enlisted persons be paid three cents per mile for unused portions of tickets furnished on Transportation Requests?
A. *Yes. Whenever the orders indicate that the travel is chargeable to the Government, and transportation has not been furnished, regardless of the mode of travel authorized, reimbursement for the difference between the official distance and that actually traveled on the ticket will be made at the rate of three cents per mile. (Ch. 3, AR 35-4540)*

Q. May an AAF officer over 38 years of age request relief from active duty?
A. *No, individual requests of this nature are not authorized. An officer desiring such action will inform his commanding officer who, if he determines that no suitable assignment exists, will initiate recommendations to higher headquarters. As an alternative, an officer desiring to return to civil life for reasons of personal hardship or to accept employment in essential industry may submit resignation under the provisions of AR 605-275. (AAF Ltr. 35-49)*

Q. May prisoners of war make radio broadcasts?
A. *All military personnel when prisoners of war are prohibited from making announcements, transmitting messages or making use of enemy wireless broadcasting systems for any purpose whatever. Such broadcasts are used by the enemy as propaganda. They are often inaccurate and cannot be relied upon by next of kin. (Sec. II, Cir. 345, WD 1944)*

Q. Are military personnel who do not have ration books allowed ration currency for limited periods?
A. *Yes. The OPA has recently authorized local boards to issue such currency to personnel of this category who may be absent from their home stations for a limited period only. (Sec. II, Cir. 361, WD 1944)*

world. Nearly 1,000 flight nurses and a like number of surgical technicians were graduated.

Cadet Recruiting Suspended

After five months in which the books were opened again for 17 year-olds to sign up for future training as members of the Air Corps Enlisted Reserve, the procurement objective has been met and recruiting suspended, effective October 31. Since the month following Pearl Harbor when the enlisted reserve program was begun, more than 1,250,000 have volunteered for air combat crew training. With many thousands still in our training centers and others on the "waiting list" or yet to come of age, nearly half a million of this total have won wings.

Wanted: Suggestions

Officers and men who are "sitting" on ideas for new aids to training should accept this as a gentle prod from the Training Aids Division.

TAD is on the hunt for suggestions which might lead to the development of new devices, films, posters, manuals and the like, or to the modification or elimination of training aids already in use. Whether your idea is in the formative stage, in blueprint form or already realized in a workable product, send it in for competent evaluation. You may be hoarding for personal use an improvement which could be effected throughout the AAF.

Ideas should be submitted through channels to the AAF Training Aids Division, One Park Avenue, New York 16, N. Y.

Brake Cocktail

Three cans of fruit juice, a jug of drinking water and the ingenuity of T/Sgt. Philip A. Brodziak, Rockaway, N. J., are credited by the 7th Air Force with saving its B-24, "Pistol Packin' Mama," from a possible crash.

On a mission over Iwo Jima, bullets from an enemy fighter severed the hydraulic tubes in the Liberator's left wing. Brodziak, engineer and top turret gunner, stopped the flow of the fluid to the broken lines by pinching the tube shut with pliers. Then, fearing that not enough fluid remained in the hydraulic system to operate the brakes and flaps for a safe landing, he added the fruit juice and water from the crew's flight rations.

When the bomber hit the home strip, the flaps came down, aided by the force of the landing, and the brakes had just enough pressure to keep the plane from rolling off the end of the runway.

The Numbers Game

We often have been asked why a serial number is what it is and a lot of other mysterious questions about ASNs.

Here are a few answers:

Serial numbers of five digits or less indicate officers in the Regular Army.

National Guard, Reserve and AUS officers commissioned during this war have serial number of six digits.

Regular Army enlisted personnel who entered the Army on or after July 1, 1940, have serial numbers from 10,000,000 to 19,999,999. National Guard numbers begin with 20,000,000 and Selective Service numbers with 30,000,000.

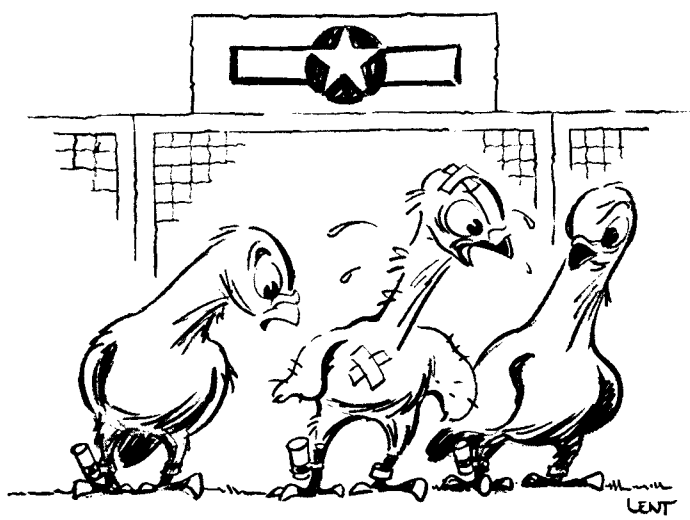
The second digit in the serial number of a Regular Army enlisted man or a selectee indicates the service command area of enlistment. For instance, a selectee with a serial number of 34,200,111 was inducted in the 4th Service Command area, formerly the 4th Corps Area. The third digit in the serial number of an enlisted man in a National Guard unit inducted into federal service indicates the service command area of induction.

Serial numbers were first given to enlisted men in 1918 and to officers in 1921.

Yes, somebody has ASN 1. General John J. Pershing.

Removing an Obstacle

If you have squirmed through a torturous hour or two in a hot, stuffy classroom while an instructor delivered a lecture or supervised the unwinding of a training film, you may like this one.



"DON'T TALK TO ME ABOUT FLAK!"

The Training Aids Division is campaigning to make classroom instruction and a tour over an obstacle course as dissimilar as possible.

Reports of poorly ventilated classrooms jammed with uncomfortable seats have been received from various sections of the country. Such conditions invariably are accompanied by dull trainee audiences whose single thought is to get the hell out in the open, and fast.

One TAD officer has explained it rather formally as follows: "If, as in the case of a combat obstacle course, discomfort aids the purpose of the instruction, use it; if discomfort impairs the instruction, prevent it. A little fresh air and a comfortable chair will not destroy the moral fiber of a soldier whose duty of the moment is to look, listen and learn."

Easy Does It

When Maj. Gen. Uzal G. Ent, then commanding general of the 2d Air Force (See "New Command Assignments," Page 22) was injured critically in a take-off crash at Fort Worth, Texas, early in October, and his life depended upon his being transported gently but quickly to Brooke General Hospital, San Antonio, the Air Transport Command really came through.

The veteran airman was in bad shape. The accident had occurred when the co-pilot, misunderstanding a signal from the piloting general, retracted the landing gear before their four-engine bomber was airborne. The plane settled back to earth, the propellers dug into the concrete runway and one blade snapped, part of it penetrating the fuselage and striking General Ent a glancing blow in the back.

Medical officers discovered the hurtling metal had cut through the General's back muscles, had torn his ribs from his spine and dislocated his lower vertebrae. There was severe pressure on the spinal cord and no muscle to support it. The General's life hung literally by a thread. The slightest jar might kill him.

After a decision was made to rush the injured officer to San Antonio, Lt. Col. Albert E. Higgins, commanding the ATC's 5th Ferrying Group, based at Love Field, Dallas, was asked to arrange the flight. For the delicate task, he chose his deputy commander, Maj. Clarence S. Chiles, as pilot, and Maj. Harold L. Carter as copilot. Told to pick their own plane, the majors decided upon a C-47.

Arriving at Fort Worth within a few minutes, they found all was in readiness for them to fly out the General, who meanwhile had been carefully removed from the crashed plane and lashed to a stretcher designed for spinal cases.

While the medics were informing them that any bump or sudden movement in taking off, flying or landing might mean instant death for the patient, the ATC men checked the weather and determined the air was rough at lower altitudes but comparatively smooth at 5,000 feet. After surveying the taxi strips to find the most suitable one, they completed their plans for the "life or death" flight and were ready to start.

Although the ramp upon which the C-47 stood was but a short distance from the take-off area, Major Chiles taxied so carefully that it was 15 minutes before he reached the head of the runway. Then, he slowly applied power and, when the transport left the ground at reduced throttle, there was scarcely any vibration.

At 5,000 feet, the pilot opened the throttles and the C-47 was eased forward gradually to full cruising speed. During the 1½-hour flight, Major Chiles not only was trying to anticipate bumps but to visualize the landing, realizing that the entire effort would be in vain if the plane bounced as it hit the ground.

Finding the San Antonio field cleared to receive the flying ambulance, the pilot decided upon a long approach and a power-on-wheel landing—one in which some power is kept on until contact is made with the ground. The tower had given permission to make a right hand pattern but Major Chiles decided against that and made left hand turns so he could see the field more clearly from his side of the plane.

On the downwind leg, the pilot told Major Carter to lower the landing gear as easily as possible and, about 1,000 yards from the boundary of the field, to "milk down" the flaps.

Then they flattened out and went in for the crucial test. It was a tense moment as the ground came nearer and nearer. Major Chiles set her down so gently his copilot didn't even know when the wheels hit the runway.

Less than an hour later, General Ent was resting in the hospital with a good chance to pull through.

Equipment Catalog

The Air Technical Service Command believes that too many organizations are using obsolescent equipment because their procurement men do not know about improved items. The command recommends that personnel concerned familiarize themselves with the contents of the recently distributed annual revision of "Illustrated Stock List—Class 13." Additional copies of the new catalog may be obtained by requisition from the Commanding General, ATSC, Wright Field, Dayton, Ohio, att: Chief, Publications Distribution Branch.

Engineering School

To insure an adequate staff of responsible young officers in maintaining the superior quality of future materiel for the Army Air Forces, the AAF Engineering School, located at Wright Field, Dayton, Ohio, offers a three month course in basic and specialized aeronautical engineering subjects to a limited number of properly qualified officers.

The curriculum covers mathematics (including calculus and differential equations), technical mechanics, strength of materials, thermodynamics, electrical engineering, aerodynamics, airplane design and aircraft structural analysis. Although a good background in the basic courses is required, exceptions are made for those who have not studied the last three subjects listed above.

At least 80 percent of the officers admitted to the school must hold an aeronautical rating of pilot or higher. Except in unusual cases, applicants must not rank above major or be over 30 years of age. Service in a combat theater is desirable.

(Continued on Next Page)

PLANE BONERS

Analyzed by Veteran Pilots

BUFFALO, N. Y.—Attempting to take off, the pilot of a P-40N noticed a terrific pull to the left. He returned the plane to the flight line to determine if baggage was fouling the rudder controls. Mechanics found the baggage was in order and advised the pilot to try more right rudder trim. On the second attempt at take off, the plane ground looped to the left. Damage required replacement of the right wing and the right landing gear.

COMMENT: Investigation revealed that the pilot had given the left rudder more trim, accentuating the torque. Such careless cockpit procedure could well have resulted in the pilot's death and the plane's complete destruction.

EL PASO, Texas.—After overshooting the runway in an attempt to land, a P-39 pilot circled and then made a second try. Again coming in too fast, he landed so far down the strip that he crashed through a fence and bounced over some sand dunes. A flap, a wing panel, an aileron and the leading edges of both wings were badly damaged.

COMMENT: The pilot was either too vain or in too much of a hurry to go around again after seeing he had miscalculated a second time. It's better to circle a dozen times than to run the risk of smashing your airplane or injuring yourself.

TULSA, Okla.—A mechanic was running up the engine of a P-51 for a generator check when the plane jumped the chocks, traveled 100 feet across the taxiway and crashed into a civilian hangar. The hangar and the Mustang's left wing and propeller were damaged badly.

COMMENT: The ground crewman was neither qualified nor authorized to run up the engine. Disciplinary action may stop him from violating orders again but it won't pay for the damage to government and private property.

RENO, Nev.—Starting the engines of a C-46 in a crowded parking area, the pilot revved them so fast as he turned from the ramp that the prop blast caught some loose cowling on the ground and blew it against another transport. Fuselage of parked plane and cowling were damaged.

COMMENT: Both pilot and ground crew were at fault here. The pilot should have used better judgment in a congested area. If it was necessary to leave the cowling where it could blow around, it should have been placed with convex side up so it would be streamlined against prop blasts.

LOVE FIELD, Texas.—While an A-24 was being pushed from one maintenance station to the next, its landing gear folded. Wing and prop damage resulted.

COMMENT: Post-accident inspection revealed the landing gear switch was in "up" position. Enough airplanes are damaged in flying accidents without breaking them up in the hangars. Careful checking by inspectors will prevent such mishaps.

NEWARK, N. J.—Taxiing for take off, the pilot of an AT-6 ran into a parked L-4. The L-4's wing and the AT-6's propeller were damaged seriously. After the accident, a flight surgeon discovered the pilot had a high fever. The flyer was grounded and ordered to return to his station by train.

COMMENT: No pilot is required to fly if he isn't fit. A man who feels ill should always report to a flight surgeon.

ROMULUS, Mich.—After landing, a P-40 pilot was taxiing toward the ramp behind a "follow me" truck when the guide vehicle was forced by traffic to stop suddenly. The pilot had to apply his brakes so abruptly that the plane nosed up.

COMMENT: It's always good practice to leave sufficient distance between your plane and the truck or plane you are following to allow for a safe, smooth stop.

MEMPHIS, Tenn.—Coming in low, an A-20 pilot landed before reaching the approach end of a runway, struck a dirt mound and damaged one landing gear and the engine nacelle. The runway was 5,000 feet long and the mound was clearly marked by warning flags. The pilot failed to report the mishap, merely listed "a hard landing" on Form 1A.

COMMENT: The pilot not only displayed poor landing technique but, in trying to cover his own shortcomings by not reporting the accident, he risked the life of the next pilot to fly the damaged plane.

OGDEN, Utah—Taking off, a C-47 left the ground and then settled back to the runway. Both propeller tips were damaged because the copilot had retracted the landing gear without waiting to receive the customary signal from the pilot.

COMMENT: Pilots must instruct copilots in correct cockpit procedure if accidents like this are to be eliminated. Landing gear should not be retracted until the copilot receives a visual and verbal signal. In C-47's, it's good policy to keep hands off gear levers until the plane reaches an altitude of at least 20 feet.

COMPILED BY THE OFFICE OF FLYING SAFETY.

Applications should be made by letter through channels to the Commanding General, Air Technical Service Command, att.: Commandant, AAF Engineering School, Wright Field, Dayton, Ohio.

'Target for Today'

"Target for Today," is a newly released training film that was more than a year in the making and is reported to be as complete a movie job as ever done on an AAF subject. It records an 8th Air Force bombing mission over Germany and offers documentary evidence of the strategic importance of air power's role in the European offensive.

After showing by charts and graphs just how effectively our bombers crippled Nazi industrial production and military communications, the feature-length production depicts a typical mission. It covers every step from the initial planning of targets and routes, through briefing, take-off, encounter with enemy fighters, release of bombs, return flight, rescue of a crew downed at sea, conferences of returned flyers with intelligence officers and the latter's disposition of the information gleaned.

No professional actors appear in this factual movie. Every person in the cast is an officer or enlisted man assigned to the 8th Air Force.

Wide use is being made of the film for orientation of AAF personnel and it is on the required list for men slated for overseas shipment (AAF Letter 50-62). It has been released also for indoctrination of flyers in Latin America and for showings by the Office of War Information in aircraft plants.

Producer, editor and director of "Target for Today" was Lt. Col. William J. Keighley, chief of the Motion Picture Services Division, Assistant Chief of Air Staff, Intelligence. Capt. Richard B. Macauley wrote the script. Distribution is being handled by the AAF Training Aids Division, One Park Avenue, New York 16, N. Y.

Jabo Wins

Latest contribution of the Nazis to AAF terminology is "Jabo"—and they don't mean a new rhumba. It seems that captured Germans, when asked what gave them the worst case of jitters during our August air blitz against the Wehrmacht, replied "the Jabos." The word is a contraction of *jadgebomber*, German for fighter-bomber.

Farewell to the WASP

The AAF's 1,000 Wasps are completing their last month of Army flying. The women's pilot program, which began in September, 1942, with the formation of the Women's Auxiliary Ferrying Service (WAFS), will be discontinued on December 20, when it is estimated that there will be enough male pilots to fill all AAF flying assignments.

In their two years of operation, the Wasps have flown 500,000 hours on a dozen different types of aerial assignments. As ferry pilots, they flew everything from Cubs to B-29s, all over the States and as far north as Winnipeg and Edmonton in Canada. They proved they could handle the hottest fighters and the biggest bombers with the ease and skill of veteran flyers. One of their group became the first woman to fly a jet propelled plane.

WASPS—MISSION ACCOMPLISHED

Towing targets for antiaircraft practice, flying night searchlight and detection calibration missions were a few of the exacting jobs taken over by the Wasps when they were releasing hundreds of male pilots for combat service. Often dubbed "aerial dishwashers" by their director, Jacqueline Cochran, the Wasps also flew simulated bombing and strafing runs by day and night, tested engines, flying clothes and equipment, taught instrument flying to AAF students, flew weather missions for the AAF's Weather Wing and made courier flights for many air force organizations.

Praising their contribution to the AAF, General Arnold recently said: "The Wasps have been as much an integral part of the AAF as their civil service status would permit and have not only performed highly essential service but also have established previously unknown facts concerning the capabilities of women in highly specialized military flying jobs. This knowledge will be of inestimable value should another national emergency arise. Together with the women flyers of our Allies, the Wasps have proved that women have the ability and the capacity to perform the most difficult jobs in flying."

Sympathetic Understanding

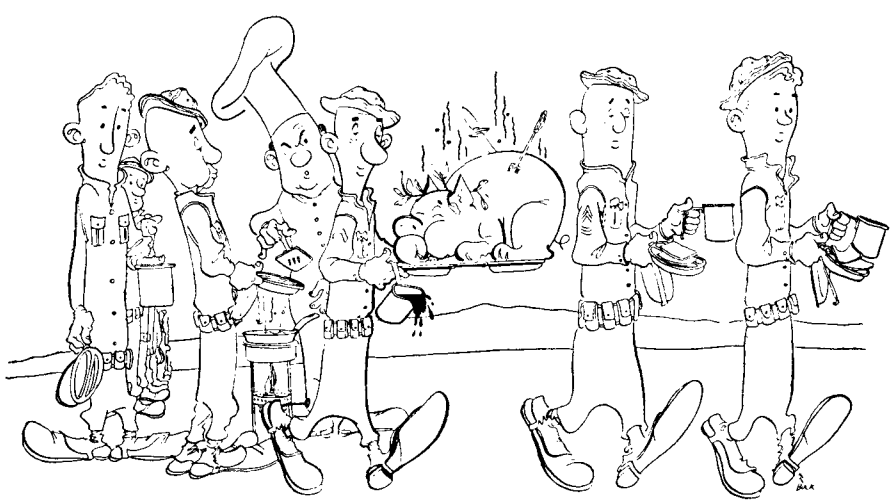
The close ties between the AAF and the families of its men are knit even more firmly under a new policy of the Air Chaplain's Office which makes it a regular and important part of a chaplain's duties at each domestic installation to visit the families of AAF combat casualties. Air Chaplain (Colonel) Charles I. Carpenter says of the new program: "This is a delicate ministry, calling forth all the tact, sympathy and understanding of the chaplain. The Army Air Forces has always felt keenly about loss of personnel, and there is some solace in knowing that our chaplain strength is sufficient to undertake this important and comforting program."

Kids Put It on the Line

With the 6th War Loan drive getting underway, AIR FORCE salutes the millions of school kids in the States who have sponsored the purchase of thousands of warplanes through their Schools-at-War stamp and bond campaigns.

Alice Frein Johnson, a newspaper writer on loan to the Treasury Department for the 4th and 5th War Loans, was nice enough to give us this report on the youngsters. She tells us that the school kids of the nation financed an average of 13 planes a day during the first six months of 1944. By July, 2,642 planes, valued at $87,970,000, had gone into combat carrying the name and address of the sponsoring school inscribed on each. Southern California schools were first with purchases of more than $12,000,000 worth of war bonds to pay for 473 planes. Illinois students earmarked their bonds to defray the cost of 322 aircraft, and North Carolina pupils' war savings efforts provided 280.

Many schools have been pretty smart in staging their campaigns. At the Royster Junior High School in Chanute, Kan., for example, whenever the youngsters in any grade bought $10 worth of war stamps, they were permitted to drop tiny blue and red



cardboard bombs on their choice of three targets—the Tokyo "Munitions Plant," "Steel Works" or "Railway Company." Each grade attempted to be the first to "wipe out" a target.

In the Edmund A. Jones High School of Cleveland, Ohio, each dollar's worth of stamps moved miniature bombers closer to Berlin and Tokyo. When goals were met "missions were accomplished."

When the children at the McDaniel Public School of Philadelphia decided to buy enough bonds to pay for a bomber, a replica of the plane was placed in the main hall. The buyer of the highest denomination bond was to have first choice of where he wanted to write his name on the replica.

On the first day, the kids flocked to school with their money. Bonds of $25, $50 and $75 denominations were purchased right and left. Then, along came a boy who wanted a $500 bond. "Where ya gonna put your name?" the kids shouted, but before the boy could answer, up strode another buyer who wanted a $1,000 bond, and the question was directed at him.

"Me," replied the thousand-dollar boy, "I'm gonna put it right on the nose. The others can have the tail, but I want the nose."

Any Ideas?

A sergeant gunner we know about, veteran of a year's overseas duty, figured out a way to improve the performance of his guns. He thought others could benefit from his idea, but assumed that it would get bogged down in channels. So he came back to the States not counting on doing much about it.

When he arrived at a Redistribution Station, he was surprised to find that the AAF wanted to get recommendations from returnees. Not only to listen, but to take action. The sergeant passed along his gun idea and it was accepted. It probably will mean a lot to other soldiers.

At every Redistribution Station there is an Air Intelligence Contact Unit. Returnees are invited to offer any suggestions or criticisms which will increase the efficiency of the AAF.

The plan is functioning well. Suggestions made by returnees regularly are being adopted by the AAF. T/Sgt. Andrew Smarck, a radio operator, for example, complained that his LHF set blacked out under certain conditions. A report was submitted to Washington. It was redirected, immediately, to Patterson Field where engineers discovered the trouble. As soon as a new part can be manufactured, a Tech Order will be issued to rectify the condition.

Capt. Raymond Janney had an idea for fingertip stick control to replace rudder pedal action in order to maintain the trim of the airplane. He was sent to Washington to present his recommendation in person.

About 1,500 reports have been forwarded to Washington since the unit was established last March. Recommendations have covered subjects from intervalometers and solenoid constructions to difficult second lieutenants and warm beer.

So, if you men coming back have some

TRAINING AIDS

Newly Standardized for Field Use

HOW TO FLY THE B-17, TF1 3395 (Part III, Emergency Operations). A discussion by a group of Fortress pilots helps demonstrate correct procedures for emergency situations in flight: fire in an engine, instability caused by improper loading (displacement of c. g. demonstrated by animated diagrams), stalls, short field take-off, engine failure on take-off, short-field landing. (Running time: 35 minutes.)

TROOP CARRIER AIRPLANES, TF1-3444 (Cockpit Procedure). The responsibilities of troop carrier pilots and their transition training. All scenes taken in C-47, including pilot's pre-flight checks in cockpit, cruising with autopilot, regular and single-engine landings with loaded aircraft. (Running time: 34 minutes.)

FIELD INSPECTION AND SERVICING OF THE WRIGHT CYCLONE 18 R 3350 ENGINE, TF1-3707. Detailed inspection procedures on B-29 and C-69 type engines. (Running time: 2 hours, 20 minutes.)

AERIAL MINES FS1-953 (Preparation and Loading Mark 12, Mod. 1, in B-25). How to prepare and load magnetic-needle type ground mines in a Mitchell.

75MM AIRCRAFT GUN M5, FS1-954 (Disassembly and Reassembly). Procedures for disassembling and reassembling breech mechanism.

FILM CATALOG (4th edition). The latest lists of AAF films and film strips, with information on how to obtain them, plus a list of all approved and recommended Army Ground Forces' and Army Service Forces' training films, film strips and film bulletins.

BURMA INDIA HANDBOOK (ADTIC Informational Bulletin No. 16). Timely facts about Burma and Northeastern India for the airman who might be forced down in the jungle, including tips on topography, Burmese history, jungle foraging for food, use of cover and concealment, precautions against insects and snakes; maps showing physiographic provinces, winds, rainfall, vegetation and agricultural zones, languages, peoples, religions and mineral and non-mineral deposits; emergency words and phrases in Tai, Burmese and Hindustani. A limited number of copies for informational purposes are available from AAF Tactical Center, Arctic, Desert and Tropic Branch, Building T1-2093, Orlando, Fla.

GROUND SAFETY MANUAL (AF Manual No. 30). Procedures, engineering principles and rules which have proved effective in attainment of safe operations at AAF installations; prepared by the Ground Safety Division, Assistant Chief of Air Staff, Personnel, to combat losses through ignorance of safety rules and regulations; illustrated with two-color cartoons.

OXYGEN USAGE ("Notes on the Use of Oxygen Equipment for Fighter Pilots and P.R.U.," AF Manual No. 34.) Stresses oxygen problems in the P-38, P-47 and P-51; pocket-size and illustrated.

TRAINING DEVICES CATALOG SUPPLEMENT NO. 1. Illustrations, descriptions and other applicable data for 10 approved standard training devices and more than 160 additional locally constructed devices; 32 pages, each numbered for immediate insertion in the proper place in original loose-leaf binder. A reference guide and an alphabetically cross-referenced index are appended.

PARACHUTE TRAINING (set of seven posters)—Based on extensive research by Lt. Col. E. V. Stuart, Parachute Division, Wright Field, and Lt. Col. M. W. Boynton, Office of Flying Safety, showing types of parachutes; correct bailout methods from fighters, single-engine trainers, bombers and transports; control of descent; how to make normal, abnormal and water landings.

MALARIA DISCIPLINE (26 posters in binder). Lithographed in color, with many photographs taken in South Pacific combat zones, explaining what malaria is, where it is to be found, how it is transferred, what the Army does to prevent its spread, the simple routine which must be followed to avoid being stricken.

INFORMATION ON THE AVAILABILITY OF TRAINING AIDS LISTED IN THIS COLUMN, UNLESS OTHERWISE INDICATED, MAY BE OBTAINED FROM THE CHIEF, TRAINING AIDS DIVISION, ARMY AIR FORCES, ONE PARK AVENUE, NEW YORK 16, N. Y., UPON REQUEST THROUGH CHANNELS.

NEW BOOKS

On Aviation Subjects

AT WAR

HEROES OF THE PACIFIC. *Shane, Ted.* Army and Navy combat stories from Pearl Harbor through the Solomons. N. Y., JULIAN MESSNER.

OUR ARMY AT WAR, The Story of American Campaigns in World War II Told in Official War Department Photographs. N. Y., HARPER.

SURVIVOR. *Madden, Paul.* An ATC lieutenant's narrative of survival from 11 "raft days." MILWAUKEE, BRUCE.

U. S. AVIATION IN WARTIME, Achievements and Progress as Reported by the Office of War Information. WASHINGTON, AMERICAN COUNCIL ON PUBLIC AFFAIRS.

HISTORY

THE WILD BLUE YONDER, Sons of the Prophet Carry On. *Gauvreau, Emile.* Billy Mitchell's official biographer reporting the development of American air strength. N. Y., DUTTON.

TECHNICAL

INTRODUCTORY AERONAUTICS. *Hammond, Clarence A., and Gilbert, Harry H.* Textbook of basic sciences involved in flight. N. Y., OXFORD BOOK CO.

NOTES ON HELICOPTER DESIGN THEORY. *Nikolsky, Alexander A.* Advanced airscrew theory as it pertains to helicopters. PRINCETON, N. J., UNIVERSITY PRESS.

TRANSPORTATION AND POWER. *Johnson, William H., and Newkirk, Louis V.* Elementary aircraft and automobile power principles. N. Y., MACMILLAN.

POSTWAR

COMPASS OF THE WORLD, A Symposium on Political Geography. *Weigert, Hans W., and Stefansson, Vilhjalmur.* Twenty-eight authorities reporting changes in geographical thinking due to shrinking "air-distances." N. Y., MACMILLAN.

FREEDOM OF THE AIR. *Hutchison, Keith.* Clear statement of problems involved in post-war, international air transportation. N. Y., PUBLIC AFFAIRS COMMITTEE.

KEEP THE PEACE THROUGH AIR POWER. *Michie, Allan A.* The role air power may play in a peace plan. N. Y., HOLT.

PLASTICS IN THE WORLD OF TOMORROW. *Leyson, Burr W.* Descriptions of plastics, their properties and post-war possibilities. N. Y., MACMILLAN.

YEARBOOKS AND HANDBOOKS

JANE'S ALL THE WORLD'S AIRCRAFT. Standard English yearbook of planes of all nations. New edition. N. Y., MACMILLAN.

MILITARY DECORATIONS AND CAMPAIGN SERVICE BARS OF THE UNITED STATES. *Gibbons, Cromwell.* Handbook describing and picturing in color plates the official decorations of U. S. N. Y., U. S. INSIGNIA CO.

RIFLES AND MACHINE GUNS, A Modern Handbook of Infantry and Aircraft Arms. *Johnson, Melvin M., Jr.* N. Y., MORROW.

These books are available to AAF personnel through the AAF Field Technical Library Service, which provides for technical libraries at all major installations. List compiled by the AAF headquarters library.

CROSS COUNTRY

ideas, we suggest you look up the Air Intelligence Contact Unit at your Redistribution Station.

New Tactical Air Force

Organization of tactical air operations along the entire Western Front in Europe was rounded out recently with the formation of the 1st Tactical Air Force (Provisional). Commanded by Maj. Gen. Ralph Royce, the air force operates with the U. S 6th Army Group on the southern sector of the front, while the 9th Air Force covers the U. S. 12th Army Group, and the RAF 2nd Tactical Air Force, the British 21st Army Group.

However, command of the air forces is so set up that our 1st and 9th can operate in the same area when necessary, and both air forces join the RAF 2nd in one sector when called upon by Supreme Headquarters, Allied Expeditionary Forces.

French air units formerly in the 12th Air Force have joined General Royce's command, with Brig. Gen. Paul Gerardot, chief of French fighters in Corsica, as their immediate commander. This move marks the first time since the fall of France that French air units have had such a large single air command. They are equipped with American-made fighters and light and medium bombers.

Co-commander under General Royce is Brig. Gen. Gordon P. Saville, who was CG of the U. S. 12th Tactical Air Command in Italy and south France.

Helicopter Training

Our helicopter training program is now well underway but it is small in scope and likely will continue that way. Personnel to be trained will be limited to rated pilots and qualified mechanics from AAF units, such as liaison squadrons, which can readily switch from use of conventional planes to helicopters.

Prospective whirligig pilots will be given a four-week flying course at Freeman Army Air Field, Seymour, Ind., while mechanics will be trained for five weeks in rotary wing and helicopter maintenance at Chanute Field, Ill.

Mustering out Planes

Many an AAF plane is going on the block these days as no longer needed for military use. Thus far, some 13,000 aircraft have been declared surplus, and more than 8,000 have gone to disposal and storage fields.

After a plane becomes excess baggage as far as the AAF is concerned, the Munitions Assignment Board determines whether any of the United Nations can use it. If it's thumbs down all around, the plane is declared excess to military requirements and is turned over to the Reconstruction Finance Corp. if it can be used commercially.

Many cub types and trainers have been listed by RFC for sales which are handled through local offices of the CAA. Others which don't have sale value are earmarked for salvage.

Boxcar Vocabulary

The dictionary of AAF vernacular continues to grow rapidly and seems likely to become a sizeable volume before the war's end. Latest contribution is a roundup of glider pilot lingo, compiled by Lt. Michael Semak and Sgt. Clarence Bonnell, both assigned to a 12th Air Force troop carrier group in Italy. Typical examples:

Boxcar or kite—glider plane.

Shooting gallery—glider carrying ammmnition.

Full house—glider loaded with troops.

Whaling ship—glider transporting a jeep or fieldpiece.

Tug, goat or *Mary*—towplane ("Mary" is suggested by the lass who had a little lamb).

Honeymoon ship—glider with copilot.

Pass the sugar—switch the controls.

Paint it on or *grease it in*—make a smooth landing.

Shotgun landing—forced landing.

Air mail stamp—large landing area.

One cent stamp—small landing area.

Pilot with dishpan hands—one who has washed out a glider.

Dear diary—accident report.

Dear pop—a report to the commanding officer.

Snatch—glider pick-up.

Parachutes

Lost:

Nos. 41-34209, 42-293645, 42-293645, 42-7160285, seat type; return to Base AAF Supply Officer, Esler Field, La.

Nos. 42-10082, 42-781006, 42-422653, seat types; 42-861822, back type; return to Flight Control Officer, Atlanta Army Air Base, Atlanta, Ga.

Nos. 42-39827, 42-1376, 42-151093, 42-80908, seat type; return to Base Operations Office, Headquarters, Ephrata Army Air Base, Ephrata, Wash.

Nos. 42-4250, 41-13240, return to AAF Resident Representative, Boeing Aircraft Corp., Wichita, Kans., Att'n Lt. Col. R. G. Vaughan.

Nos. 41-16149, 41-16162, 42-40505; re

turn to Traffic Section, Grenier Field, Manchester, N. H.

No. 42-1038466, return to Topeka Army Air Field, Topeka, Kan.

No. 42-200300, seat type; return to Lemoore Army Air Field, Lemoore, Calif.

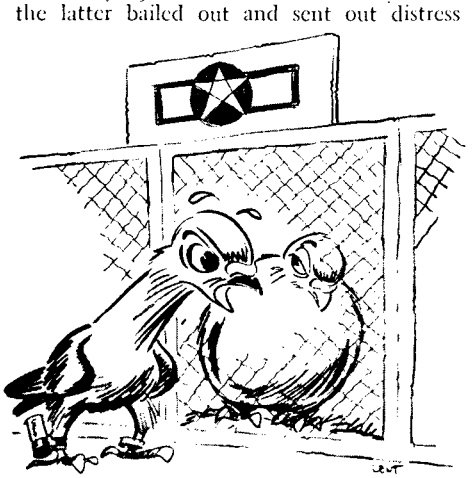
No. 42-43820, seat type; return to Flight Operations, DeRidder Army Air Base, DeRidder, La.

No. 42-51746, seat type, jungle pack attached, taken from or with a 25th Bomb Group B-25 parked at Clovis, N. M., last February. Return to Capt. C. W. Mills, Officers' Mail Room, Box 83, Army Air Base, Alamagordo, N. M.

Prop Wash vs. Ill Wind

When his P-51 developed engine trouble over Germany, 2nd Lt. Stephen C. Ananian of New York City was forced to bail out over the North Sea. He hit the choppy water still in his chute harness, and before he could free himself, the wind caught the open chute, tugged it across water and battered the flyer against the waves.

Second Lt. George T. Rich, Wilmington, N. C., flying with Ananian, stood by when the latter bailed out and sent out distress



"I WISH TO HELL THEY'D GIVE US PER DIEM ON THESE LONG HAULS!"

signals. Sizing up the situation when the wind did its dirty work, Rich dropped his Mustang nearly to the water, flew over the billowing chute and collapsed it with his prop wash, thus enabling Ananian to extricate himself. Picked up a short time later, the New Yorker was returned to England unharmed by his experience.

Living up to a Name

You might know it would happen at Love Field. AAF women volunteers at the Dallas (Texas) base are aiding, upon request, in preparations for enlisted men's weddings.

Most of the weddings take place in the post chapel, and 5th Ferrying Group Woman's Club members provide and arrange floral decorations for the ceremonies. Flowers for the bride also have been provided in some instances. If the bride-to-be is not from the Dallas area, she is assisted in finding living accommodations and completing her last-minute shopping.

When a small reception after the ceremony is desired, club members provide refreshments and have everything in readiness when the wedding party arrives from the chapel.

Accrued Leave

Officers, who by choice or circumstance have not taken their full leave allowance of 30 days a year, will be given the accrued time, up to a maximum of 120 days, before they are separated from service.

Suppose, for example, the war is ended, demobilization machinery is in operation and an officer who has accumulated 45 days of unused leave is at the separation center nearest his home. He will receive orders which will send him home for 45 days plus travel time. During this terminal leave, the officer will receive full pay and allowances, but he will be technically liable to recall for active duty. At the end of the leave period, he will be discharged automatically from active duty without returning to the separation center.

If an officer is in, say, China when the war ends and he wishes to spend his accrued leave in the Orient when his outfit is ready to go home for demobilization, he could do so by securing approval of his theater commander and return to the States for discharge at the end of his leave.

Furlough time does not accrue for enlisted men, who are discharged when they leave the separation center nearest their homes.

Short Bursts

Silver instead of gold wings have been authorized for flight surgeons and flight nurses. The design of the insigne remains the same. . . . The Flight Control Division of the Office of Flying Safety has been redesignated the AAF Flight Service and placed under the Assistant Chief of Air Staff, Training. This domestic service will continue to operate through regional offices and flight service centers. . . . Not long after the new year, commercial airlines will have returned to them all transport planes requisitioned for military use when the war emergency was most critical. Of the 158 planes turned over to the AAF, 142 already have been returned to the airlines or replaced. . . . They are calling a 10th Air Force B-25 squadron the "Burma Bridge Busters." The boys knocked off 13 bridges in as many days. . . . The Central African Division of the ATC gets a pat on the back for rounding out a year of intensive transport flying without a fatal accident. And over jungle and desert country never before traversed except by air. . . . Numerous take-off and landing accidents are caused by pilots losing control of their planes when adjustable seats slide backward or forward. The Office of Flying Safety recommends that seat locks be checked carefully before each flight and faulty operation reported on Form 54 (UR). . . . Stricter oxygen discipline and improved oxygen equipment are credited by the Air Surgeon for a 90-percent reduction in the anoxia rate among heavy bomber crews of the 8th Air Force during the past year. . . . A recent three-month study by aviation psychologists of bombing mission results against Germany revealed that lead bombardiers and lead navigators with best combat records usually were those who had attained highest scores in aptitude tests which determined the jobs for which they were best fitted as aviation cadets. . . . DFCs have been awarded several members of a Quartermaster Dropping Unit in the CBI, which was organized last year to work with troop carrier squadrons in supplying ground troops in isolated areas. The unit has participated in more than 90 combat missions in aiding advance forces along the Ledo Road. . . . The Thurman H. Bane Award for the most important technical achievement by an officer or civilian of the Air Technical Service Command has been presented to Col. Donald J. Keirn for his part in the development and production of the turbo-jet engine. The award is given annually by the Institute of Aeronautical Sciences. . . . The first B-29 cost $3,392,396.60; they now come off the production lines at an approximate cost of $600,000 each. . . . Pilot training for the ATC probably will be discontinued after the first of the year. ☆

HOW SHARP ARE YOU?

QUESTIONS

1. How many airplanes are there in the picture?
2. Can you identify all the types of planes?
3. Are any rocket-firing tubes visible?
4. What is the name printed on the radiator cowling of the plane in the foreground?
5. What is the initial on the tail of the plane in the foreground?
6. There are four men in the picture. Three are walking or standing on the ground. What is the fourth doing?
7. The three planes nearest the camera have bubble canopies: True or false?
8. Is the jeep in the picture painted with stripes, circles or checks?
9. Are the flaps of the plane in the foreground up or down?
10. Is there a pilot in the plane in the foreground?

ANSWERS ON PAGE 40

Why Not Contribute?

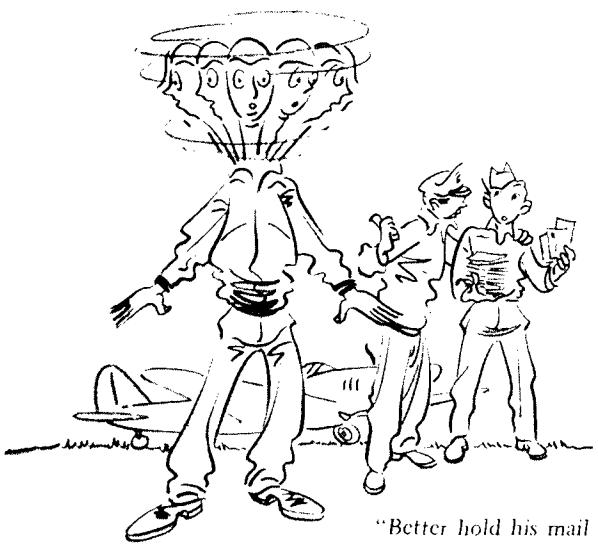
Whether they are short bursts or blockbusters, your suggestions for Cross Country items will be welcomed. Address your articles, comments and criticisms to Cross Country, AIR FORCE Editorial Office, One Park Avenue, New York 16, N. Y.

"OFF THE BEAM" by CAPT. WM. T. LENT

After the Mission

"I think I'm beginning to get the hang of this low-level stuff."

"Wow! You really sweated out that mission!"



"Better hold his mail a while. He just finished a 12-hour escort job."

"Of course my ball turret man has more missions to his credit than both of us."

"I knew Davis would have trouble describing that Jerry's maneuver."

striking OIL

By AIR FORCE Overseas Staff Correspondents

On November 2, 1944, the biggest air battle of the war took place over Germany when half of a force of more than 1,100 8th Air Force heavy bombers, escorted by 900 fighters, attacked the giant Leuna synthetic oil refinery at Merseburg. For the first time in many weeks, the Luftwaffe, which had remained in hiding while Allied bombers were laying waste whole cities, rose to defend a target. And its fierce resistance and the recklessness with which its carefully husbanded fighters were expended—208 Nazi planes were destroyed—testified to the desperation of the Reich with regard to its gasoline situation.

It is more than just a figure of speech, therefore, to say that the picture of a badly mauled Germany driven behind the defensive bastions of its homeland is a portrait in oil.

Oil refineries are good targets. The smoke stacks and tank clusters of the Austrian oil plant at Vienna suffer from this B-17's bombs.

Fuel and lubricants—the lifeblood of machine warfare—have been systematically drained from its veins. Blow by blow, the sledgehammers of strategic bombing have pounded away until Hitler's oil production of more than a million metric tons per month has dwindled to a thin, sluggish trickle.

Beyond the welter of dates and figures that detail the story of our campaign to strike oil is the simple fact of its overwhelming importance to the enemy and the prime necessity, from our point of view, for its destruction. This was recognized early in the war. As far back as 1940, the RAF went after specific oil targets in the Ruhr and elsewhere. However, it was not until the turning point in Africa and the culmination of the slow growth of Allied air superiority, that the smashing of Nazi refineries and synthetic plants could assume its rightful priority.

The target was large and sprawling. There is very little oil in Germany itself, although several new wells, which would have been uneconomical in peacetime, have been developed during the war. The principal producers are the synthetic plants in the three main coal regions of Silesia, the Ruhr and around Leipzig. Various coke oven plants, gas works and L/T carbonization units add their volume to the total of Hitler's refined products, but by far the greater percentage of natural petroleum sources are scattered through the occupied countries. The great Ploesti refining district in Romania, for example, was able to furnish 28 percent of Greater Germany's demands for oil.

It was realized at the beginning of the oil offensive that an effective reduction of Nazi output called for neutralization of the Luftwaffe to permit a concentrated assault. Long-range precision bombardment was required before the industry could be gravely hurt. There had been successful missions against oil before 1944—notably the attack on the Ploesti fields in August, 1943—but as long as the enemy's air force maintained and expanded its fighter strength, all strategic bombing efforts were threatened with prohibitive losses. The first objective, therefore, of the U. S. 8th and 15th Air Forces and the RAF Bomber Command, became the demolition of aircraft plants, ball-bearing factories and related industrial installations. By May of this year the Luftwaffe was limping badly. Single-engine fighter production had been cut by more than 60 percent, twin-engine manufacture by about 80 percent. Thousands of planes had been destroyed in combat and on the ground. The capacity of German airmen to interfere seriously with Allied operations was limited.

The field was now cleared for the kick-off, and goals were assigned as follows: the RAF was to attack petroleum plants in the Ruhr, the 8th Air Force was to operate in central, northern and eastern Germany, western Czechoslovakia and western Poland; the 15th Air Force was to strike at southern and southeastern Germany, southern Poland, Austria, Hungary, Italy, southern France and the important Balkan countries, including Romania. It was a master plan to dovetail three powerful air armadas in a campaign against Hitler's oil refineries, synthetic fuel manufacturing plants and stored reserves.

The ensuing air campaign was consistent and effective. Between the middle of May and October 19, the 8th made 112 assaults on more than 30 individual refineries and synthetic plants in some of the biggest daylight attacks of the war. In July, the 15th aimed its bombs at oil targets on 17 days of the month, while during the short summer nights the RAF was also diligent. And pacing the drive was a week-in, week-out demolition of storage tanks, depots, railway tankers and other supplies by all Allied air forces in Europe, both strategic and tactical. The list of important places hit included Ploesti, Almasfuzito, Trzebinia, Lobau,

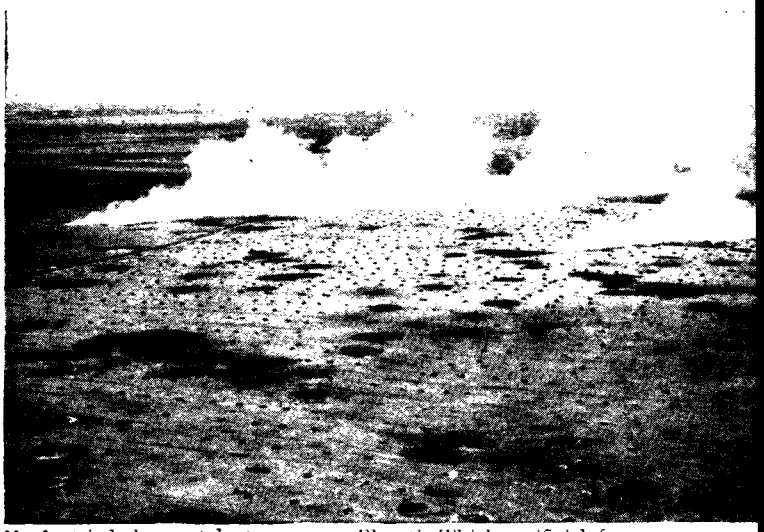
Giant column of smoke casts its shadow across the Czechoslovakian landscape as Liberators of the 15th Air Force come off the target

Flames and black smoke shoot up from burning oil storage tanks and installations at the Nonheim refinery situated between Cologne

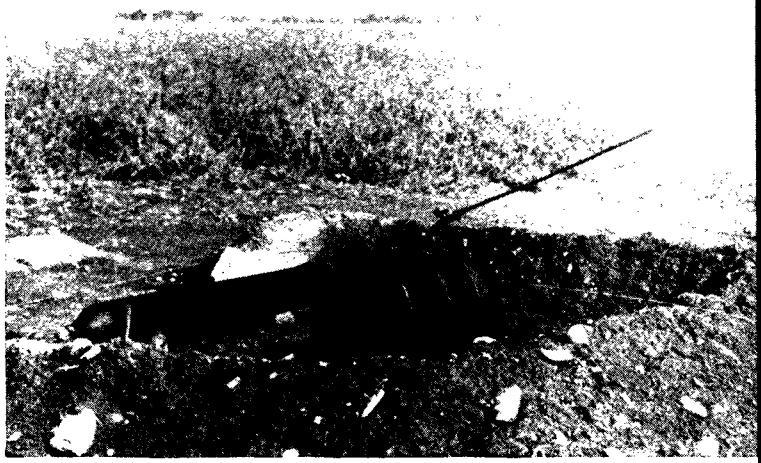
The air campaign to choke off fuel supplies of the Nazi war machine has hit the Germans where it hurts the most

area of the Pardubice oil refinery on August 24, 1944. Returning crewmen reported good concentration of bombs in the target area.

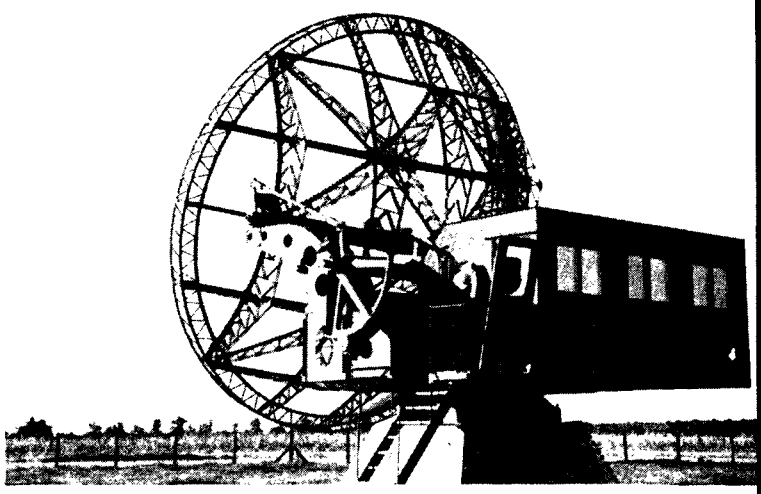
and Dusseldorf on the Rhine River. This refinery, shown here under attack by 8th Air Force B-24s, is one of the few oil plants in Germany.



Nazis tried desperately to protect Ploesti. Thick artificial fog was produced by 2,000 smoke generators scattered throughout the area.



Close-up of the smoke generator. The long cylinder contains a gas which forces smoke chemical in the barrel through the spray nozzle.



Germans also protected Ploesti with elaborate devices like this huge Wurzburg, designed to detect approach of 15th Air Force bombers.

Recon photo shows distillation and cracking plants at Colombia Aquila refinery, Ploesti, completely smashed and rail lines damaged.

Zeitz, Pölitz, Brüx, Blechhammer, Merseburg, Magdeburg, Bohlen, Lutzkendorf, Ruhland, Hamburg and many others. Total Nazi production of oil products declined steadily and inexorably. By October the quantity available was less than one-fourth of what it had been, and the Wehrmacht was forced to dip heavily into its reserves.

By its very nature, an oil refinery is a good target. The process of refining petroleum requires installations that are rambling and well spread out, offering bombardiers wide areas upon which to sight. Smokestacks, often more than 100 feet tall, and distillation equipment situated well above ground, make camouflage extremely difficult. And ideal landmarks are provided by the clusters of tank farms which are used to accumulate crude oil to supply the refineries and to store the finished products until shipment can be made.

Synthetic plants, too, need complicated facilities. The manufacture of oil from coal shale by either the Bergius method, which provides the greatest percentage of aviation gas, or the Fischer Tropsch system, requires plants for distillation, carbonization, compression, conversion, catalysis and purification, as well as oven houses, gas generators, large gas tanks, injector plants, water gas works and other specialized equipment. Authorities say that it takes two years to build a synthetic plant from the ground up.

In addition, the number of direct hits necessary to incapacitate a refinery is smaller than for most targets. To render a plant unproductive, only one of its components has to be seriously impeded. Destruction of either the cracking plant, the distillation unit or the boiler house will suspend normal operation of the refinery until it is repaired or rebuilt. And the high volatility of the product itself, which may ignite from other causes when even a near-miss occurs, greatly increases the probability of damage.

The Germans have made frantic efforts to reduce this vulnerability, and their methods, discussed later in this article, have been partially successful. One of the great proving grounds for this epic race between offense and defense was Ploesti. That facet of the campaign is worth considering in some detail, not only because it was the greatest single source of Nazi oil, but also because the fields have since

Concordia Vega was virtually demolished by a series of heavy blows during July, 1944. Only two of the tanks in foreground remain intact.

fallen into Allied hands, thus making complete evaluation possible.

At Ploesti, the oil region covers an area of 19 square miles, densely crowded with refineries and pumping stations interconnected with a railway network. The plants are in three principal groups—at Ploesti, Campina and Brazil—and were potentially capable of a crude oil output of 709,000 tons per month. The largest of these units, Astra Romana, served as the central receiving station for oil from most of the other plants, and pumped it to the Giurgiu terminal of the pipeline on the Danube, over which it was transported to the Reich. The proximity of Romania to the Nazi forces on the Russian front enabled the Germans to supply them with ease, while some of the fuel requirements of the hard pressed divisions in Italy could also be met with Romanian lubricants and gasoline.

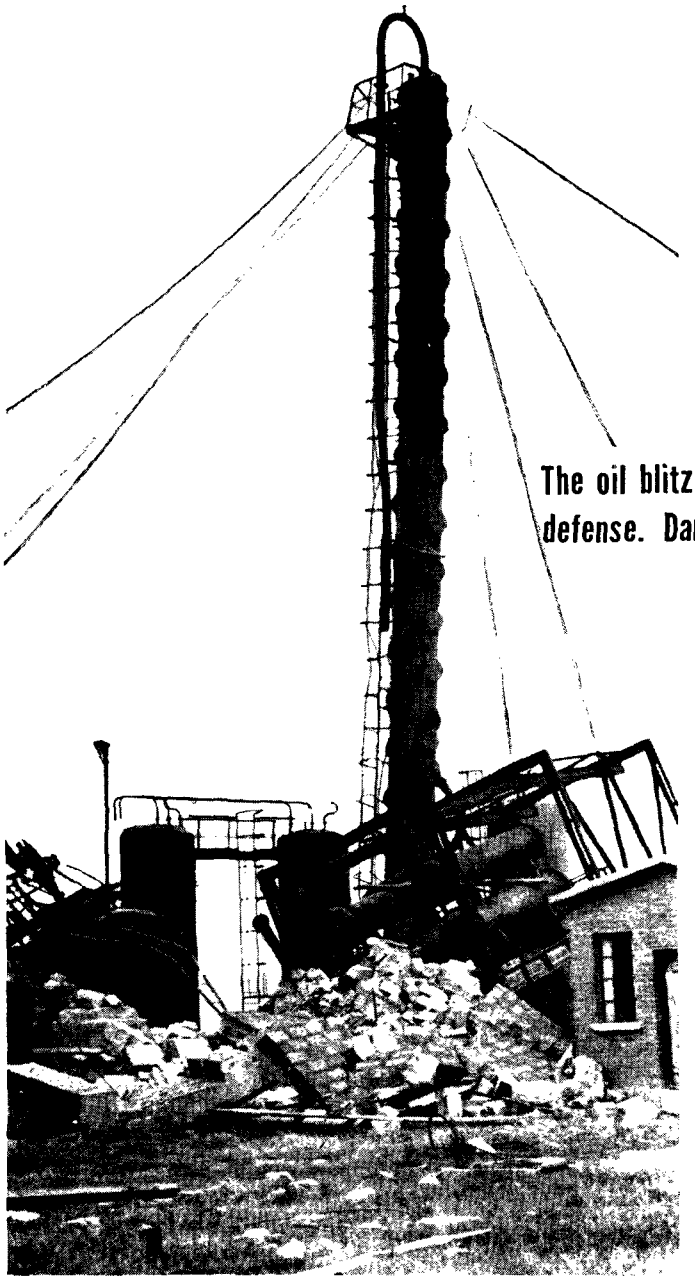
When the first attacking party of 177 B-24s came over without fighter escort in the now historic low-level attack of August 1, 1943, a tremendous amount of damage was accomplished in spite of the loss of 54 planes. Astra Romana's powerhouse was put out of operation and its cracking installation was demolished, as well as half of its functioning capacity. Creditul Minier, Colombia Acquila and Steaua Romana—three of Ploesti's most modern plants—were hit hard. Half of the Phoenix Orion refinery was obliterated, and the Lumina works had a large proportion of its vital parts reduced to rubble.

At the time of the opening salvo against German oil in early 1944, Ploesti's estimated production was 458,000 tons of crude output per month, of which 177,000 tons represented maximum gasoline production. During April the 15th Air Force—this time flying at 20,000 feet with fighter escort—softened up the target for its Sunday punch by pounding the railroad marshalling yards which lie to the north and south of the oil fields themselves.

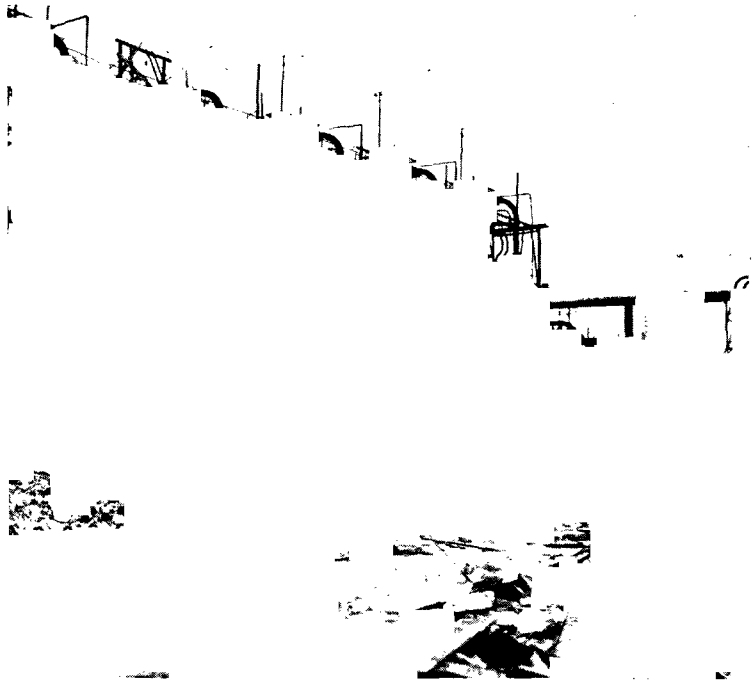
From May on, the heavies concentrated on the refineries. The enemy reacted with strong countermeasures of active and passive defense, exploiting every old trick and a couple of new ones. Their fighters were up in force, with the Romanian and Nazi pilots flying ME-109s. Antiaircraft guns, including four-barreled 20 mm, 88 mm, 105 mm and 128 mm guns, threw up a curtain of flak that at all times was heavy, intense and accurate.

But fighter interception and ack-ack were not the sole extent of Hitler's defense preparations. Beginning with the last strike in May, the whole Ploesti area was screened by a thick, swirling artificial fog. Approximately 2,000 smoke generators were employed in this capacity, and functioned in the same manner every time Allied airmen came over. On the last battle, however, there was but little smoke. Continued hammering of communication lines had paid off, and

The oil blitz has been a constant struggle between offense and defense. Damage at Ploesti shows plainly which is succeeding



P-38 attack on June 10 wrecked the Romana Americana unit.



This is what AAF bombs did to Astra Romana, largest Ploesti plant.

the defenders could not get in supplies of the necessary chemicals.

Another defensive feature at Ploesti was the construction of huge blast walls—requiring enough brick to build a sizeable modern town—around every single installation at each refinery. Nothing quite like them had ever been seen. Some were six feet thick at the bottom and tapered upward to a height of 20 feet, where they were two feet wide. Even a series of three pumps had a complete square of blast walls around it, and from the air the whole arrangement had the weird, dazzle-painted appearance of a gigantic, one-story, multi-roomed, roofless house.

There were three large-scale raids in the month of May, at the end of which the Steaua Romana refinery—third most productive—had been definitely knocked out, and the overall output at Ploesti had been trimmed down to 317,000 tons monthly.

June brought another three attacks and an innovation in the 15th Air Force's tactics. On the 10th, P-38s made a low-level bombing-strafing run on Romana Americana Refinery. They dropped between 40 and 50 bombs weighing 500 pounds each and set fire to the Crutzell crude oil distillery plant. When they left, 10 oil storage tanks were blazing and the mechanical work shops were almost completely demolished.

Five stabs in July caused important material damage to the Romana Americana and Concordia refineries. Storage facilities of the Unirea Refinery were severely rocked, and the giant Astra Romana plant was once again subjected to an aerial pummeling.

In August, up to the time of the capture of the Ploesti fields by the Soviet Army, several heavy strikes were carried out by the 15th Air Force with one night bombing foray by RAF Wellingtons and Halifaxes. In addition, there was a straight fighter sweep by P-51s and P-38s on August 6. By the end of the last mission, the capacity of the main Romanian refineries was reduced from its rated 709,000 tons of crude output per month to a mere 77,000 tons—a drop of 90 percent. No wonder, then, that the following recommendations appeared in the withdrawal orders issued by the command of the Nazi 26th Panzer Division in Italy:

"Armored units which are not completely ready for action and those which cannot be taken along on account of the fuel position must be blown up. Commanders will have to decide which motor transport will have to be taken along and which left behind, basing their decision on the fuel position . . ." Eloquent testimony to the leak which air power had punched in the German gas tank.

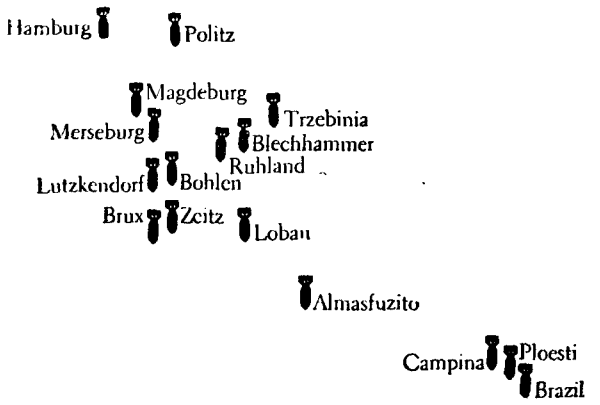
On the less cloudy side of the enemy's ledger with respect to his "fuel position" are several important considerations. First is the fact that the word "destroy" must be used cautiously when applied to the oil industry. A refinery is a vulnerable mechanism, it is true, but it can be repaired if spare parts are readily available. A plant may be struck with the greatest possible accuracy, with the right number, type and size of bombs. Most of the surface structure may be demolished, most of the machinery smashed. But the foundations will probably be left standing, the bulk of underground pipes and other works will be little harmed, and some of the machines will no doubt be available for repair or salvage. Hitler's men are well aware of this, and in June a special commissioner was appointed to direct such renovation activities. He was given preference for labor and material even over armament manufacturers, and the result has been the creation of a well trained corps of skilled workmen who are specialists in just this type of emergency work.

Moreover, extravagant pains have been taken to have spare parts within reach. Just as in the Reich substitute bridges are ready to replace existing spans which the Nazis think may be demolished, so extra machinery and building materials have been deposited in the vicinity of many essential oil plants. By this means, it is possible for a refinery to be in production again remarkably soon after it has been saturated with bombs.

The speed of German restoration is best illustrated by recent figures. Whereas, in September it was known that oil capacity had fallen to its low point of approximately 25 percent of the pre-attack level, the belief among experts was

Thick blast walls 20 feet high were reduced to rubble at the Xenia refinery. Oil tank, sheltered by walls, was completely collapsed.

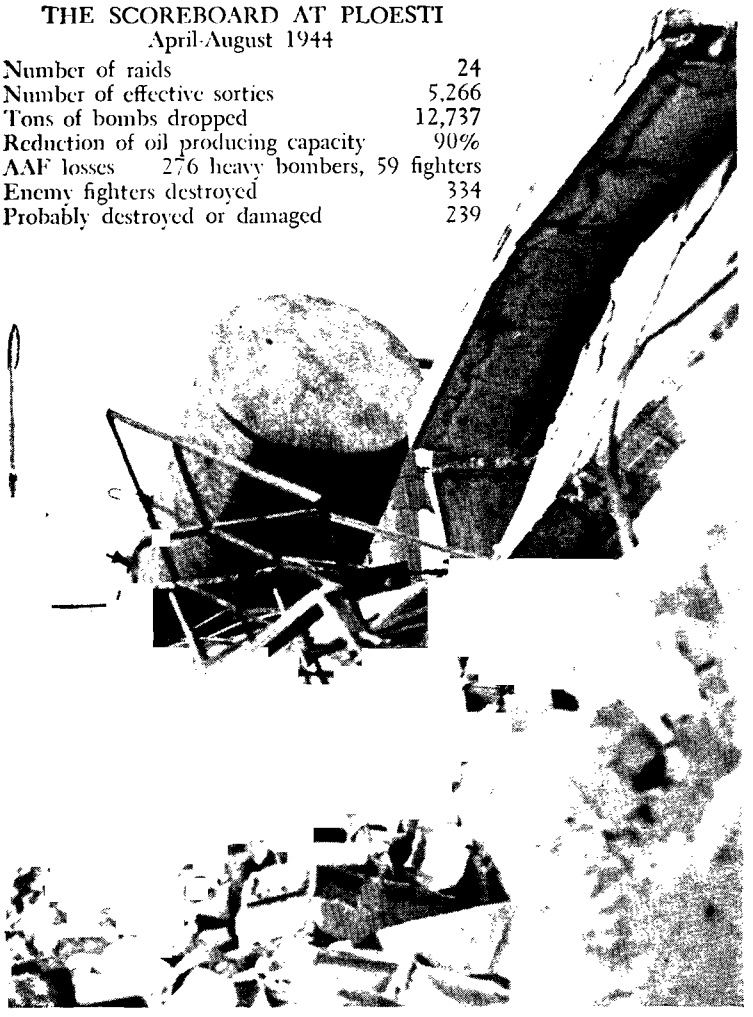
Five successive attacks in July, 1944, rocked the Concordia, Ploesti, refineries with the results shown above. Toppled tanks, twisted pipe-



OIL PLANTS ATTACKED

THE SCOREBOARD AT PLOESTI
April-August 1944

Number of raids	24
Number of effective sorties	5,266
Tons of bombs dropped	12,737
Reduction of oil producing capacity	90%
AAF losses 276 heavy bombers, 59 fighters	
Enemy fighters destroyed	334
Probably destroyed or damaged	239



lines, razed buildings, could also be seen at Loban, Bohlen, Merseburg, Hamburg — in fact, wherever the air armadas struck.

that volume might rise during the winter months because bad weather would probably interfere with our operations.

To soften the effects of such assaults, the enemy has been surrounding his oil targets with some extremely strong batteries of antiaircraft guns. At Brux, for example, photo reconnaissance shows that the number of AA weapons had been increased from 84 heavy guns in July to about 200 in late October. Politz is now guarded by more heavy guns than are used to protect entire cities such as Bremen, Hanover, Frankfort or Munich.

Another advantage for Jerry lies in the fact that bombing of refineries and synthetic plants is rarely a visual pin-point operation. Because of smoke screens and other reasons, it frequently has to be performed by instruments. And as the weather grows worse, the problem becomes more difficult for the Allies and easier for the Nazis.

Nevertheless, the persistent bombing of her oil industry has been very costly to the Reich— may, in fact, have been the substance with which her skids were greased on the western front. Outward indications of a serious pinch are everywhere in evidence. Commanders of panzer divisions are now required to submit daily reports on consumption and have been ordered to utilize horsedrawn vehicles wherever possible. The German Air Force training program, which always received a top priority on gas, has been drastically limited. Training periods have been shortened and new pilots do much less flying. Needless to say, civilian use of vital gas and oil has been virtually eliminated.

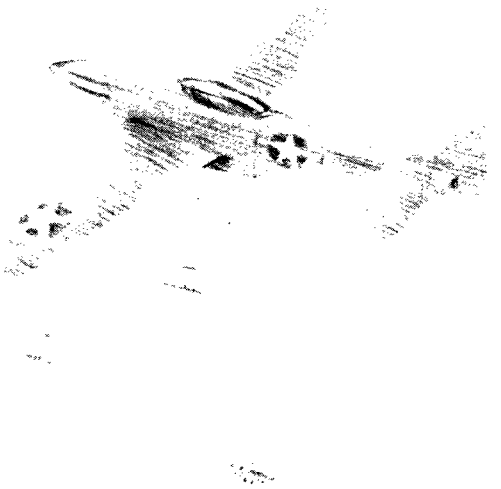
To compensate for the shortage, the Nazis have the rather dubious consolation of knowing that their requirements are becoming less and less. Having lost France and large slices of the Low Countries, Poland, Italy and the Balkans, with the doleful prospect of losing more, the enemy does not need nearly so much oil and gasoline as he formerly did. Moreover, in his own country, good water and rail transportation systems are present, and he is less reliant on highway travel. This is hardly enough to brighten a Prussian general's outlook, but it is distinctly worth noting.

On the Allied side, the lessons of the oil offensive were extremely valuable. It proved that oil refineries could be hit and knocked out with a reasonable economy of force. It gave us some data on what size bomb was most effective against this type of target and the fuzing to be employed. Further knowledge was added about the capabilities and shortcomings of the long range German antiaircraft guns. New means were developed to outwit the smoke-screen defenses. And the pathfinder technique of our bombers reached a new high level of skillful application.

From the Ploesti pasting alone, the Evaluation Board of the Mediterranean Theater of Operations—a group of AAF investigators who moved into Romania on the heels of the fleeing Nazis—was able to extract enough information to modify and set a pattern for future air operations of this nature. The board's function was to appraise properly and justly the methods used against the various targets and to prepare substantiated reports on which further bombing activities might be based.

All in all, the success of the oil blockade is a major triumph in the history of strategic air warfare. The amazing fact is that so much was done in so short a time at so little cost. Its objective, as it gains ground, is not to burn up every last gallon of gas left in the Reich, but to cripple the Luftwaffe and to make the Army progressively less mobile.

Obviously, the enemy is desperate. The bombardment of his oil industry has been and continues to be his worst headache. And when the wheels of the Wehrmacht grate and grind to their last stop, Germany's defeat may well be ascribed in part to too many troubled waters—and not enough oil. ☆



Portrait of a Crew Chief

By Sgt. Samuel W. Taylor
8th Air Force

ILLUSTRATION BY SGT. LEE GRUBAUGH

It is 0830 of a gray English morning. In the Nissen hut, S/Sgt. Willard Wall puts a big, work-grimed hand into the arm of a greasy field jacket, shrugs his shoulders into it, pulls on an equally greasy flyer's cap with its long sun visor tilted sharply up from his brow.

Outside it is chill and damp. Dew is heavy on the fields of clipped grass between the runways. The gray brick administration buildings far across the landing field are barely visible. Dispersed about the area in their bays are the sleek, red-nosed Mustangs. Sergeant Wall pauses before the "Boise Bee," giving it a quick once over. Appropriately named, an agile creature of the air, with a deadly sting. It is the plane of Capt. Duane Beeson. The former hotel clerk from Boise, Idaho, is one of the "hot" pilots of Blakeslee's group of the 8th Air Force.

Sergeant Wall flexes his hands this morning of April 5, 1944. They are large, well-formed, powerful. In them, he holds the life of Beeson.

For the thousand things that might go wrong with the enormously complicated mechanism that is a fighter plane, Wall is fully responsible. Nobody else shares that responsibility. Other men have tested and loaded the guns, repaired the engine and patched up holes from battles. Other men have rigged the radio and adjusted the controls. Specialists, all of them. But Wall has full responsibility for their work. If anything goes wrong, he is to blame. If anything goes wrong, his pilot and hero, Beeson, may not come back.

The 23-year-old sergeant shrugs and starts his day's work. There's a show on today. Beeson will be going out at 1130 hours, leading his squadron.

Wall wheels up the battery cart and starts the motor. He loves this glycol-cooled inline power plane. He listens to it

He's the guy who holds the life of the pilot in the palm of his hand

as it warms up. Is there the faintest overtone of foreign noise amid the powerful throbbing? Tappets? Valves? Bearings? No. It's running like a watch.

He makes a ground check of engine and instruments, examining the radio, armament, camera, testing the controls. He adjusts the brakes, inspects every part of the landing gear retraction mechanism. How are the flaps? He trims the tabs, aileron, rudder and elevators, so Beeson will be all ready to take off when he climbs in.

Beeson is particular. Nothing but perfection satisfies him. In himself as well as in others. Beeson knows planes. He knows planes just as he knows about everything connected with his business. He's a man to spend hours poring over recognition charts at night, even after two years and nine months as a combat pilot. With 21 victories to his credit, he still is practicing dry runs of marksmanship on an aiming gadget he set up in the dispersal hut. The plane has to be right for Beeson.

Wall cleans the canopy. He rubs the plexiglas until it shines. He goes over the waxed body of the plane, polishing it. A few more miles per hour, when Beeson needs them in a pinch. Wall takes special care to polish the insigne of the Bee with a revolver in each hand. The Hun knows this plane, with reason.

"I'm going to change the name of this plane," Beeson has told Wall. "I want something that includes you as well as me."

Many pilots have the names of their crew chiefs on the plane. A pilot knows who keeps him in the air, who is behind the unerring response of the mechanism that meets every emergency and brings him back from the Reich. Wall is proud of the fact that in more than a year the Boise Bee has aborted only twice. Both times the cause was radio trouble.

Wiping off the tail, Wall examines carefully the almost invisible line where a new section was put on. That was just a month ago, on March 6. His heart had turned cold when he saw the Boise Bee come in for a landing with the bare framework showing in the fin structure.

Wall had run to the plane as it taxied up, guided it into the bay. Then, as he helped unstrap the pilot and get him out, the first inevitable question:

"How was the plane, Captain?"

And Beeson's invariable answer: "OK." From a perfectionist, that one word speaks volumes.

Wall had noticed first thing that the gun tape was broken.

"How many did you get?"

"One ME-109 and some strikes on an FW-190."

"That makes 14."

Then Wall gets the story first-hand. That's one advantage of being a crew chief. You're the first to hear about it.

Beeson gestures with his hands as he talks, like all pilots. His left hand does the Hun maneuver, his right his own. The 22-year-old flyer is rather slight, closely knit, intense, assertive, bristling with self-confidence born of hours of painstaking work. No pilot in the world tries harder than he. Few, if any, are better. None is so dissatisfied with the hairline between himself and perfection.

"We were coming back when we spotted a flying field, so we went down to the deck and came over at about 400 miles an hour. I got strikes on an FW-190. There was flak. I was almost over when she hit me. Whoof. It threw me over on my side and for a while I didn't know if I'd pull out of it. I slowed down and got under control. The rudders were stiff as hell and I had to hold hard left rudder all the way back. Get that fixed up, and check it to be sure it's OK."

"You bet, Captain," Wall says. He is just as scared as if he'd been through it. It's that flak. The flak doesn't care how good you are. You can't out-maneuver flak. You can't outshoot flak. He doesn't like Beeson to go into that flak.

That was a month ago. Since then, things have happened. In March, Blakeslee's boys set a new AAF record by destroying 156 Nazi planes. Beeson and Capt. Don Gentile of Piqua, Ohio, were the top-scoring pilots all month, with the former holding a slight advantage until March 29.

Like all members of the group, Beeson and Gentile are more concerned with teamwork than with individual achievement as they go about their job of protecting the AAF bombers. But naturally a friendly rivalry has developed between the pair as each nears the magic mark of 27, which no American thus far has attained in the ETO.

On March 6, Gentile had nine to Beeson's 14. Two days later, Gentile got four to come within one of tying the score. Each bagged a single on the 18th and a double on the 23d, and the count then stood 17 for Beeson and 16 for Gentile.

Beeson increased his margin on the 27th when he destroyed three Nazis to Gentile's two, and Wall pocketed two pounds profit from a side bet on which of the two pilots would first crack 20.

Then on the 29th, Beeson went to London on a pass and Gentile knocked down three Huns to put him in the lead. The month ended with no further tally by either.

This morning of April 5, the score is 22 for Gentile and 21 for Beeson. Since April 1, when each of the rivals got one enemy plane, the group has fretted through three days of bad weather. But now it's clearing. A mission is on today.

As Wall polishes the Boise Bee, he is confident that this is Beeson's day. It's in the bag. If Beeson hadn't taken that day off. . . . But he'll even the score today.

He shuts off the motor, tops off the fuel tanks, and checks everything again. And once more. Any leaks in the cooling system or hydraulic controls? Spark plugs are only four hours old. Good for another eight before changing.

Finally, Beeson arrives. His eyes rove over the plane as he strides up.

"Everything OK, Wall?"

"OK, Captain."

Wall is very happy to be crew chief to Beeson. He's never served another pilot. Beeson demands perfection, but he appreciates it as only a perfectionist can. He's done a hundred little things for Wall. Little things an officer can do for an enlisted man.

Beeson has on his yellow Mae West. He inspects the plane carefully. He gets into the cockpit, sits on his parachute and checks the controls.

"Where are you going today, Captain?" Wall asks, helping him into his parachute harness and strapping him in.

And Beeson relaxes a bit, grins, answering as he always does, "Just a big long ride."

He's too intent to be a happy man. But he's not morose. He is keen, quick, given to repartee. After a Berlin show when fighters met no opposition he returned with the classic quip, "You can't do business with Hitler."

"Watch yourself, Captain. Don't get in so close. The way your prop looked the other day, you were right on Jerry's tail."

Beeson laughs. "If I can't get 'em any other way, I'll knock 'em down with my prop." He's confident. He's spent plenty of time and pains making himself good.

Wall presses the button of the battery cart, and Beeson listens to the engine. He runs it about four minutes. It is

OK. Wall takes out the blocks and Beeson taxis the Boise Bee to the runway and takes off. He's squadron leader now, and is first. The other planes of the squadron follow in order.

Then comes the bad time for Wall. He can't get at the plane now. Let's see, he checked everything. He checked it twice and three times. It's OK. Isn't it? But until the Boise Bee comes back—

There's work to do while sweating it out. He gets belly tanks ready for the plane's return. He goes into the little office of the Nissen hut and fills out forms. Then he strolls up and down awhile, stopping occasionally to look at one of the hundred-odd pin-up girls. He keeps going outside, looking up at the sky. He keeps listening. This is the hard part. That repaired tail structure hadn't begun shaking loose, had it? He checked that, didn't he?

He starts writing a letter to the folks in Mohnton, Pa., where he used to help fix cars in his dad's garage. It helps to remember the old times. He was a knitting machine fixer for a couple of years. Then he was given $300 a month to go to a Civil Service school and become an aircraft engineer, but the Army snatched him two weeks before graduation. He had had enough training that after his three months of basic he went straight to England—and he's worked for Beeson ever since.

He hears the drone of an engine and runs outside, leaving the letter unfinished. It's a Mustang aborting. Not Beeson. He goes back inside and looks at another section of pin-up girls on the corrugated iron walls. The crewmen have their private scoreboard on a blackboard on the wall. Beeson 21. Gentile 22. Sweating it out.

And then along in the afternoon they start coming back from Berlin. He watches them as they come in. They're all off the same assembly line, but he can tell the Boise Bee. Every flyer handles his ship differently. He'll know Beeson.

They keep coming in. Where is Beeson?

"Hey, Gentile got five today!" somebody calls.

Wall's face is stiff and wooden. Where is Beeson? He'll be in. He'll be back. Here comes a straggler! No, that isn't Beeson.

Finally he hears it.

"Beeson went down." And, hurriedly, to reassure him: "Flak. The plane was all right, but the flak got the glycol. They came down on this Hun airfield, strafing, and the flak got them, one, two, three. Beeson first, Carr second, Biel third. They all got hit as they made the first pass. Biel got back, but Carr and Beeson bailed out. You ought to see Biel's plane. It's a sieve."

"Beeson— bailed out?" Wall asks mechanically.

"But he got two Jerries first. A slug got him in the glycol. Biel heard him over the R/T.

"'I've got a glycol leak, but I'll make it home anyway,' Beeson said. But pretty soon he came in again: 'I've got to bail out in a minute. My temperature is up to 150.' And then he bailed. He didn't say goodbye."

No, Beeson wouldn't say goodbye. He wouldn't turn sentimental. He'd be bitterly disappointed, not soft.

"Hey, Wall, come on over and take a gander at Biel's plane. You never seen such a ship."

But Sergeant Wall turns and walks slowly back to the Nissen hut. He goes in and lies down on the bed, on his back, looking up unseeingly at the pin-up girls and the curving, corrugated roof. Anyhow, no Hun pilot got Beeson. Flak got the Boise Bee. No flyer can avoid flak. It doesn't matter how good you are, with flak. No Hun was good enough to get Beeson. The blackboard still has the score: Beeson 21, Gentile 22. Beeson is 23 now. But Gentile is 27. That's the breaks. Wall lies there looking up at nothing. A couple of other guys go out and leave him to be alone. ☆

OUR AIR TASK FORCE

(Continued from Page 7)

quartermaster complements. It also has liaison officers from ground and Naval units participating in an operation. In short, it is an extremely flexible, pioneering air force.

General Kenney's three air task forces have been the spearhead of every major aerial advance from Lae Salamaua to the Philippines.

The First Air Task Force originally consisted of a few officers and enlisted men, one fighter group to give local cover, and an attack group for low-level strafing and a normal service setup. Later a troop carrier and light, medium, and heavy bomber units were attached. Its first commanding officer, Brig. Gen. (then colonel) Frederick H. Smith, was to a great extent responsible for the organization and development of the air task forces in the Southwest Pacific.

A typical illustration of an air task force mission was that assigned to the 308th Bomb Wing during its six weeks of operation in the Biak-Owi area. It can be stated as follows: First, denial to the enemy use of shipping and supply routes in the Molucca Sea, Ceram Sea and in waters between Mindanao and western Dutch New Guinea. Second, destruction of enemy air installations which could be used against our Army and Fleet units which would be participating in future landing operations. Third, reduction of enemy ground defenses and Pacific ports, and constant attacks on enemy networks to supply and reinforce their ground units situated in the Biak area.

In this operation, as in all others, the beginnings were on a small scale. It started with only fighter units to which P-61s were added gradually. Strength accumulated, as strips and other facilities became available, with the attachments of light and medium and heavy bomber units. At its height of activity, the First Air Task Force had complete operational control of five bomb groups, four fighter groups, a Navy heavy patrol squadron, a night fighter squadron, a liaison squadron, an air-sea rescue squadron, a photo group, a night intruder squadron, and elements of a recon group. This was the First Air Task Force's last big show prior to the Philippines assignment.

With this latter operation, air power in this area assumed a slightly different role. All through New Guinea, General MacArthur had reversed the conventional procedure and in fact drew the ground forces in support of air operation. The main function of our ground forces was to contact a softened-up enemy and to seize on the shore areas for use as airbases from which to launch another forward thrust. In place of a war of by-passing and isolation of the enemy to the rear, our plan in the Philippines is not to isolate the Jap but to drive him out. The liberation of the Philippines is an objective in itself. It will be the mission of our air forces to coordinate with ground forces every inch of the way in freeing the Philippines of Japs, to secure permanent airdromes for the strategic bombing of Japan itself.

Whatever the future employment of his air task forces by General Kenney, their creation has been fully justified as the key to the air conquest of New Guinea and the Halmaheras which brought our planes back to the Philippines. ☆

Answers to "How Sharp Are You?" on Page 2

1. Eight
2. P-51, P-47, P-38
3. Yes, on the P-47, which is third from the front
4. Gentle Annie
5. R
6. Standing in a jeep
7. True
8. Cheeks
9. Down
10. No

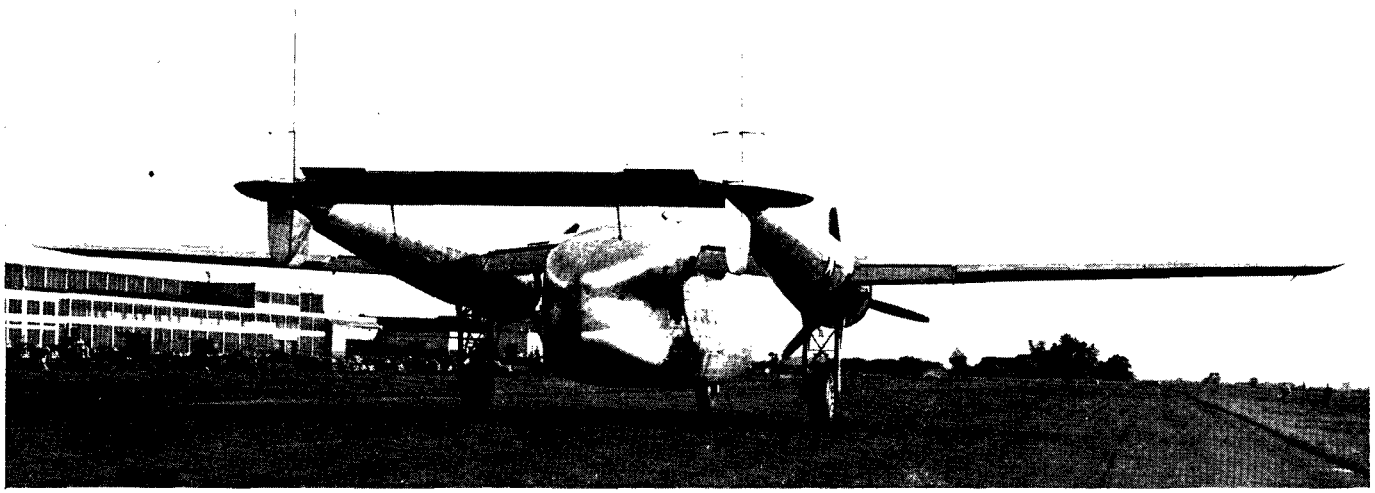
technique

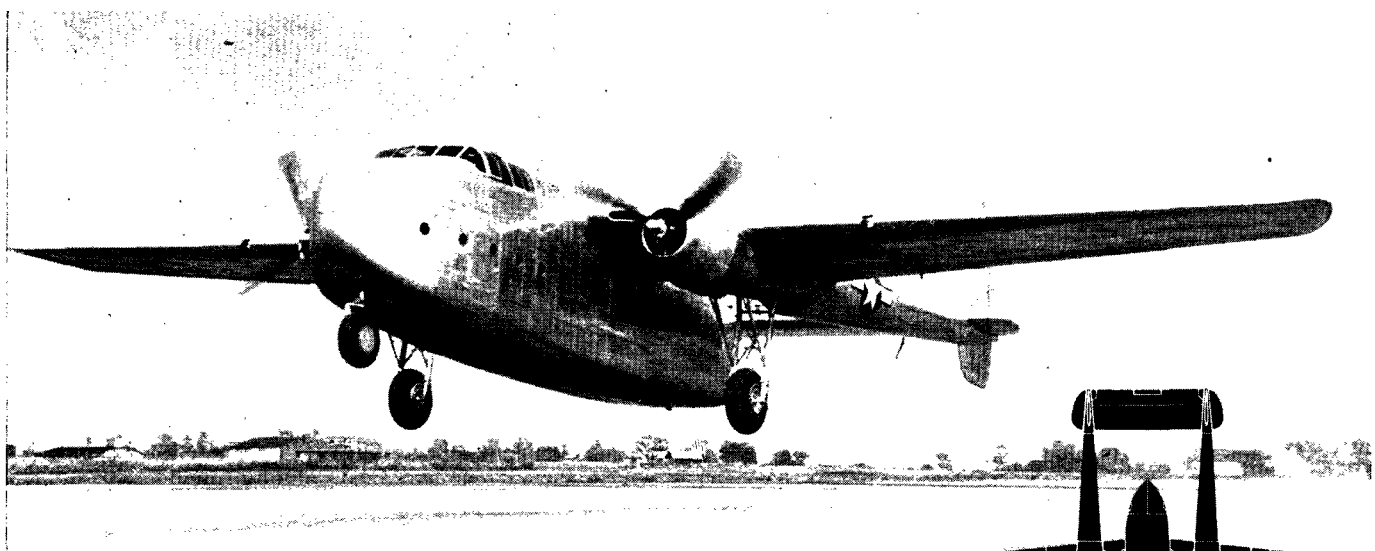
Development, Maintenance and Supply of Aircraft and Equipment

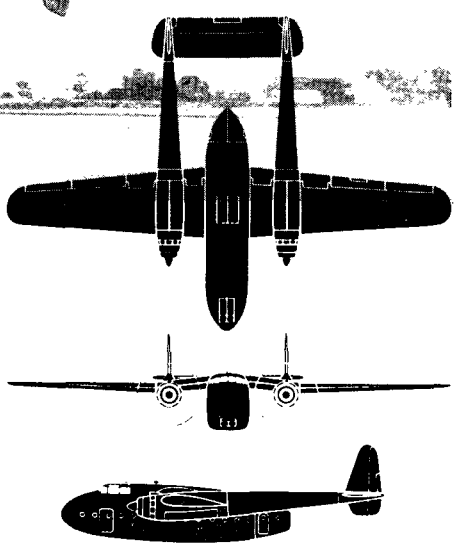
WIND TUNNEL—SEE PAGE

Coverage: The Technical Features of

ON THE LINE, FLYING SAFETY, TRAINING AIDS, ON THE ALERT, plus information on new planes and equipment, timely notes on technical developments, maintenance tips and items on our combat ground crews.







Two powerful 2,100 hp engines lift the C-82's 25 gross tons into the air. High tail construction, shown at top, facilitates cargo loading through eight-foot door at rear of fuselage.

Identification silhouettes of the C-82.

C-82—Sky Boxcar

Designed exclusively for cargo operations under combat conditions, the new Fairchild C-82 "fork-tailed freighter" is a twin-engined, boom-tailed plane which combines the triple-threat advantages of a cargo transport, troop carrier and flying ambulance, and possesses speed and range greater than any aircraft of its class in the world.

As a cargo carrier, its low-slung fuselage and rear door loading features reduce loading problems to moving-van simplicity. The twin tail booms are so high off the ground that ordinary trucks may be backed right up to the fuselage. Then the garage-action doors swing open to reveal an eight-foot square cargo opening, and freight rolls aboard with speed and ease. In another method, a ramp which folds into the plane's interior when not in use, is let down from the fuselage, and vehicles such as a Thomas 9E-1 tank or a 75 mm half-track are simply driven into the plane. It would require a major engineering operation to get either unit into any other present type cargo craft. This "boxcar with wings" is 54 feet in length and has an overall cargo space of 2,312 cubic feet—only 550 cubic feet less than the standard X-23 boxcar used by the railroads.

The troop transport version of the C-82 can seat 42 fully equipped soldiers and their fighting material. The interior of the cargo compartment has folding canvas-type troop benches running along the sides, while circular windows slide open to permit rifle fire. There are small doors within the cargo doors for paratroopers, who can jump without fear of striking fuselage or tail assembly structures because of the boom-tail design. An air-to-ground supply feature is incorporated in the droppable aerial delivery containers which are mounted on standard bomb shackles in the bot-

tom of the fuselage and are released in the conventional bomb bay manner.

When the C-82 is used as an ambulance plane, posts and web straps for litters are set up in a double row along the center of the plane without interfering with side seating arrangements. Seventy-five casualties may be carried, together with three attendants. When not in use, litters are stowed under the plywood flooring.

In profile, the C-82 looks slightly like an overgrown "Black Widow." However, its wing span of 106.56 feet—almost matching that of the Flying Fortress—considerably dwarfs the night fighter. Wing is full cantilever construction, with aluminum alloy and alclad framework and covering. Special flaps and use of a "drooping aileron" permit quick take-offs with full loads from short runways, and give the plane an extremely slow landing speed.

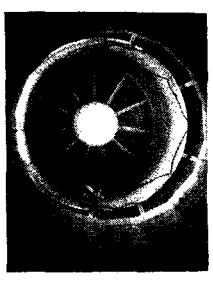
The crew's cabin is on a deck above the forward end of the cargo compartment and provides roomy, sound-proofed quarters for pilot, copilot and navigator-radio-operator. Entrance is through a small hatch in the floor by means of a ladder from the cargo area.

The fuselage is of monocoque construction and is built of alclad sheet and formed stringers with a plywood "Duramold" nose. The retractable landing gear is motor-operated, with an intricate system of folding strut arms adapted from the RAF Short-Stirling bomber permitting half-minute wheel retraction.

Power for the C-82 comes from two Pratt and Whitney R-2800 series engines, each capable of developing 2,100 hp at take-off. Two full-feathering, constant speed, Hamilton Standard three-bladed props pull the plane's 25 gross tons in the air, while built-in wing tanks can take the air freighter for about 3,500 miles.

On the Technique Cover Page

The spider-web pattern inside this wind tunnel at Wright Field is created by a nylon net which aids in testing airplane spin characteristics. The operator is about to throw into the airstream a 1/20 scale model of a fighter plane with controls set for performance at a specified level so engineers and observers can study its spin and recovery properties with delicate recording devices. The netting



tech topics . . . about aircraft and equipment

Contemplated pusher-type fighters have led to development of a spring-type catapult which tosses the pilot out of the plane and below the propeller arc in case he has to abandon. . . . Droppable fuel tanks now being fitted to wing installations of P-61s may give these planes extra long range.

Complaints from ground crews on removal of spinner caps from P-38 props are answered with a new quick-detachable spinner. A few simple operations and the new spinner drops off; previously, 100 Phillips head screws had to be removed.

Because occasional "lucky" hits have caused serious damage to propellers resulting in loss of airplanes, a new tougher deflection armor is being utilized for prop spinners. . . . A high strength laminated glass plastic may be used for molding small two-bladed propellers.

Even some of our old experimental aircraft are getting a workout in this war. Take the giant Boeing XB-15, which now is used by ATC for cargo operations in the Caribbean theater. . . . Small emergency signal lights in the bomb bay of B-17s now tell the crew members when to prepare to hit the silk. . . . An old B-18 bomber which participated in initial experiments with automatic landings has been fitted with a new automatic pilot and is now being used for tests of the latest "hands-off" landing system.

Special biological containers using dry ice now provide a means of shipping vaccines and serums in temperatures below freezing. . . . Portable-by-air arctic and tropical hospital shelters have been designed for wounded patients, who are being evacuated by air and get grounded at ATC stopover points. Shelters include heating or cooling units, depending upon climates to which they are sent. . . . Thin, lightweight casualty blankets with tiny electric wires in their lining also are helping keep wounded comfortable. They plug in to any plane's electrical system. . . . The air evacuees will get warm soups and bever ages because of a compact, electrically-heated thermos jug recently developed by AAF engineers. . . . Difficulties experienced by combat crews trying to get out of crippled bombers have led to a series of mock-ups which embody various shapes for escape hatches and doors.

Wright Field's Armament Laboratory is planning a unique "torture chamber" for aircraft machine guns and light cannon. Housed in a 20 by 30 foot concrete building, the gun fires through a tube at a backstop of 18 inch battleship armor. Impact smashes slug to pieces and deflects it into an armored cone shaped container which, after 1,000,000 rounds, automatically dumps the used lead for disposal. . . . A special jig, larger than any previously used, has been designed for drop testing of B-29s.

Pilots flying P-38s in the ETO have asked for new seat cushions. The "bottom" is too hard when wearing back-type chutes. . . . All P-38s soon will have an improved gun switch on the control wheel that enables all guns and rockets to be fired with a single trigger. Original cannon switch is to be used for releasing bombs in place of push button on the bomb control panel. . . . Some B-24s have been fitted with power-operated waist guns.

Students in Link Instrument Flying and Landing trainers now will have more instruments to fret over. A modified design of the trainers has added major engine instruments to acquaint pilots with their use.

Red and green windshields, called view limiters and used for blind flight instruction will be replaced with orange and blue color combinations which are considered more effective. . . . Tests recently have been completed with five new types of goggles which are said to give greater field of vision. Among those tested was a Russian design.

A phosphorescent tape may be used inside airplanes to mark hatchways and exits. . . . Dangers in flak-fired aircraft are being minimized by an experimental fireproof fabric for personal clothing. Nylon and fiberglass cloth for covering alpaca fuzz on intermediate flying suits is proving highly non-combustible, may serve as an added fire protector for aircrews. . . . Lightweight cutters and wedges with special features have been designed to aid crews in cutting their way out of submerged airplanes after crash landings in water.

Paratroopers are being supplied with a new quick opening snap hook device for their reserve parachutes. . . . Coil springs in a tubular webbing construction are being tested as pack openers in parachutes and are proving superior to rubber elastic openers. ☆

catches the model when it recovers and serves to create a low-velocity spot inside the test chamber so the miniature plane will remain as near as possible to the center of the air jet. The 16-sided vertical tunnel outwardly resembles a huge silo.

Hood and Cape Repels Flak

Airmen of the 15th Air Force are now protected from the high incidence of head and neck flak wounds by a special hood and cape, designed by Lt. Col. I. Louis Hoffman, MC, of the Air Surgeon's Office of the 15th, to be worn over flying helmets.

In construction of the first model, manganese steel plates were removed from an old flak suit in shops of the 11th Air Depot Group, enclosed in canvas and covered with leather. A cotton lining containing a half-inch layer of sponge rubber was used to absorb concussion. Because the five-pound weight of the anti-flak hood is borne on the shoulders, it can be worn without discomfort and does not interfere with movements at gun positions or over the bombsight.

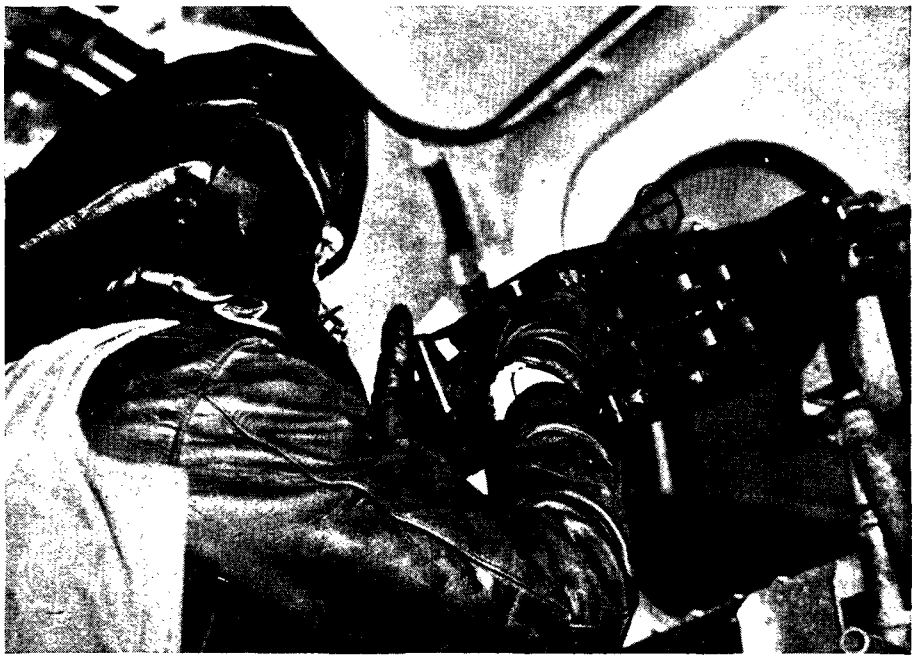
Sun Takes Salt from Seawater

A floating distillation unit that uses the sun's heat to convert seawater into drinking water has been developed by the Air Technical Service Command from designs submitted by the Massachusetts Institute of Technology and the Gallowhur Chemical Corp., and is now standard equipment for multi-place life rafts.

This new inflatable solar still is a balloon-like cylinder 12 inches in diameter and 30 inches long. It is made from Vinylite plastic, which permits 90 percent of the sun's rays to pass through. The heat is then absorbed by a plastic screen in the center of the still, which has black cellulose sponges sewed to it. These sponges are saturated with seawater before the still is blown up, and as the sun evaporates the water, they serve to retain the salt residue. The vapor, on the other hand, condenses and trickles down the sidewalls to a fresh-water reservoir in the bottom where it is stored until needed. Water is drunk direct from the still.

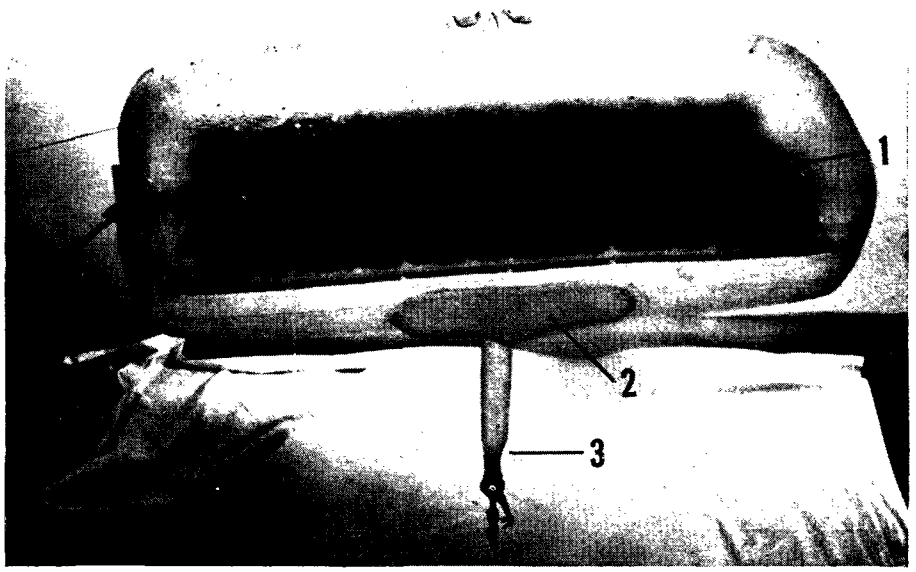
Maximum output varies from one to five pints of water daily for each unit, and as many as six of these two-quart capacity stills may be floated from a single raft.

Also included in AAF life rafts are tarpaulins for catching rain, and desalting kits for use on cloudy days. Cans of water are included for emergency use as well.



Gunner mans position confident that the specially constructed hood he wears will afford excellent protection against flak wounds around head and neck. Steel plates enclosed in canvas, covered with leather and lined with cotton and sponge rubber compose the garment.

Men seated in life raft drink fresh water sun's rays have produced from seawater. Below is Gallowhur Still showing components: 1, screen with hexagon sponges which retain the saline residue, 2, collecting chamber for fresh water, 3, drinking tube with screw cap.



Oxygen on Wheels

Mobile oxygen generators now move ahead with AAF ground units, relieving cargo planes of their former job of transporting oxygen cylinders to forward bases.

Generating units include compressors, refrigeration equipment and a 110 hp gasoline engine, are installed in large trailer vans and can produce oxygen five hours after arrival. Small airdrome trucks rush supply from generator to plane, then promptly return empty cylinders for recharging, thus eliminating need for extensive warehouse facilities.

Oxygen producing equipment is essentially similar to that used in ordinary commercial plants, except for a huge bag used as a temporary reservoir until oxygen can be piped into steel cylinders. These hold 220 cu. ft. each at a pressure of 2,000 lbs. per sq. in., and 70 cylinders can be filled in 24 hours—enough to supply 350 fighters or 23 bombers.

ATC Flight Tests

In order to determine the best power combinations at all altitudes and the best operating technique for maximum range of planes that are to be ferried overseas to combat zones, the Air Transport Command is now carrying on its own flight test program at Miami's 36th Street Airport.

As a result of the data compiled in these test hops, the Flight Research Division, under Maj. John M. Tillman, has been able to initiate modifications which have improved performance and increased safety in many types of bombers, fighters and cargo planes. Alteration of tab control system on B-24s, for example, eliminated much potential crash danger in event of No. 1 engine failure at take-off. With new controls, a Liberator carrying 64,500 pounds made a safe take-off despite feathering of No. 1 prop when only 50 feet off ground.

An unusual flight recently was one in which Capt. William N. Ryan sat backwards in a piggyback P-51 while Maj. Joseph A. McKeown piloted the plane at 420 mph. Captain Ryan's task was to operate a special glass fuel tank to ascertain the exact rate of fuel consumption at high speeds.

TAD Says Don't Strip Devices

The Training Aids Division, unofficially representing the Society for the Prevention of Cruelty to Training Devices, comes out strongly against the

maintenance tips . . .

from the crew chief's stand

No, you needn't spend half of your duty time apologizing for the other half, but if you want the pilots you serve to grow old gracefully, you'll make a manly confession when you inadvertently err. For example, the engine of a fighter recently sputtered out and the plane plummeted down and crashed. Cause: Oil starvation, resulting from pump failure due to a stray bolt goldbricking in the pump gears. Sometimes paper, sticks and tools used for measuring oil or fuel are dropped into tanks by mistake and the butter-fingered mech often keeps mum for fear of getting his tail chewed. But here's one case where loose talk can save lives, so don't commit the sabotage of silence.

A rattle in an engine is often the result of a rattle in someone's head. Pilots in mid-air can't get out and push, you know, so make pretty sure that engines are properly warmed up and operating smooth-

ly before take-off. Inspectors report that incorrect warm-ups cut many hours off the life expectancy of an engine . . . and sometimes the height of an operation's success is only one flight up.

Take a tip from a maintenance crew at one fighter base in the ETO which uses tiny dental mirrors and pencil flashlights in its daily inspections of small braces inside wings of fighters that carry heavy bombs and rockets. This isn't going to hurt you a bit.

When material and equipment is alerted for shipment, and you feel that you'd like to try your hand at packing and carloading, why don't you try your head as well? Dash to the nearest copy of WD Circular 316, 1944, and follow the instructions contained in Section VI for proper packing and loading. Damaged parts make Tech Supply look like Mother Hubbard's cupboard.

You GI truck drivers may feel that tire conservation talk is "treading" on familiar ground. But here's a few hints that are always refreshing:

Loads should be distributed as evenly as possible.

Tire chains should be loose enough to "creep."

Tires temporarily repaired with emergency boots on blow-out patches should be turned in as soon as possible for permanent repairs.

Checks should be made of dual tires to insure that glass, nails, stones and other foreign matter are not wedged between them.

Even minor cuts should be called to the attention of the motor sergeant. Leave 'em alone and they'll expand like an Allied beachhead.

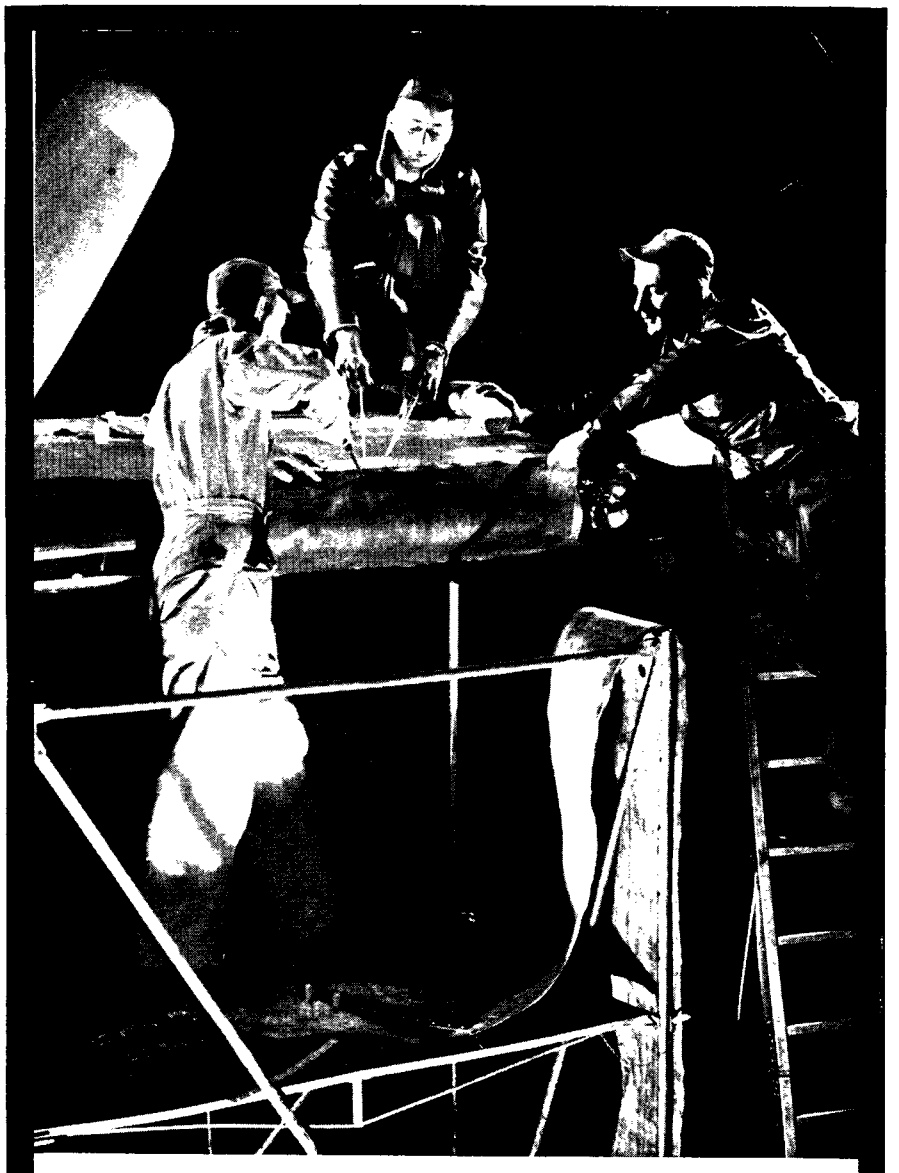
Nonchalance personified is the Sack who whistles "I Feel Like a Feather in the Breeze" while juggling three or four cannon shells prior to loading a fighter's nose armament. "Look, no hands!" he says, and

if you care to hang around within frag mentation range, you'll find that he's quite literally correct. A short session with TM 9-1900, which lists precautions to be taken, would have told the poor chap that careless handling causes explosions.

Flak and bullets are a highly unproductive combination. They make nothing but holes. That's why cover-up men like sheet metal specialists have to pitch in with patches. A sieve-like plane will rapidly induce a pilot to murmur, "Maybe I shouldn't have brought this matter up." But a skillfully repaired wing or fuselage section is fighting talk—that says it with flyers.

Did you hear about the absent-minded mechanic who filled his pipe and lit the gas tank? He now pins a "no smoking" sign on his harp. If his best friend had told him about AAF Regulation 55-20, dated 24 August, 1944, he would have known that "lighting up" in an airplane is absolutely taboo during all ground and fuel

transfer operations, at any time gas fumes are present, and in the bomb bay or the fuselage when auxiliary gas tanks are carried. . . . So leave us not have any butts about it! ☆



what's wrong with this picture?

If you haven't got a Christmas stocking on a mantlepiece this year, it's only because there's a greater need for hanging de-icer boots on airplane wings. It's a seasonal installation in continental U. S. and a year-round job for maintenance men in some areas overseas, and requires careful handling and plenty of know-how procedure. A "boot," however, is a slang term for a mistake, and St. Nick tells us that this Yuletide offering is brimming over with seven of them. Turn the page if you don't believe in Santa Claus, but count 'em first as he's known to toss in gifts! Posing for the boners are (left to right) Sgt. Robert Craig, Cpl. Robert Shepherd and S/Sgt. Clarence Schwake, all of 4000th AAF, BUC, Flight Section, Patterson Field, Ohio.

practice of stripping parts from one piece of training equipment to put another in working order. Such "cannibalization," as it is called, arises when two identical devices are out of repair at the same base, each for a different reason, and maintenance men interchange parts in order to put at least one of them in operating fettle. This starts a vicious cycle in which the deficient apparatus is slowly but surely "strip teased" until its possible repair is rendered hopeless.

TAD recommends that the best way to put a training device back on the job is to requisition the necessary spare parts through proper channels. Supply officers, for example, are authorized to requisition parts for gunnery and bombing training aids from the 837th Specialized Depot, Denver, Col., which offers 24-hour service.

Permission for scrapping any equipment of this nature must be obtained directly from the Training Aids Division. Existing policy provides that permission for such action will be given only in cases of extreme emergency, and that no such emergency should exist within the limits of the United States, where spare parts for all devices are ordinarily available in quantity.

In cases involving major overhaul or repair, specialized maintenance crews are sent out by the area Air Service Command, on request.

Chute Jumps Over Water

It takes plenty of practice to escape from parachutes in water landings, and the B-25 school at Greenville AAB, S. C., is making sure its future alumni will never alibi on grounds of inexperience.

In a cleverly constructed mock-up, a tower with an arm extended over the water supports the jumper in a regular chute harness while a block and tackle lowers him toward the surface. When the trainee is about to hit the water he unfastens leg and chest straps and is able to work himself free from the pack merely by raising his arms.

It is pointed out, however, that in actual jumps care must be taken not to abandon the harness until contact is made with the water, since judgment of heights at sea frequently is deceiving.

New Valve Raises Fighter Plane Ceiling

A new valve for auxiliary fuel tanks, recently announced by the Maintenance Section of Air Service Command in England, now puts every American fighter plane into the high-altitude class.

Gasoline, carried in non-pressurized auxiliary tanks, boils away at high altitudes and will not feed into the engine, thus forcing fighter pilots to fly below 20,000 feet until the fuel in their belly tanks is consumed. With the new pressurization valve, however, six pounds of pressure per square inch is constantly maintained inside the belly tanks, even at "ceiling" altitudes, and fighters may fly above or level with bombers at all times.

Precipitation Static Eliminated

Baffled for many months by radio noises resulting from the build-up of static electricity in the aerials and skin of aircraft, signal experts have now solved the problem by the simple addition of a resistor across the antenna circuit of the receiver. This drains off excess static electric charges—known as precipitation static — before they can discharge and cause interference in the radio sets. Air Service Command technicians, who developed the method at research stations in the British Isles, have recommended its adoption throughout the AAF.

Flying Colors

A Hollywood stunt flyer's formula and a simple toggle switch in the bombardier's or navigator's compartment, now enable a bomber to eject thick swirls or dot-and-dash squirts of white, orange, yellow, red and green smoke. Visible for 12 miles, these colored smoke trails can guide flights of bombers to rendezvous positions, enable pilots to single out formation leaders, and unsnarl aerial traffic congestions more effectively than pyrotechnics or signal lights.

"Tex" Rankin, whose souped-up biplane has written hundreds of advertising slogans across California's skies, cooperated with the Power Plant Laboratory Installations Unit of the Engineering Division, ATSC, and made available his method of introducing a non-inflammable mixture into airplane exhaust systems.

First tests were made on a C-47 transport, and the chemicals were carried in a 10-gallon oil tank taken from a trainer plane and installed near the Wright 1820 engine. Small hydraulic pumps fed the mixture into the exhaust pipe.

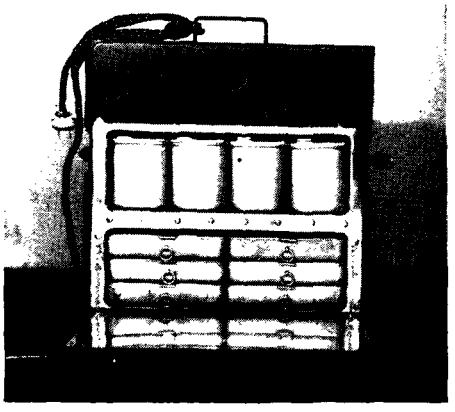
Pie in the Sky

At a B-29 training field in Kansas, hundreds of GI flight cooks are being graduated each month with special honors in the preparation of tasty, well-balanced meals for aircrews to eat while enroute to and from distant targets.

Using the new electrically heated B-2 Tappan Food Warmer, a nourishing dinner—complete from soup to dessert may be placed in the plane before take-off. During the mission, when lowered oxygen pressure and the strain of protracted flight accelerate the body's demand for fuel, the warming unit may be heated to a temperature of 160 degrees from the airplane's electrical system, and some "heavenly" chow enjoyed.

The warmer is 17½ inches high, 17 inches wide and 10 inches deep, with specially insulated walls. Six sectionalized trays are included, with 12 beverage containers and a top drawer for condiments, bread and eating utensils. One heater will supply the normal medium bomber crew, while two are required for heavy bombers and B-29s. The "lunchbox" is also used by ATC hospital planes.

Hot food is enjoyed by pilot during flight as six compartment electric heater (below) keeps crewmen's meals warm and palatable.



Much of the credit for standardization and early production of the B-2 Food Warmer goes to the flight surgeons of the 20th Bomber Command, who tested and modified the equipment in cooperation with AAFTAC technicians, Air Quartermaster officers and Wright Field engineers.

Quick Disconnect for Oxygen Mask

An improved quick disconnect for demand oxygen masks to safeguard airmen from separation of hose and regulators has been developed by Aero-Medical Laboratory, Wright Field. The new device (AAF Part No. 44A13451) replaces the old prong type which was found to lose tension after several months' use. It is made of brass, is fitted with an open circle of spring steel set in a groove in the connecting end of the disconnect, and is able to withstand a separating pull of approximately 12 pounds.

New Night Vision Trainer

The essence of good night vision—according to the Johnson Foundation of the University of Pennsylvania, assisting the Air Surgeon's Office in the development of a night vision trainer for the AAF—lies not only in the ability to see things in the dark but also in being able to recognize what is seen.

Acting on this principle, a projector and two turntables have been devised which throw the silhouettes of planes, tanks and ships on a screen or blank wall, causing them to move at speeds at which they would normally be observed under actual combat conditions.

The first turntable revolves horizontally at one rpm at a height which reproduces on the screen the horizon and the area below it. On this are mounted outlines of objects which are usually seen moving across terrain or water. The other turntable is placed above this, and turns at six rpm. Aircraft silhouettes are suspended here and may be seen traveling rapidly across the screen. A manual tilt feature also enables them to dive or zoom at varying angles.

The projector uses an extremely small lamp for a point of light, the intensity of which is controlled by a rheostat. This light is mounted in a box across which a wooden, slotted strip about three inches wide is fastened. The upper edge of the strip becomes a silhouette horizon on the screen, and can be moved up or down at will, while the slot holds inserts of profiles of such stationary landmarks as buildings, sentry towers, trees, etc.

Provision is made for including slide

projector on top of the box, which can be effected by installing a very low powered lamp, housed to prevent light leaks. Standard aircraft recognition slides may then be projected at low flight levels to serve as additional night vision practice.

Mechanical Briefer

The Type T-2 Combat Intelligence Briefer, developed by the Training Branch of Wright Field's Equipment Laboratory Engineering Division, is an adaptation of the Pilot Navigational Trainer that shows aircrews photographs of actual terrain over which they will fly on bombing missions. Black-and-white or color transparencies are projected onto a large screen for as many as 200 combat crewmen at one sitting. Oblique and vertical photos of check points along the target route make available last-minute instruction to crews, furnishing a bird's eye view of terrain over which a mission will fly.

Sheds for Bomber Maintenance

Time saved and precious hangar space conserved are the contributions that MacDill Field, Fla., is making toward better B-17 maintenance. This 3rd Air Force heavy bombardment base has constructed lumber sheds 57 feet long, 12 feet wide and 15 feet high, with sections cut away from floor levels to permit mechanics to house the nose of the plane under the roof and to allow for propeller revolution during maintenance and inspection.

A maximum of repair work and overhaul is performed in these sheds, and the bombers are only taken into the hangars for major jobs involving engine change, sheet metal work and landing gear retraction tests. Field officials estimate that use of sheds has reduced number of mechs required for maintenance duties by 12½ percent.

WHAT'S WRONG . . .

in the picture on page 46.

1. Wouldn't this method of installing a de-icer boot leave you cold? For correct procedure, start at the inboard end and fasten boot securely at top and bottom of wing with positioning pegs.

2. No, no, Sergeant Craig—an air-scoop is NOT a tool chest. Don't use it as a handy receptacle for hammers, screwdrivers or Joe Blow's newly acquired false teeth. You can bet your boots that forgotten tools left inside will cause serious damage later.

3. And listen, Robert—it may sound like doubletalk, but get your shoes off the boot. It's not a welcome mat for miscellaneous tools and strips of fairing, either. Keep de-icers rolled until ready for installation.

4. Come, come, Clarence, you know better than to place a ladder against the leading edge of a wing. What's worse, it's touching the plexiglas covering of the landing light. And watch your step or *you'll* be landing *heavily*.

5. Take a powder—and dust the underside of the boot *before* installing it. When you apply powder while the boot is being put on—as the sergeant is doing—you prevent even distribution of the talc.

6. The corporal on the wing is doubling for Humpty Dumpty when he assumes this precarious position while tightening the boot. He's holding on by bootstrings, and if they break or pull loose, he'll nose over in a backflip and spin to a crash. Proper way is to kneel on the wing while tightening boots. Use de-icer tensioning hooks.

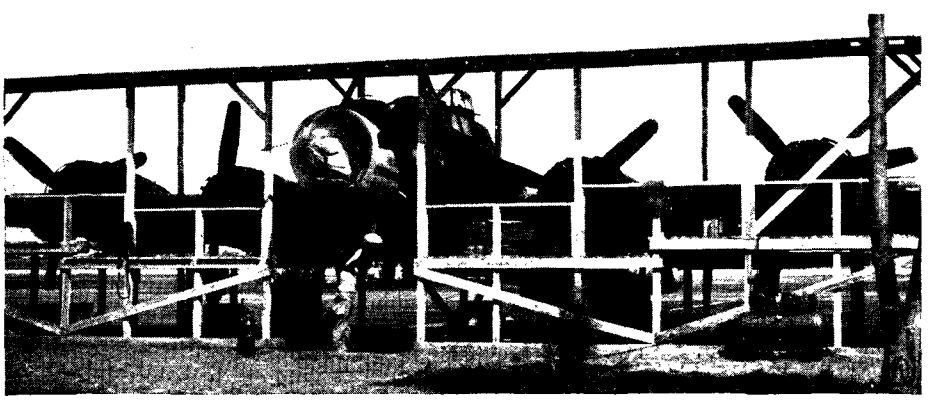
7. Don't get eager with that screwdriver, sergeant. Prodding the boot under the fairing will mar the rubber surface. Try doing this instead: mount shoe with positioning pegs, lay fairing strip over pegs, pull pegs one by one and replace with de-icer attachment screws using special screw holder.

New Aerial Strip Camera

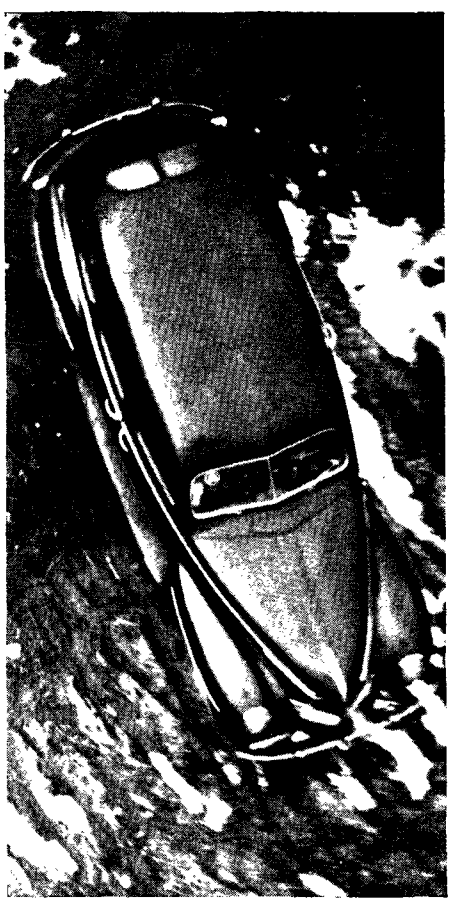
The newly developed type S-7 camera, which makes pictures 9½ inches wide and up to 200 feet in length, is producing some of the most remarkable aerial reconnaissance photos of the war. Its prime military importance is not its ability to photograph 10 or 11 miles of terrain in one unbroken strip, but the amazing sharpness of detail in the pictures taken, and the camera's remarkable ability to produce successful photos under adverse lighting conditions.

In a recent test flight, for example, a plane flew several hundred feet over a golf course at approximately 200 mph, and brought back a picture of such infinite detail that a golf ball was clearly discernible on a tee. On another hop, the pilot passed over a clothesline at better than 400 miles an hour, altitude 300 feet, and in the photo strip, with the aid of a magnifying glass, you could count the buttons on a shirt waving in the wash-day breeze!

Photographic interpreters need large-scale pictures taken at low altitudes because high altitude shots suffer from diffusion of detail and frequently lack



Maintenance and inspection problems are solved at MacDill Field, Fla., without taxing crowded hangar facilities unduly, through the use of these platform like wood structures which readily accommodate B-17 heavy bombers for routine checks and periodic engine tests.



Taken at speed of 350 mph from low level, new camera shows remarkable detail. Note the "A" sticker on the windshield of automobile.

sharpness. But in tree-top level aerial photography, the shutters of single-exposure cameras are not fast enough to stop the motion of the ground as it streaks past the lens.

Rather than attempt to produce a shutter that would stop motion—a mechanical impossibility, since in huge aerial cameras the shutter must open and close over an aperture five or six inches in diameter—the engineers of Wright Field's Photographic Laboratory, Engineering Division, plunged into the development of a *shutterless* camera in which the film would move across the lens at the same rate as the image of objects on the ground moved past.

The task was to convert the spasmodic film motion of the ordinary single-exposure camera to a steady, even flow, synchronized with the speed of the ground below. And after overcoming such difficulties as gear chatter, coordination of film speed with ground movement, and adjustment of film exposure rate to altitude, "limited procurement" was authorized for the S-7 camera in April of this year.

Instead of a shutter, this "strip" or "continuous strip" camera has a narrow slit extending across the width of the film, past which the film is moved at a constant rate of speed. When adjusted to the speed and altitude of the airplane, the film—black-and-white or color—flows across the lens toward the nose of the plane at the same rate as the image of an object on the ground goes past in the focal plane. The light reflected from an object on the ground strikes the same spot on the film as it crosses from one side to the other of the aperture slit, and the apparent motion of the earth is stopped—giving the equivalent of a very fast shutter speed. Thus, in the final picture, there is no blur or fuzziness and even minute objects are clean-cut and clearly defined.

The amount of light reaching the film is controlled by the iris diaphragm and the width of the slit. It is advisable, to avoid diffusion, to use the strip camera with the slit as narrow as possible, down to certain limits, and to make any necessary light adjustments by means of the iris diaphragm. Film speed is adjustable in terms of inches-per-second, and the width of the slit is variable in increments of 1/1000-inch. The operator has a "handy pocket guide" type of rapid calculator with which he can quickly determine the proper settings for any given controlling condition.—*By Maj. Robert H. Unseld, Photographic Laboratory, Engineering Division, ATSC.* ☆

with mechs around the world

When the first group of Thunderbolts arrived in England, pilots discovered that the powerful 2,000 hp engine caused interference and made the plane's radio unuseable. Static resulting from generator and magneto noise made the aircraft a dubious bomber escort and threatened to ground fighters. On the job was Maj. Charles E. Lee, Sacramento, Calif., who applied a simple principle of basic electricity and inserted a few brass rings to afford perfect bonding between the distributor and the metal casing enclosing spark plug leads. Result? Modification of Thunderbolts in American factories and Legion of Merit for Major Lee.

The Japs lost face when two Yankee mechs pounced on a piece of captured material and converted it into a new type of bomb transport assembly that hauls four times as many 500 pounders and loads a bomb trailer in 5 minutes instead of 20. Ask Sgts. Benjamin F. Baldwin, Baltimore, Md., and Allan T. Polmere, Oakland, Calif., both at a 7th AAF base in the Marshalls, and they'll tell you how a sheet of 3/4" armor plate left behind by the fleeing Nips became a useful attachment to the crane of a tow tug and automatically dropped each bomb hooked from the storage dump into its proper place in the trailer.

Did someone say bombs? At Bartow Army Air Field (Fla.) replacement fighter pilots are getting superior training in skip bombing in P-51s because of a new rack adapter fabricated by T/Sgt. Guy V. Bailey, Oklahoma City, Okla. Legion of Merit winner Bailey's device enables the plane to carry three 100-lb. practice bombs under each wing and makes possible several successive attacks on the target in one flight. Previously, only two missiles could be loaded in the standard bomb rack, and planes had to land frequently for reloading.

"Straighten up and fly right" isn't just a popular jive song with members of the "Hat in the Ring" Squadron of the 15th Air Force, somewhere in Italy, when mechs like M/Sgt. Woodrow J. Wingo, of Lexington, S. C., are on the shift. With authorized equipment temporarily unavailable, he tested coolant shutter control valves and the hydraulic system of P-38s with a field-constructed check chest. Locating an old packing case, he fitted it out with a heating unit for controls, a pressure pump, a circulating hand pump, a temperature indicator and an oxygen bottle, together with other operating components he was able to reclaim from wrecked aircraft. All important maintenance on retractable landing gear is now speeded up, and fewer Lightnings are grounded for lack of test facilities.

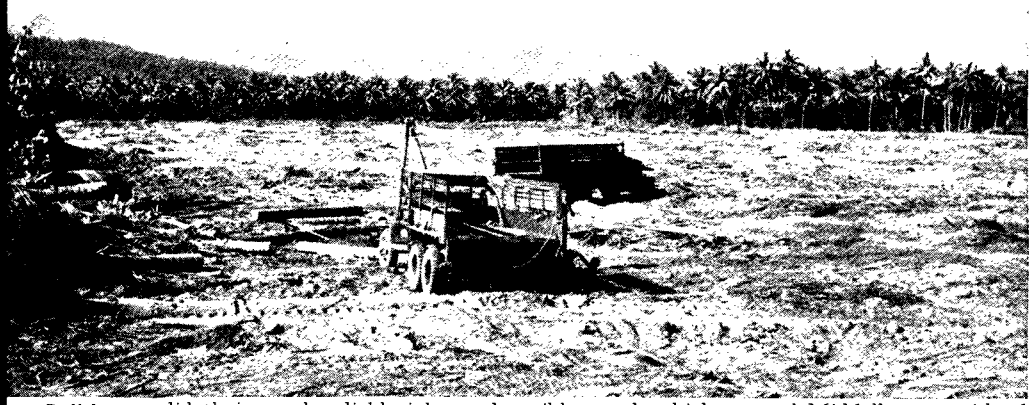
Come and get it was the challenge to the mobile repair unit crew headed by T/Sgt. Joseph R. Tabor, Chicopee Falls, Mass., during the critical days of the invasion in Europe, when a slowdown in replacements prevented a full complement of fighters from taking the air. Obtaining permission from his service team commander, Maj. Maynard A. Hincks, Portland, Maine, who decided to come along, the men set out after a cracked-up plane that was reported lying abandoned in a field near Caen, in order to bring it back for repair. The city had not yet been taken, and bitter fighting raged all around it, but the intrepid detail completed its mission and returned from no man's land to add another fighter to Uncle Sam's sky power. . . . Yes, they named the plane "Spare Parts."

Half an hour after a change of station by a Marauder Group of the 9th AAF in France, the radio equipment in one of its squadrons was tuned and ready for combat operation. How could do? T/Sgt. Forrest D. McDaniel, Wichita, Kan., supplied the answer with a portable repair unit constructed from large wooden crates and sheet metal sections from empty ammo cans. Easily transported in a 2½ ton army truck, the unit provides facilities for testing and trouble shooting, and cracks a hard communications nut for advance air support elements.

Compliments for G-Ingenuity this month go to Cpl. John "Chief" Rave, full-blooded Winnebago Indian from Winnebago, Neb., for his prop remover machine and engine stand adapted to the needs of the Fighting Cocks Squadron of the 13th AAF, Southwest Pacific . . . to Sgt. Carl M. Perin, Newport, Ohio, for his work in converting salvaged oxygen containers into portable compressed air tanks which can be carried handily to riveting jobs around his Air Service Command Depot in England . . . to M/Sgt. Walter M. Bakula in Italy and T/Sgt. Patrick M. Gonzales in the British Isles for devising workable gadgets to "break" bomber tires away from the wheel rims at tire change, and to Sgt. Alfred G. Dammill at an air depot bomber repair base in the ETO for his brake test stand which checks torque of motors operating landing gear, and tail wheel as well as bomb bay doors on Flying Fortresses. ☆

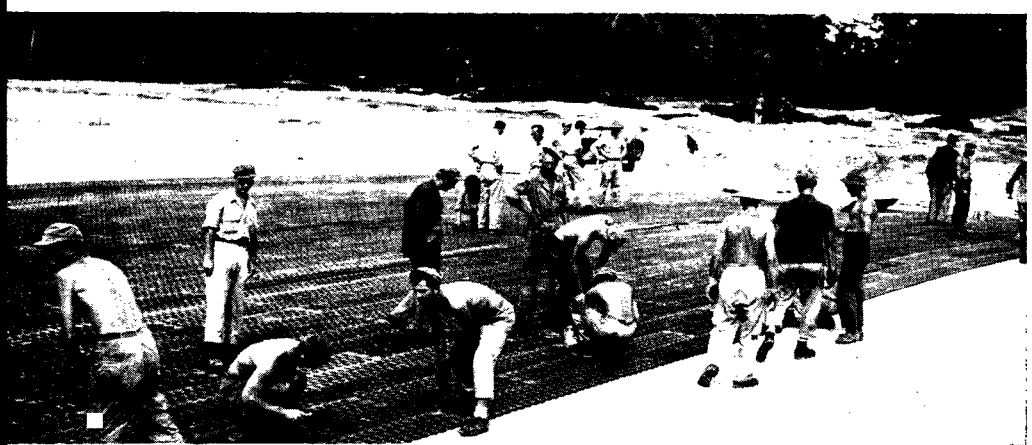
Personnel of Hq. and Hq. Squadron, XIII Fighter Command, trudge up the gangplank of the S.S. John Lykes at Kukum Pier, Guadalcanal. Two weeks later these men were ashore at Sansapor.

Sansapo



Bulldozers did their usual, reliable job on the wild growth which covered Middelburg, an island just off Sansapor. Trucks, above, are clearing timber from the area, seven days after invasion.

Engineers needed coral to cover sandy loam, which is poor base for steel matting. This reef, extending off Middelburg, furnished all the coral needed, but it could be worked only at low tide.



Thirteen days after the 13th ATF had landed, aviation engineers had swept clear the area, bedded it with coral, and had almost completed laying the metal matting, as this photograph shows.

To American forces moving at express train speed toward the Philippines, the operation at Cape Sansapor in Dutch New Guinea was just a whistle-stop. Invasion troops stormed the area on July 30, mopped up the feeble Jap resistance in a big hurry, and moved on. Two weeks after the invasion, aviation engineers had converted nearby Middelburg Island from a wild forest into a strip from which fighter planes were doing a thriving business. At that time, Sansapor was extremely important—it was the closest Allied base to the Philippines.

The Sansapor stopover was relatively quick and easy on the ground, but it held an important spot on the air timetable. The 13th Air Task Force, which included two fighter groups and one B-25 group from Maj. Gen. St. Clair Streett's 13th Air Force, came highballing in from the Solomons to clear the track to Morotai. Not since February 19 when Jap Zeros made their last stand at Rabaul, had the XIII Fighter Command engaged in aerial combat. Now, after a 2000-mile sea and air trip as part of the 13th ATF it was back in action.

This task force, commanded by Brig. Gen. Earl W. Barnes, spearheaded the neutralization of Dutch East Indies airfields. It provided air cover for the Halmaheras invasion and on September 6, 32 ATF Lightning escorted bombers to Mindanao, a record 1,400-mile trip. Only a Jap Topsy was able to get into the air and it was knocked down.

For pilots and crewmen who made the long trip from the Solomons to New Guinea, the victory was a stirring climax to the Sansapor operation. ☆

Stopover

After the aviation engineers got through with it, Middelburg Island was a flight strip, from one end to the other. Another base was built on the Sansapor mainland for 13th AFF mediums.

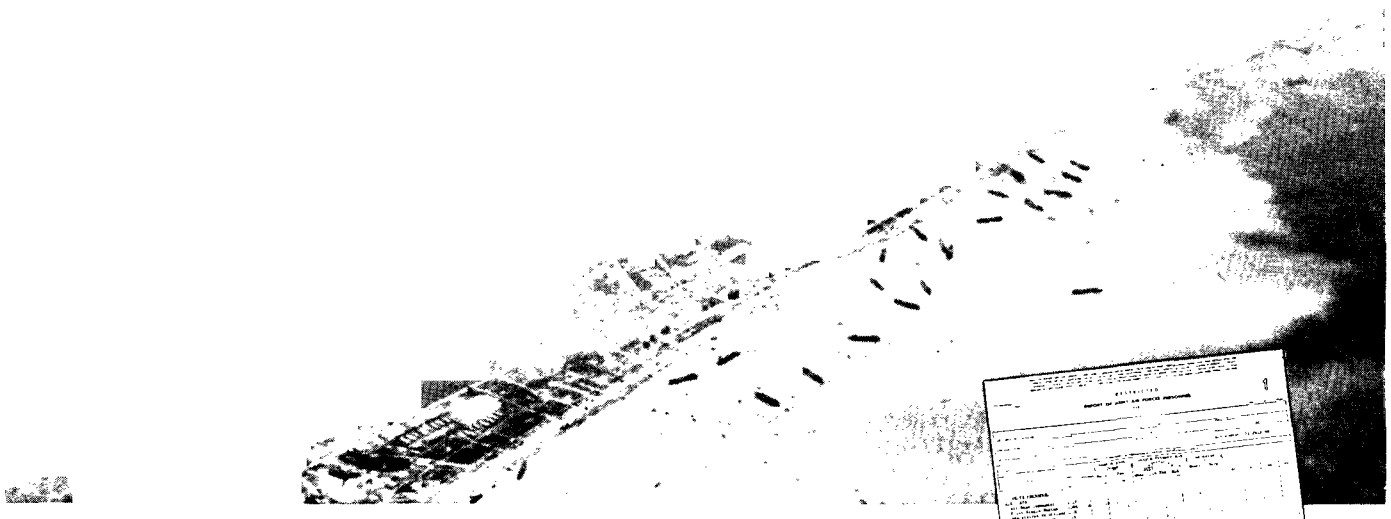
Brig. Gen. Earl W. Barnes, AFF commander, chops tree in bivouac area that had to be hand cleared.

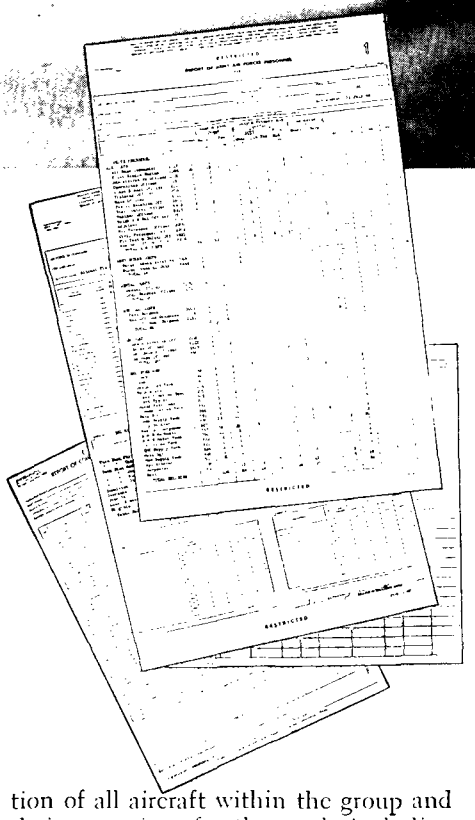
Carved from dense jungle, Mar Field, the mainland strip, was ready for operational use by B-25s on September 16. As soon as trees were cleared, ack-ack crews dug in along the runway.

Wounded were evacuated by C-47 on August 22. Here, flight nurse prepares patients for journey.

Simultaneously with the establishment of ack-ack emplacements, air raid shelters were set up at regular intervals. Men at right are filling sacks with dirt, lining shelter with them.

With the planes coming and going with ease, this GI had time to rig up the inevitable wash rack.





THE ABC OF D-DAY

When an invasion is in the cards, Stat Control shuffles the deck for the right answers

Let's suppose a date has been set for the beginning of the Battle of Japan. Intelligent planning requires a readily available source of accurate and complete information. The Air Staff wants to know exactly what, when, where and how—*what* subordinate units are able to do, *when* the required number of four-engine bombers and four-engine pilots will be sent to the proper stations, *where* supplies and equipment may be speedily located, and *how* deficiencies in the number of trained crews will affect the success of a mission.

These are the unknown factors in the air war equation that have to be answered in the crucible of combat. War moves fast and so do aircraft. Conditions change hourly. Data must be swift, concise. Reports have to be gathered, digested and presented in a clear, life-size picture. Figures must be at finger-tip level, reduced to a common denominator. The accent must be on speed, simplicity, system.

Who undertakes to furnish such factual material? Who serves as the Army Air Forces' "Information, Please"? Who collects, compiles, analyzes and tabulates the floodtide of facts that swirl into headquarters?

The questions are purely rhetorical, for they have already been answered. They were answered on March 9, 1942, when the Office of Management Control was asked to set up its Statistical Control Division. And just how well the reply was made is shown in the ascendant superiority of American air tactics over its opposition.

The fledgling organization was given a man-size mission. Unlike most youngsters who plague their elders with continued and prodding inquiries on topics of unlimited range, Statistical Control found itself from the very first on the answer end of a rapid-fire quiz.

Each month Statistical Control's various branches are required to furnish for use in AAF Headquarters 215 reports on status and location of aircraft and equipment, combat operations and training, as well as 1,500 replies to requests for special information.

How is the task performed? Try to imagine a great newspaper with star reporters posted all over the globe, wherever an airplane flies under USAAF command. These reporters are statistical officers, and their duties are to cover the planes, personnel and operations of their outfits and transmit their "stories" on six daily and weekly forms to the "desk" in Washington. From the engineering, ordnance, weather and communications officers, the S-2, the S-3 and the deputy commander, they compile such newsworthy bits as the condition and disposition of all aircraft within the group and their operations for the week, including type of missions flown, altitude at which they were flown, number of unsuccessful sorties and why they were unsuccessful, number and types of bombs expended and the type of bomb release employed.

This information is sent to wing, command and air force levels to be used as the basis for administration and planning, then forwarded to Washington where it provides the foundation for accurate estimates of air force capabilities and requirements. From these estimates come the staff decisions which affect every AAF squadron in the world.

Sure, it's statistics, cut and dried. But statistics are the fingers that point the way to efficient management and savings in time, money and motion. Statistics are the check and double-check in the uncertain business of war. Statistics, if you will, are cold figures leaping to life and becoming the unseen member of a bomber crew. And like that much-needed ounce of prevention, they can

preserve American airmen just as surely as the latest advances in medicine or the newest safety appliance.

Take a look at D-day in Europe and see how Statistical Control knocked the guesswork out of strategy and stacked the deck so that defeat might be dealt to the enemy.

First came the problem of supply. There were over 500,000 different items of AAF equipment and spare parts needed for the rapidly mounting number of aircraft being readied in the United Kingdom, and once these stores were procured, the difficulty of knowing where and in what quantities to distribute them seemed a runaway nightmare. For the solution, the supply division of Air Service Command headquarters turned to the Statistical Control system.

In order to exercise control over this plethora of parts, it was decided to establish a reporting method built around the framework of a Master List. But in endeavoring to compile such a list, it was suddenly discovered that in the vital category of airplane frames, engines and accessories, no complete list of spare parts had ever been assembled. This was in late 1943, and time was growing short.

Immediately, the group of highly skilled military and civilian personnel charged with the completion of the project, stepped up their working day to 16 hours regularly, seven days a week, during the months of October and November. And by December 1, 1943—the date on which the reporting system was to become effective—the Master List was ready.

The new procedure was tried out in the continental United States, and as soon as it became apparent that it was highly effective in providing the basic data necessary for expeditions handling of supplies, its introduction in the European theater became a high-priority consideration.

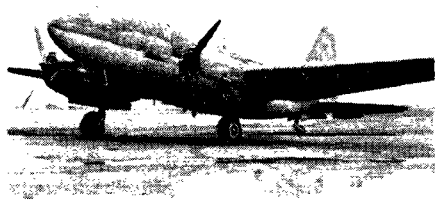
Maj. Erwin A Stuebner, Technical Assistant, Statistical Control Office, ATSC, headed a team of officers who flew to England to lay the preliminary groundwork. Maj. Gen. Hugh J. Knerr, General Spaatz' deputy in charge of administration, was quick to sense the very real assistance this reporting system would provide in putting the theater's supply house in order before the invasion began. His only concern was how soon it could be placed in operation. Accordingly, Major Stuebner took off on a hurried round-trip flight to the States to arrange for the necessary tabulating-machine equipment and personnel. And 31 days from the date on which it was decided to install the sys-

(Continued on Page 60)

WHAT IS YOUR AIR FORCE I. Q.?

Here is your monthly brain-twister. Chalk up five points for each correct answer. A score of 90 or above is excellent; 75 to 85, good; 60 to 70, not too bad; below 60, tsk, tsk. Answers on Page 60.

1. The approximate statute mileage from the northern tip of Luzon in the Philippines to Kyushu, in the southern part of Japan, is
   A. *250*
   B. *1,000*
   C. *750*
   D. *500*
2. The name popularly given to the B-32 is the
   A. *Dominator*
   B. *Crusader*
   C. *Commander*
   D. *Liberty Limited*
3. The Good Conduct Medal is not awarded to officers.
   A. *True* B. *False*
4. Formosa is located off the Chinese coast between
   A. *Shanghai and Peiping*
   B. *Hong Kong and Singapore*
   C. *Canton and Hanoi*
   D. *Shanghai and Hong Kong*
5. For each three years of service, enlisted men receive how much of an increase in base pay?
   A. *25%*
   B. *5%*
   C. *10%*
   D. *20%*
6. Who is the PAO?
7. Corregidor fell on
   A. *December 29, 1941*
   B. *September 7, 1942*
   C. *May 6, 1942*
   D. *January 10, 1942*
8. The letter "X" before the numerical designation of an aircraft means the plane is
   A. *Obsolete*
   B. *Experimental*
   C. *A service test aircraft*
   D. *Equipped with radar*
9. The effective range of the cannon in the nose of the B-25 is approximately
   A. *500 yards*
   B. *5,000 yards*
   C. *2,000 yards*
   D. *1,000 yards*
10. New Castle Army Air Base is located nearest
    A. *Dayton, Ohio*
    B. *Seattle, Wash.*
    C. *Wilmington, Del.*
    D. *Dallas, Texas*
11. The ATC route known as the Crescent Caravan runs from
    A. *California to Australia*
    B. *Delaware to India and China*
    C. *Montana to Alaska*
    D. *Florida to Africa*
12. The purpose of a centrifuge tank is to
    A. *Separate gas vapors*
    B. *Serve as a reservoir for coolant*
    C. *Separate solid particles from the coolant*
    D. *Cool the hot coolant*
13. Leyte is the third largest of the Philippine Islands.
    A. *True* B. *False*
14. In order to communicate with AIR FORCE, the Official Service Journal of the AAF, it is necessary to go through channels.
    A. *True* B. *False*
15. The wingspan of the B-29 is greater than the B-19.
    A. *True* B. *False*
16. The property of oil to flow is called
    A. *Permeability*
    B. *Viscosity*
    C. *Pressure factor*
    D. *Adhesiveness*
17. The approximate statute mileage from Formosa to Manila is
    A. *100 miles*
    B. *750 miles*
    C. *450 miles*
    D. *1,000 miles*
18. USSR stands for United States of Soviet Russia.
    A. *True* B. *False*
19. Warrant officers may not serve on courts martial.
    A. *True* B. *False*
20. Identify these aircraft. ↓



Blood Plane

It saves hundreds of lives in Italy and France

By an AIR FORCE Overseas Staff Correspondent

She made her first appearance in Italy. She was the first plane in at Dole, at Sisteron, at Florence—and where she wasn't the first she went in right behind the fighter-bombers who were route-blasting for the infantry. She's just a lumbering C-47, but to the medicos and the wounded who wait for her wherever there's action, she's the most wonderful aircraft in the world. They call her the 'Blood Plane'.

The Blood Plane carries whole blood, not plasma. Blood consists of fluid and cellular elements. When a donor gives blood in the States, cells are removed and remaining fluid, which is plasma, is frozen and dried. This dried plasma keeps indefinitely without refrigeration, can be carried everywhere and given to a man immediately after he is injured.

But when a man has a severe wound, or a bad hemorrhage or is badly shocked, or is about to be operated upon, he may need more than the fluid which the plasma provides. He needs red blood cells, and the only way they can be replaced is by fresh whole blood. Unfortunately, however, whole blood can be kept only for a relatively short time, and then only under constant refrigeration. Blood donations under combat conditions are difficult, if not impossible. Hence the Blood Plane.

In January 1944, with the big push in Italy coming up, the Surgeon of the Mediterranean Theater decided to set up a blood bank that could provide for whole blood transfusions closer to the front lines, at field and evacuation hospitals. Within a month Col. V. H. Cornell, Commanding Officer of a Medical General Laboratory, had the bank organized with nurses, Wacs, and the soldiers themselves making donations. Capt. John J. McGraw, Jr., was appointed its supervisor. At first, the blood was sent to the 5th Army at the Cassino front by truck. Anzio beachhead troops received it via LST. With the front still almost static, these types of transport were sufficient.

Then came the break-through. On that day at 1000, the Lab received an urgent request from Anzio for whole blood. Colonel Cornell called the ATC for a transport. At 1730 of the same day a C-47 landed on the Nettuno airstrip in the beachhead with a full load of blood. From then on, that C-47 became *the* Blood Plane.

Shortly thereafter, the Troop Carrier Command took over, and from then on the plane has not missed a single day's delivery to Lt. Gen. Mark Clark's 5th Army. After the break-through it followed the Army up the boot of Italy. It flew to Rome, Tarquinia, Grossetto, Fallonica, Cecina, Sienna, Florence, and into the Po Valley.

The General Medical Lab was ready, too, for the invasion of Southern France, and another C-47 was assigned to them from Troop Carrier.

Flying into France was hazardous due not only to unknown fields that were without towers and radio the first few days, but also to bad weather. The flights became longer and longer until the round trip was about 2,000 miles. On some days deliveries in France were missed. It was not because the pilot didn't try to bring the plane in. On days when even the fish didn't swim, the men in the trucks of the Advanced Section of the General Medical Lab often heard the plane trying to find the field and they would sweat out the landing. Sometimes the plane would call the small tower to explain that it was going to try to sit down at a field about 60 or 70 miles to the rear. The men on the blood trucks would race down the wet, muddy roads to the next airport. Often they'd find this field closed and the plane trying another one. And off they'd go again. Those drivers really deserve a few medals.

Day after day sees the medics down on the field waiting for the Blood Plane. They know the pilot will bring it in if it is humanly possible. And he does. To date, there have been no accidents, despite the fact the planes are flying well over 120 hours a month in all types of weather and landing on inadequate fields. The pilots are proud of their work. There are no dead hauls. On the return trip any extra space is filled with air evacuation patients.

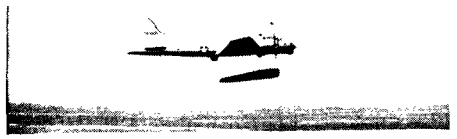
The flyers like the work. It isn't easy but it is highly satisfying. And it isn't every troop carrier outfit that lives at a Lab, gets briefed by doctors, and has a medico as CO. ☆

Rendezvous

(Continued from Page 3)

cedure for releasing the boat, it is stated that the boat is released so that it will alight *downwind* from the survivors and that they may drift towards it.

Almost any boat, particularly one of the hull design shown in the picture, will drift, even in a light breeze, fast enough so that even a powerful, naked survivor would find it difficult if not impossible to overtake the drifting craft. The 150-yard buoyant lines



may be of some help but they also will drift with the boat and would present rather a small target, particularly in choppy water.

It would seem to me that the hull should be dropped so as to alight as near to the survivors as possible but *definitely up-wind* from them. This procedure would offer the survivors the maximum opportunity to intercept the hull as it drifts toward them rather than away from them. . . .

Pvt. Winfield H. Perkins, Alamogordo, N. M.

No, because the three large parachutes which lower the boat act as sea anchors, preventing the boat from drifting away and enabling the men to drift to it.—Ed.

Out of Uniform?

Dear Editor:

. . . Are NCOs allowed to wear chevrons with the Air Corps insignia sewn on, as shown.

S Sgt. Charles Stava, Kelly Field, Texas

Dear Editor:

. . . I wonder if you could give us some information concerning special insignia which instructors at flying schools are authorized to wear?

Lt. Eugene A. Kilcheski, San Antonio

See question and answer column on page 23.—Ed.

That Man

Dear Editor:

I accept your invitation on the back cover of the October issue of AIR FORCE to let you folks hear from me. . . . Next February 27th will be the 25th anniversary of man's conquest of the stratosphere, at which time the writer was the first man in a flying machine to explore the possibilities of Army Air Force military operations in or above the stratosphere. When the Krauts and other gangsters tried to get the upper hand, or upper level, those air blitz gangsters found the U. S. already up there waiting for them. . . . That "man" in the open cockpit machine of 25 years ago is still hanging on to the thread of his life, partially paralyzed by a blood clot or nitrogen bubble in the right side of his brain. One

(Continued on Page 60)

The Intercom

As a medium for the exchange of ideas, AIR FORCE presents these answers to its Question of the Month. Replies are those of personnel recently returned from combat duty in the areas indicated.

QUESTION: Where were you last Christmas?

S/Sgt. Alden Cranmer, air warning, 10th Air Force: "In the Naga hills of northeastern Burma. Our Christmas dinner was dropped to us from a C-47. We had turkey, cranberry sauce, potatoes, peas and coffee. We even made cherry pie. One of the men got out his mouth organ and we sang Christmas carols. It was quite unusual to sing 'Oh, Little Town of Bethlehem' 5,000 feet up in the Himalaya mountains. One of my friends in the C-47 dropped me a note wishing me a Merry Christmas. All in all, it was the strangest Christmas I ever had."

Capt. Edward Ackley, intelligence officer, 13th Air Force: "On Guadalcanal. One of the men got some red cloth and dressed himself up as Santa Claus. He had a cotton gauze wig and beard, and he rode around the island on a truck visiting all of the installations. We also had a strolling band. The boys played, sang carols and old songs, and we all joined in. It seemed peculiar to all of us to celebrate Christmas in the tropical heat of the South Pacific. All the men had received Christmas packages weeks before, so we broke them out and had a real celebration."

Maj. James Shreeve, communications officer, 5th Air Force: "I was in Port Moresby. We had a big strike on Wewak, and Christmas was a regular working day for us. The boys were a little concerned about getting back on a Christmas Day mission, but they all returned. That gave us good reason for a double celebration, but we didn't have much to celebrate with. Somebody who seemed like Santa Claus had the real holiday spirit, though, because he flew in hard candy, nuts, fresh fruit, fresh vegetables, and even eggs and butter. So it really turned out to be a fine celebration after all."

T/Sgt. Paul Covert, gunner, 8th Air Force: "I was in the picturesque English village of Bovingdon, near London. I spent my Christmas playing father to a lot of British war orphans. The kids were brought over to our base and the men lined up and 'adopted' a youngster as he climbed down from the truck. I got a six-year old blond tyke. His father was killed in the RAF and his mother was killed during the Battle of Britain. The men on the base had made a variety of toys for the kids, and we played Santa Claus and handed them out. I never had a better time."

S/Sgt. Adolph DiMinno, gunner, 15th Air Force: "I was in Marrakech, Africa. My crew went to a Christmas dance given by the Red Cross. We had just landed in Africa and it was all very strange to us—Arabs all over the place, French women to dance with, and carols being sung in a variety of languages. They had a big Christmas tree in the center of the dance floor decorated with colored lights just like it is done here. The French provided toys for all of the children in the town, and even though we were thousands of miles from America, we felt right at home."

Lt. William Brennan, bombardier, 14th Air Force: "I was riding down the Burma road in a jeep on Christmas eve. We drove 60 miles into Kunming to attend midnight mass which was celebrated in a hangar. On Christmas Day, we had a party and the men made aluminum stars for the tree out of a cracked up airplane. We hung colored crepe paper in the mess hall and really did ourselves up proud. Most of our Christmas was spent thinking and talking about home. We had some records and everybody joined in singing carols and the usual songs. It was a wonderful Christmas."

Combat Express

By Capt. L. P. Bachmann

The fighters called for help and the bombers came through

For the 12th Tactical Air Command, it was a critical hour. From the day the 7th Army had stormed the beaches of southern France, the ground troops had been driving forward, never losing momentum, never being curtailed by their own insufficiencies. And with bomb and gun power that had torn the German strong points to rubble and dust, the 12th had provided the air support and led the way.

Now they had the Nazis on the run. They had to keep operating. But they needed supplies of rations, ammunition and gasoline, needed them badly.

The ground forces couldn't be called upon for aid. They were having their own headaches keeping their own units supplied. From the beachhead it was a 3½-day turn-around by truck. And the roads had about reached their capacity.

So for once, instead of helping the bombers, the fighters and light attack planes called upon the bombers to help them. And help arrived without delay.

From the 15th Air Force first came a fleet of B-24s. Shifted from strategic bombing missions, they were assigned to fly the gasoline and supplies from their Italian bases to the tactical command men in southern and central France.

Each B-24 was fitted to carry empty gasoline drums in the rear section, unfuzed 500 pounders were hung in the bomb bays, while many cases of .50 caliber ammunition and food supplies were distributed in whatever storage space was left. In addition, each plane made the short flight with a full load of fuel in every available tank.

In tight formations they flew to airdromes that but a week before had been targets for the new occupants. Many of the crew members in the B-24s were groundmen who were making their first mission to help with the unloading. They were astonished at the destruction the AAF had wrought upon the targets they passed over.

When the planes landed, the townspeople—long accustomed to diving for the nearest shelter whenever big bombers passed overhead—flocked out to the airdromes like children to a circus. They watched as the aircraft turned onto the apron that ran in a large semi-circle around the field. They saw the bomb bay doors open and the bombs come gently down guided by careful hands. They waved and cheered as the engines revved up and the empty planes took off to return the next day and the next with still more bombs, ammunition, gasoline and other supplies for the fighters.

But even the efforts of the B-24s were not enough. The drive to the north was in full swing again, this time for Belfort Gap, gateway to Germany. It was decided to add a fleet of A-20s and whatever C-47s were available; for these

British soldiers helped unload gas drums, ammunition and bombs, ferried into southern France from 15th Air Force bases in Italy.

smaller planes could get into the forward fields where the B-24s couldn't land. There was such a demand for the cargo now that the A-20s and C-47s often taxied to within hose distance of the combat P-47s. The groundmen pumped the gasoline from one plane to another like a blood transfusion. They lifted bombs down from the bomber's bay, fuzed them, and rehung them on the Thunderbolts.

A small indication of what the Thunderbolts did with these supplies may be gained from their score in a single day's operations. On that day they nailed 43 locomotives, destroying 34 of them, leaving 9 damaged. In addition, they damaged or destroyed 29 railroad cars carrying German troops and supplies to the Belfort Gap. Of 125,000 rounds of ammunition flown in on one day, a P-47 group fired 90,000 rounds into enemy convoys in the Belfort Gap area.

Gradually, the race to keep the fighters supplied was being won. The reserve of materiel was mounting with each delivery by the ingenious Combat Express. Indeed, the delivery of surplus gasoline began to pose a problem. It was easy to store rations, ammunition and bombs, but high octane gasoline could not be poured on a field, when no more storage tanks were available. A lieutenant at one field came up with an answer. Finding four wine tank cars nearby, he secured permission from the French authorities to have the cars moved to a siding on the airfield. This done, the cars were thoroughly cleaned, and 25,000 gallons of the precious fuel found storage space.

By this time, the front had become more stabilized. As the ground forces moved in to stand before the Belfort Gap, the moves from airdrome to airdrome became less frequent, and Brig. Gen. Gordon P. Saville happily announced that his 12th Tactical Air Command was in swell shape—they had several days' supply of necessary materiel.

With the reestablishment of the railroad lines, the emergency was over, and the Combat Express made its last supply run. The B-24s went back to delivering bombs on strategic targets, the A-20s returned to flying their errands of ill-will, and the C-47s flew on to meet other demands.

The 7th Army was readying itself for the Battle of Belfort Gap. Thanks to their big friends and the supplies they had brought, the 12th Tactical Air Command was ready to take its usual place, the place up front. ☆

After the bombers had unloaded their cargoes, mechs drained the gasoline from the wing tanks, leaving just enough for the return trip.

THE CARELESS DIE EARLY (Continued from Page 17)

accidents, of frostbite casualties, and of drownings which have occurred in the last 18 months.

In August, 1943, General Arnold, inspecting the 8th Air Force, saw the PEO at work. When General Arnold got back to Washington, he told the Air Staff, "We want Personal Equipment Officers *now*."

Regulations and TOs were devised and revised. Training of the PEO at the AAF School of Aviation Medicine, Randolph Field, Texas, began where the course for the Unit Oxygen Officer left off. Capt. Sidney G. McGavic and Capt. Henry J. Dohrman were brought back from the 8th Air Force to instruct students on air-sea rescue and PEO organization, and, meanwhile, Capt. Samuel R. M. Reynolds, aviation physiologist, hustled to England to get the latest information on PEO instruction. Later, the AAFSAM course was moved to AAFSAT at Orlando, Fla., expanded and placed under the Aero Medical Department.

By October, when the Orlando course was terminated, more than 2,000 PEOs had been trained.

The three-week Orlando course, of shotgun proportions, was calculated to give the PEO-to-be some real insight into the flyer's problems. The student officers made flights in an altitude cold chamber, wearing oxygen masks and various types of insulated and heated suits to get a taste of 40 below zero at 30,000 feet above sea level. They saw how a man loses muscular control and then passes out when he gets oxygen want. They learned to fit masks and test them for leaks. They ran through dinghy drills in a B-17 mock-up, and found out how easy it is to snafu when you have only 45 seconds to get in that rubber raft. They were taught how to open and inflate the one-man and five-man life rafts in the water. By sitting out in a five-man raft from sunset to sunrise, they observed that three is a crowd and five is a mob scene. They rode Navy crash boats and Army B-17s in an air-sea search off Daytona Beach which proved that it's easier to lose a raft than to find one. They put on Mae Wests and parachutes and jumped into the drink from a tower.

The high spot of the course, and the low spot in morale, was a five-day struggle with sand flies, sunburn and sour stomach in a jungle survival problem on a swamp island which the Florida real estate jokers gave back to the lizards.

The PEO goes forth from Orlando with a bundle of ADTIC survival literature prepared by the Arctic, Desert and Tropic Information Center, which leads one to the impression that a man lost in the jungle, far from being a hero just because he survives, is destroying government property if he loses weight and is AWOL if he can't get himself rescued in 48 hours.

From all of this, it is easy to see that the PEO has an unhappy job. If everything is going all right, his CO is likely to forget him. But if anything goes wrong with the equipment or the men using it, he is in the middle. He's just a ground-gripper with no place to go.

But he's a member of the combat team, there at the briefing and back for the interrogation, and he gets his reward when he sees all 10 of a crew come back from a ditching. His dinghy drill and life raft inspections did that.

He can look proud when the flight surgeon brags that they haven't had an oxygen accident in a month, because it was he who trained the crews on that 22-point, 90-second oxygen preflight check and only he who knew enough to inspect each Airco regulator diaphragm for spring tension.

When Headquarters reports that high altitude frostbite has been cut 93 percent, as in the 8th Air Force, the PEO can smile at the way he toiled on ohmmeter tests and ate out the gunners on learning to work with their gloves on. ☆

A jeep, laden with leftover explosives, scurried like a frightened rabbit from the deserted runway of Hengyang Air Field. Demolition bombs were set, fuzes were burning; in a matter of seconds, huge charges of TNT would crater the airstrip.

Safety precautions had been taken, but even the battle-hardened officer in charge of the little party was apprehensive when the roar of an airplane engine came out of the overcast sky. Almost certainly it was another Jap, and the demolition crew was out in the open with a jeep full of potential destruction. To be safe from the explosions, they were putting distance between themselves and the field. To escape imminent strafing, they would have to seek shelter in a nearby revetment located so close to the mined field that falling rocks might do as much damage as Jap bullets.

Choosing between certain and probable death, the officer swung the jeep recklessly into the revetment. The plane screamed low across the field and the crew, hugging sides of the revetment, sighed with relief as the field was blasted by three heavy bombs and the plane zoomed away. It meant just that much less work for them to do.

In charge of the crew was Lt. Col. Richard W. Treiber, Airdrome Defense Officer of the China Air Service Area Command, and twice wounded veteran of two world wars. All day long, with the enemy pounding the field relentlessly from the air and ground attack a decided possibility, he and his crew of 11 men had worked like demons to complete the job of mutilating Hengyang.

Demolition of airbases was one job the China Air Service Area Command had hoped never to carry out, but the Japanese drive to control the Hunan Kwangsi railway and establish a line of communication to French Indo-China has slowly driven back Chinese ground forces and necessitated abandonment of several forward bases of Maj. Gen. C. L. Chennault's 14th Air Force.

Colonel Treiber and his men at Hengyang were the first to carry out the demolition phase of the CASAC's Airdrome Defense plan for all China bases. But trained crews, prepared well in advance for such an eventuality, have proved their worth again and again as the Japanese push onward through China. The Air Service Command has never left a base behind without mutilating it thoroughly. Buildings, machinery, bomb and ammunition slits, runways—every man-made implement of war has been blown to pieces o hammered into useless junk. It is almost impo render runways permanently useless, but CASA achieve the impossible.

Runway somewhere in China being mined with an ingenious pattern of bombs. Here coolies dig hole at point marked with white circle.

Demolition bomb is placed in hole dug by coolies. Lt. Col. Richard W. Treiber shaves block of TNT which will be put in nose of bomb.

It took us eleven months to build this airdrome. We had to wreck it in fourteen hours

The job of the CASAC is to maintain, supply and reclaim all military aircraft and to build, maintain, supply and defend all American airdromes in China. Operating under Maj. Gen. T. J. Hanley, Jr., Commanding General of the China-Burma-India Air Service Command, and Col. Clarence P. Talbot, Commanding Officer, the CASAC does a job which, in its tremendous scope, is peculiar to the China area. Its activities on this rapidly developing war front are constantly coordinated with General Chennault, who carries responsibility for the personnel, materiel, adequate maintenance and protection of all American airbases and installations in China.

With typical thoroughness, the Air Service Command has set up air and ground defense for these installations, complete with annexes.

One of these annexes includes a detailed plan for the destruction of each airdrome in the event of abandonment to the enemy, and provides for an adequate crew to carry out the complex and dangerous job.

In the case of Hengyang, a 12-man crew wrecked in 14 hours an installation that took thousands of men 11 months to construct. After that, on July 6, came the destruction of Paoching. Lingling followed, and on September 20, airstrips at Kweilin were demolished. As the Japanese advanced, Tanchuk on the West River had to be demolished. In every instance, the job was done by a handful of men specially trained for the particular airdrome, and always the demolition was completed within a few hours after the field was abandoned.

Colonel Treiber, who since the loss of Hengyang has been made Chief of Personnel and Training Division in the China Air Service Area Command, knows the peculiarities of American bases in China. Three times he has made a complete round of them, first to draw up a detailed defense plan for each, and then to train crews to carry out defense against ground or air attack and execute the "Demolition Annex" in the event of abandonment.

Proud of the fact that there has been no single casualty in carrying out a mounting number of demolition jobs, the Colonel credited "close coordination" with the success.

"A well-trained crew," he said, "ordinarily encounters little danger in handling explosives. However, these jobs have to be done in such hurry that every phase must be carefully planned ahead so that no one will be endangered through ignorance of what the other man is doing."

The general procedure followed in the Demolition Annexes, according to Colonel Treiber, is first the burning of buildings, then destruction of bomb and ammunition slots and gasoline dumps. While this work is going on, the runways, taxi strips and parking stands are mined and made ready for exploding.

Usually, the demolition of buildings is a comparatively simple job. Drums of gasoline are set near each structure as soon as there is indication that the installation may have to be abandoned. After the field is deserted and ready for the demolition crew, drums are placed inside each building. The crew shoots holes in the containers and from a safe point outside, hurls burning material through windows or doors to start the blaze.

"One time," the Colonel related, "I couldn't get the stuff burning and the building filled with gas fumes in no time. But I finally got it started, and took off. When I was about halfway down the path, the building went 'Woosh!' and I found myself running a race with a window sash!"

Bomb and ammunition slots are destroyed by dumping gasoline inside and igniting it. The tremendous heat sets off the explosives and the main problem is planning their destruction so that they can be handled speedily, yet allow the crews to reach adequate shelter. For explosive demolition of any real size, hastily built lean-to's serve to keep crews safe from falling rock and fragments.

To illustrate unforeseen dangers encountered in this work, Colonel Treiber recalled the burning of a building full of 50 caliber ammunition at Hengyang.

"We fired it and ran like mad for the nearest revetment before the cases began to explode. Everything went fine until a stray slug hit a gasoline drum next to us and the stuff began to trickle down the hill toward the fire. . . . We didn't stay much longer."

The "Annex Plan" provides for two types of demolition, "destructive" and "explosive." "This," Colonel Treiber said, "means that we destroy as much as we can by fire and by breaking it up with sledges. We take care of most machinery this way, though sometimes when it is too big we have to use explosives."

The final job is attempting to make the runway useless to the enemy. This is done by mining the strip with an ingenious pattern of bombs devised to accomplish greatest damage in the least time.

Nose plugs are taken out of the bombs and a half-pound block of TNT is shaved round to fit, then inserted. To this is attached either an electric or non-electric detonator cap. When there is time, the bombs are buried in the runway to accomplish a maximum of damage, but sometimes it is necessary to tie two or three together and explode them on the surface.

When using non-electric explosives, the safety cord fuze and prima cords are set for approximately five or six minutes, depending upon the immediate circumstances. A jeep sweeps by each mined spot to pick up the man who touches the mines off. "When using such fuzes, there is always a standby jeep," the Colonel explained. "With this fuel, you can never be sure your jeep isn't going to conk out."

When electrical detonators are used, the crew usually builds a lean-to over the switch box for protection from falling stuff.

Asked about the problems of getting out of the area after the destruction is completed, the Colonel observed laconically, "That's the touchy part of it!"

But the records show that not a man has been lost on a demolition job.

If, in the future, the China Air Service Area Command is forced to destroy more of its bases to keep them from the hands of the enemy, there is ample certainty that the job will be done well. At each base, crews are constantly trained for this job and thoroughly acquainted with peculiar aspects of their particular job. The men assigned to this heartbreaking, but essential, task have been taught to handle high explosives safely and efficiently and to carry out their assignments in the face of every conceivable obstacle. The destruction thus far has proved their courage and skill. ☆

Text prepared by Public Relations office, 14th Air Force

THE ABC OF D-DAY

(Continued from Page 53)

tem, the complete organization in the ETO was established.

Did the system pay off? It worked so well, that on D-day, less than one-half of one percent of all tactical aircraft of the 8th and 9th Air Forces were grounded for lack of parts.

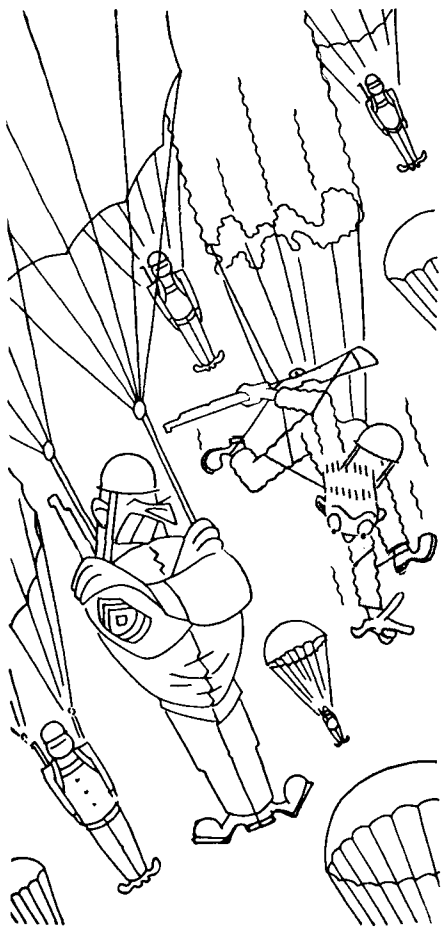
Next came the translation of supply into action. Intelligence provided information on what targets would be neutralized when, while the Air Staff decided on how much time the pre-invasion "processing" should take. However, questions were always bobbing up, like "What will be the average altitude of attack and the anticipated bombing accuracy at that altitude?" "How many bombs will have to be dropped to get the required number of hits?" "How many bombers will have to be put over the target to drop the required number of bombs?"

To settle these and other fine points, it was evident that only a complete check on combat operations over a long period could possibly provide the data required. Yet Statistical Control, with a light flick of its Form 34 reports, served up the figures in short order.

Modification represents another tangle frequently unraveled with timely assistance by Stat Control. In the ETO back in early 1943, for example, it was decided to increase B-17 armament by installing twin 50s in the nose in order to counter enemy fighter planes which were attacking head-on. Only 35 percent of the bombers in a group needed this change, since a formation is so deployed that the noses of aircraft in certain positions are adequately protected by the tail guns of other planes. It was the job of the modifications officer to direct the flow of B-17s from the airbases to the depot and back again, without either stripping the airbase below combat strength or overcrowding the service facilities. What was more, he had to keep track of those bombers under his jurisdiction which had been armed in this way, since it was this factor which decided what plane would lead each element. This seemed simple enough, but when the air forces began massing ships for big offensives, the situation became so involved with details that modifications officers were on the verge of throwing up their hands.

Here, too, Statistical Control stepped in and came up with the right idea—on the nose. An appendix was added to the regular aircraft status report and an arrangement was made for forwarding it to higher levels. Under this plan, group knew by serial number what aircraft had been modified, air division knew by quantity, and command knew by percentages. But any time command wanted to know by serial numbers, the necessary information could be supplied within the hour.

Preparation for D-day in Europe was a big order. Stat Control took off its tabulators, rolled up its index files and went to work. Preparation for D-day in the Pacific will be an equally large undertaking. But Stat Control has its machinery set up, its report system organized and its comprehensive data ready for action. ☆



"All right, Cathey—dress it up!"

Answers to Quiz on Page 53

1. (B) 1,000
2. (A) Dominator
3. (A) True
4. (D) Shanghai and Hong Kong
5. (B) 5%
6. Personal Affairs Officer
7. (C) May 6, 1942
8. (B) Experimental
9. (C) 2,000 yards
10. (C) Wilmington, Del.
11. (B) Delaware to India and China
12. (A) Separate gas vapors
13. (B) False. Leyte, with approximately 2,800 square miles, is the eighth largest of the islands. Luzon, Mindanao, Samar, Negros, Panay, Palawan and Mindoro are larger in that order.
14. (B) False. Direct communication is authorized.
15. (B) False. The B-29 wingspan is approximately 141 feet; the B-19, 212 feet.
16. (B) Viscosity
17. (C) 450
18. (B) False. Union of Soviet Socialist Republics
19. (A) True
20. The C-46 Commando (left) and the C-47 Skytrain.

Rendezvous

(Continued from Page 55)

may think that was a terrible price for any human to pay, but we got the "upper hand" in air power back then, and from where I now sit it seems to me my present comfort is earned. . . . I am much improved and able to get about with my cane and try to keep my time gainfully occupied. . . . Some folks think I am dead, but my desire to live seems to keep me alive regardless of what folks think.

Maj. R. W. Schroeder (Retired)
P. O. Box 87, Glenview, Ill.

To Major Schroeder every airman in the AAF owes a debt of gratitude; many owe their lives. This pioneer flyer made his first record ascent into the upper air in 1918. Within two years he had pushed his ceiling from 28,000 to 33,000 feet (the first pilot to pass 30,000 feet), collecting invaluable data on flight conditions in that region, their effect on man and machine. His flights were made in open cockpit jobs in which few men would care to risk their necks today. We were happy to hear from him and to pass on his thoughts to all our readers.—Ed.

WAC Happy

Dear Editor:

. . . This is not a complaint, neither a suggestion. But the girl pictured on the back cover of your October 1944 issue looked very familiar to me. And if it's possible please send me her name and address.

Sgt. Donald M. Luke, Indianapolis, Ind.

Dear Editor:

. . . I have no squawk, comment or suggestion to offer, but I'm awfully puzzled. Can you tell me the name of the Wac whose picture appears on the back cover of AIR FORCE for October. I know I've seen her, either in my Basic 60—or back home.

I think your magazine is great and I read every page religiously every month.

Pvt. Frances Drennan, Baton Rouge, La.

Dear Editor:

. . . On the back cover of your October issue there is a picture of an enlisted Wac. The picture is of an acquaintance of mine with whom I have lost contact. It was quite a surprise to see her in uniform. If it is at all possible I would like full name, grade and complete address.

1/t. Henry R. Hales, McClellan Field, Calif.

Dear Editor:

. . . While looking through your October issue, I noticed your ad on the back cover. There is but one picture of a girl. I am very much interested in learning her name and address, the reason being that she looks very much like a girl I knew back home and haven't seen for over two years. I know she joined the forces, but that's all. Is her name

Frances LeFevre, and is her home in Center Line, Mich.?

Lt. Paul Gardella, New York, N. Y.

Lieutenant Gardella gets the gal. Or at least, he has a head start. She is Frances LeFevre, of Center Line, Mich. —Ed.

Our Error

Dear Editor:

. . . In your issue of AIR FORCE dated July, 1944, on the article "Land and Live in the Desert," I wish to call to your attention an error in the picture which shows a staff sergeant firing the M-11 Distress Flare with the M-8 Aircraft Projector and yet the caption beneath that picture stated that he was firing the Very pistol. It is impossible to fire any aircraft flares with the Very pistol. . . .

Cpl. Charles Kapner, Charleston, S. C.

Correct. The man in the photograph is firing an "M-11 distress flare" with a "pistol, pyrotechnic, AN-M8."—Ed.

Kind Words Section

Dear Editor:

. . . I have just seen the new AIR FORCE and hasten to congratulate you on the new format. It is much more dynamic and certainly has a greater reader appeal.

Lt. Col. Merle Armitage, Atlantic City

Dear Editor:

. . . Let me add my voice to the chorus of praise I'm sure you are receiving on your latest (October) issue . . . Art, layout and copy are the best I have ever seen in AIR FORCE . . .

S/Sgt. Max Shulman, Winston Salem, N. C.

Dear Editor:

. . . We want to tell you that we think the new cover of AIR FORCE is tops. But old cover—new cover—it's the best darned magazine of its type anywhere. You certainly do a magnificent job and we're proud to be on your mailing list . . .

Ford Motor Co., Dearborn, Mich.

Dear Editor:

. . . Your new front cover is very attractive, both the design and the photo (especially the photo). Keep up the good work.

S/Sgt. P. B. Cunningham, APO 862, c/o Postmaster, New York, N. Y.

Dear Editor:

Hooray for your new cover on the October issue of AIR FORCE—certainly is a grand improvement.

Cpl. Tom Blandford, Cedar Key, Fla.

Dear Editor:

. . . Overall rating for AIR FORCE *superior* without hesitancy.

T/Sgt. J. A. Casey, Bolling Field, D. C.

PICTURE CREDITS

All photographs in this issue furnished through official Army Air Forces and/or Signal Corps sources. Requests for prints of photographs appearing in AIR FORCE should be directed to the AAF Photographic Library, Headquarters, AAF, Washington 25, D. C.

DECEMBER

. . . BEFORE DECEMBER 7, 1941

1903, DEC. 17: First controlled power airplane flights made by Orville and Wilbur Wright at Kitty Hawk, N. C.

1907, DEC. 23: Bids on heavier than air "flying machine" called for by Chief Signal Officer.

1911, DEC. 31: Fifteen airplanes purchased by the Army.

1914, DEC. 16: First radio message ever received in an airplane, at Manila, P. I., from Corregidor.

1918, DEC. 23: Maj. Gen. C. T. Menoher made Director of Air Service.

1919, DEC. 31: Notable technical developments of the year include leakproof tanks, free parachute pack, reversible and variable pitch propellers, supercharger, siphon gasoline pump, fins and floats for emergency water landings, and a 37 mm cannon in a bomber, the first cannon mounted and fired in an American-built airplane.

1920, DEC. 31: Major accomplishments listed by Air Service engineering division are: The GAX armored attack plane; 700 hp "W" engine, the new Martin bomber, and aerial firing of 37 mm cannon.

1922, DEC. 18: Helicopter test-flown one minute, 42 seconds.

1925, DEC. 31: Developments of the year include the Douglas CI transport, standardized airway light beacons, the radio beacon, and oleo-pneumatic shock absorbers and brakes.

1926, DEC. 21: Goodwill flight from Texas around South America begun. Return on May 2, 1927. Distance: 22,065 miles.

1927, DEC. 14: Maj. Gen. J. E. Fechet succeeds Maj. Gen. M. M. Patrick as Chief of Air Corps.

1931, DEC. 18: World duration record for gliders is established. Flying time: 21:34:15.

1931, DEC. 22: Maj. Gen. B. D. Foulois is appointed Chief of Air Corps.

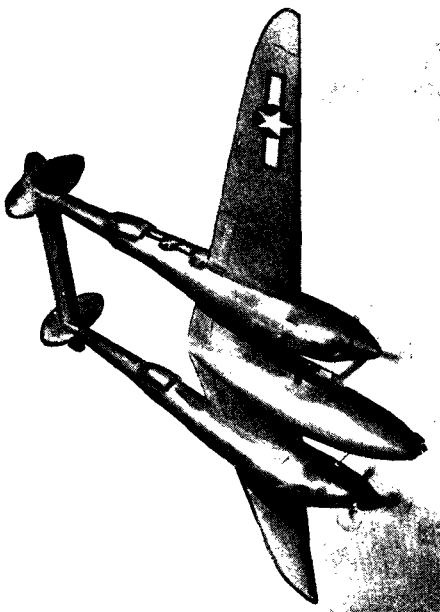
1935, DEC 1-2: Mass flight of 29 bombardment planes of 7th Bombardment Group made from Hamilton Field, Calif., to Vero Beach, Fla. Elapsed time, 21.50.

1935, DEC. 31: Device insuring automatic fuel transfer in airplanes with reserve fuel tanks is developed.

1936, DEC. 14-18: Five B-10s make goodwill flight from France Field, C. Z., to Bogota, Colombia.

WEATHER OR NOT

By Capt. E. E. Churchill
CO, 15th Air Force Weather Reconnaissance Squadron



LESS than a year ago, unpredictable weather was costing the 15th Air Force an average of three or four abortive missions a week. Dozens of others were being grounded by the uncertainty of weather conditions en route and over the target. Precious time and gasoline was being squandered by flying three or four hours toward targets, only to find them overcast. Failure to utilize the maximum number of bombing days was giving the enemy an opportunity to put his factories back into operation before they could be paid encore visits. And seeing their bombs jettisoned into the ocean instead of exploding on the targets was having a depressing effect on bomber crews.

Weather was at the root of these uncompleted missions, but weather forecasters were not to blame. Their reports ended abruptly at the borders of enemy-held territory while targets for which they were expected to forecast were often hundreds of miles beyond. Then there was another complication—the freakish movement of air masses across the Alps frequently resulted in a complete about-face in the weather within an hour or two.

There had to be a practical solution to these problems. The 15th found it in weather reconnaissance.

The principle involved is a simple one. Instead of sending a hundred bombers on a flight that might be wasted, a fast fighter plane is first sent over the target to take a look at the weather and report back. There was nothing wrong with the idea itself but it took months of experimenting before it really paid off.

The plan of double-checking the weather began on a limited scale in March, 1943, with each group sending out its own weather ship and forwarding its findings through channels—to headquarters. But tardiness of transmission, lack of uniformity and coordination, and general inaccuracies of the reports almost nullified their effectiveness. Plans and personnel were still being needlessly lost, precious time and gasoline were still being wasted, and chances of the success of missions continued to be reduced approximately 50 percent by inadequate weather information.

To iron out these wrinkles in the system, the 15th Air Force Weather Reconnaissance Detachment, destined to blossom four months later into a full-fledged squadron, was organized on November 3, 1943, with six hand-picked, battle-seasoned P-38 pilots, each with 15 to 35 combat missions under his belt, and 22 enlisted men with an average of two and a half years' experience as P-38 mechanics.

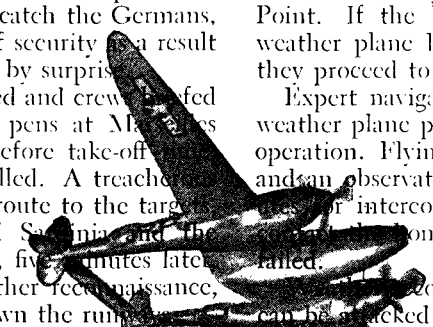
The day may look dreary as hell but these flying weather snoopers in Italy can usually find a target for our bombers

In spite of the customary difficulties of supply, administration and communications attendant upon a new outfit, the results were amazing. In less than a week after the organization of the detachment, abortive missions had been practically erased. By the end of February, weather reconnaissance flights had been officially credited as the decisive factor in the success of 15 missions that otherwise would not have been attempted.

Cases like this were typical:

Flying entirely by instruments for two and a half hours, two P-38 pilots had emerged from the soup half an hour after sunrise to find both targets clear. A subsequent search along the front had ferreted out several breaks large enough to permit passage of the bombers. This information, radioed back to Bari, enabled the rerouted heavies to complete one of their most successful missions and to catch the Germans, who had been lulled into a false sense of security as a result of the heavy belt of weather, completely by surpris[illegible]

On another day, planes had been loaded and crew[illegible] for twin daylight strikes on submarine pens at M[illegible]s and ballbearing works at Turin. Just before take-off [illegible] the mission had been temporarily cancelled. A treache[illegible] front, cutting at right angles across the route to the targ[illegible] had wedged its way over Corsica and S[illegible]nia and the [illegible]ombers within this brief span, his mission has chances of piercing it seemed slim. Yet, five minutes late[illegible] failed. because of a last minute report by weather reconnaissance, the bombers were chasing each other down the run[illegible]



Missions flown by weather reconnaissance are roughly divisible into three principal categories. First, there are the general area missions in which planes are dispatched on a staggered schedule throughout the day over various routes radiating from the base. Reports from these area-blanketing flights not only give operations officers a detailed weather picture for the planning of the next day's operations, but they also are of inestimable value to the RAF in charting night bombing missions.

Still more important are the target check missions, flown a short time before take-off time to pry into any questionable weather conditions which may have developed during the night—and to give the green light to waiting bombers if the prospects are promising, or to hold them at home if the picture is dark.

Finally, when the soup is thick and the breaks are few, there are pathfinding missions to locate openings for outbound and homing bombers whose maximum-range flights leave no surplus fuel for scouting around on their own.

Secret of the success of the target check missions is timing. Information on weather conditions over the target area loses its value in direct proportion to the time lag in reporting it. It was discovered early in the game that if the target is four hours away, you can't wait until the weather recon plane returns to make its report before you send your bombers off. By the time they arrive, the weather may have changed and the target may be closed in. Wherever possible, the pilot radios his findings in simple code to a powerful homing station, from which point they are promptly transmitted to the staff weather officer and all units which might benefit from the reports. If the distance from base to the target is beyond the 350-400 mile radio range, a second reconnaissance plane is sent out behind the first to pick up its signals and relay them home. Thus, the bombers may be half way to their targets before the reconnaissance planes return.

Fastest transmission method of all is the one by which the weather recon pilot radios his information directly to the leader of the bomber group while both are in flight. If the main target, for example, is Schweinfurt and that city is blanketed by heavy overcast, there's a sporting chance that either Stuttgart or Regensburg is clear. The P-38 weather plane leaves in advance of the bomber flight, takes readings at several points along the way, observes conditions at the selected targets—or at points near them—and heads back. The route of the bombers, meanwhile, may be directed either toward the main target or on a median course for all possible targets. Some point on the course is designated as the "Turning Point." There is also a "Point of Intersection" where bombers and the observation plane should pass each other. This is placed a short distance from the Turning Point. If the bombers have received no word from the weather plane by the time they reach the Turning Point, they proceed to the main target as planned.

Expert navigation and careful timing on the part of the weather plane pilot are paramount in this particular kind of operation. Flying on opposite courses at high speed, bombers and an observation plane are left only about 20 to 25 min[illegible] for intercommunication. If the weather pilot doesn't [illegible]on is not able to determine whether a target can be attacked in all instances. When cloud cover over the target [illegible]10 to 7/10, the bombing possibilities are uncertain. The observation planes are most useful in making sure that time is not wasted in going to impossible targets, and that a clear target is not passed up.

Despite several very definite drawbacks, the P-38 was chosen as the best available ship for reconnaissance purposes. Its range enabled it to poke an inquisitive nose into the most distant targets; its speed gave the pilots a greater advantage in leaving attacking Messerschmitts behind, and its ceiling permitted it to explore actual conditions through which the high-flying bombers would pass. Its armor plating was left intact, but three of its five guns were removed to make room for an extra VHF radio set and battery, an electric K-24 aerial camera and a radio range receiver.

With pilots doing triple duty as their own observers, navigators and gunners, a streamlined report sheet, attached to a clipboard clamped on the pilot's leg, was devised to make it easier to record pertinent weather data. A simple grid system is used to locate definite areas of heavy weather, to define pin-point targets within these areas and to report the extent and orientation of fronts. Among the weather factors observed are the extent, base and height of clouds, approximate wind direction and velocity, temperature at every 2,000 feet of elevation, poor visibility, fog, haze, rain, snow, icing, turbulence, thunderstorms and the levels of condensation vapor trails.

Weather reconnaissance, one of the newest and most promising phases of strategic bombing, received its greatest tribute in a recent statement—with no strings attached—made by A-3 of 15th Air Force. It was that the operations of the reconnaissance unit had slashed at least six months from the length of the war in the Mediterranean by making it possible to carry out continuous bombing strikes and thus thwart the German efforts to repair damage to key factories and military installations. ☆

SHOOTING THE BREEZE

GOT ANY GOOD STORIES? SEND 'EM IN!

USA. Second lieutenants are so numerous around the 1st Air Force Pilots Processing Center at Richmond, Va., that they travel in swarms. It's a rare bird among them who has been commissioned more than a month and whether they admit it or not, most of them are still cadets at heart. Matter of fact, Capt. Charles Smith, operations officer, got so weary of refusing requests for three-day passes that he planted a booby trap.

Confronting a pair of young innocents, Captain Smith said sharply: "You men have been in the Army more than a year. You should know by now where to get your passes. Go see the first sergeant." With

brand new airplane-driver hats held politely in their hands, the two lieutenants applied to the first sergeant. He made out two Enlisted Men's passes and the young pilots headed for the bright lights of Washington, D. C. "Just a minute," the sergeant called after them. "You'll have to get the CO's signature on those passes."

The lieutenants walked into the old man's office, saluted, and placed the passes upon his desk. The CO glanced at the passes, then at the gold bars, then at the youthful faces—then he roared. It was the bellow of a man too busy to appreciate clowns. The unsuspecting officers had presented passes made out to Pvt. Jake Snake and Pvt. Joe Blow.

France. It was one of those bad days during the Third Army's rush from St. Lo to the German border. Nobody was very sure where the leading elements of the ground troops were, and our P-47s out ahead were having trouble identifying targets. Finally, one flight spotted a likely looking column of troops using horse-drawn vehicles—usually a sign of Germans. The fighters dropped their bombs, which that day happened to include leaflets advising the enemy to surrender, promising good food and civilized treatment. The payoff came a few days later when one of the forward command posts of the Tactical Air Force was visited by several dozen grimy Third Army infantrymen.

"OK," said their sergeant. "We surrender. Now, where the hell is that good food?"

USA. To our attention has come the neat trick of Pvt. Edward O. Spratt, 28-year-old pre-aviation cadet, who is reported to have performed 6,429 consecutive sit-ups from a prone position. An AAF camp newspaper says, "Starting from a prone position with hands locked behind his neck, Spratt raised to touch elbow-to-knee alternately in the prescribed manner . . . and returned to the prone position each time."

It's not the 6,429 we're excited about, but the fact that he accomplished even one. According to our dictionary, if Spratt was prone, he was flat on his face.

China. A Chinese bomber crew of the 14th Air Force became separated from its formation while returning from a mission. After losing contact with other bombers, the crew eventually found a familiar landmark, the Yangtze river. This proved useless, however, when the navigator confessed that he was too confused to determine the direction of their base. But shortly afterward the bomber changed course and went straight home—without the navigator. When he arrived, weary and footsore some days later, he explained. "The pilot made me bail out and ask somebody. Then I made markers on the ground. Then I hadda walk home."

Southwest Pacific. A major in a 5th Air Force fighter wing claims that he has found an easy way to determine the various levels of command at his SWPA headquarters base. At wing headquarters mess the major says he is served, several times a week, one half inch stubs cut off the butt end of asparagus stalks. When visiting naval headquarters at mess he was served the middle part of asparagus. Then, one night, according to the major, he dined at another place and realized suddenly that he had reached both the top of the command and the stalk. It was GHQ mess, and there on his plate were the asparagus tips.

North Africa. Lt. C. A. McEver, of San Antonio, was asked to describe the outstanding incident of his flying career. The pilot sat down and pondered such matters as

missions, bombings and dogfights. "Well," he said, "I guess it was something that happened in French Morocco. I saw an Arab eat a sandwich made of K-ration biscuits and a tube of American shaving cream."

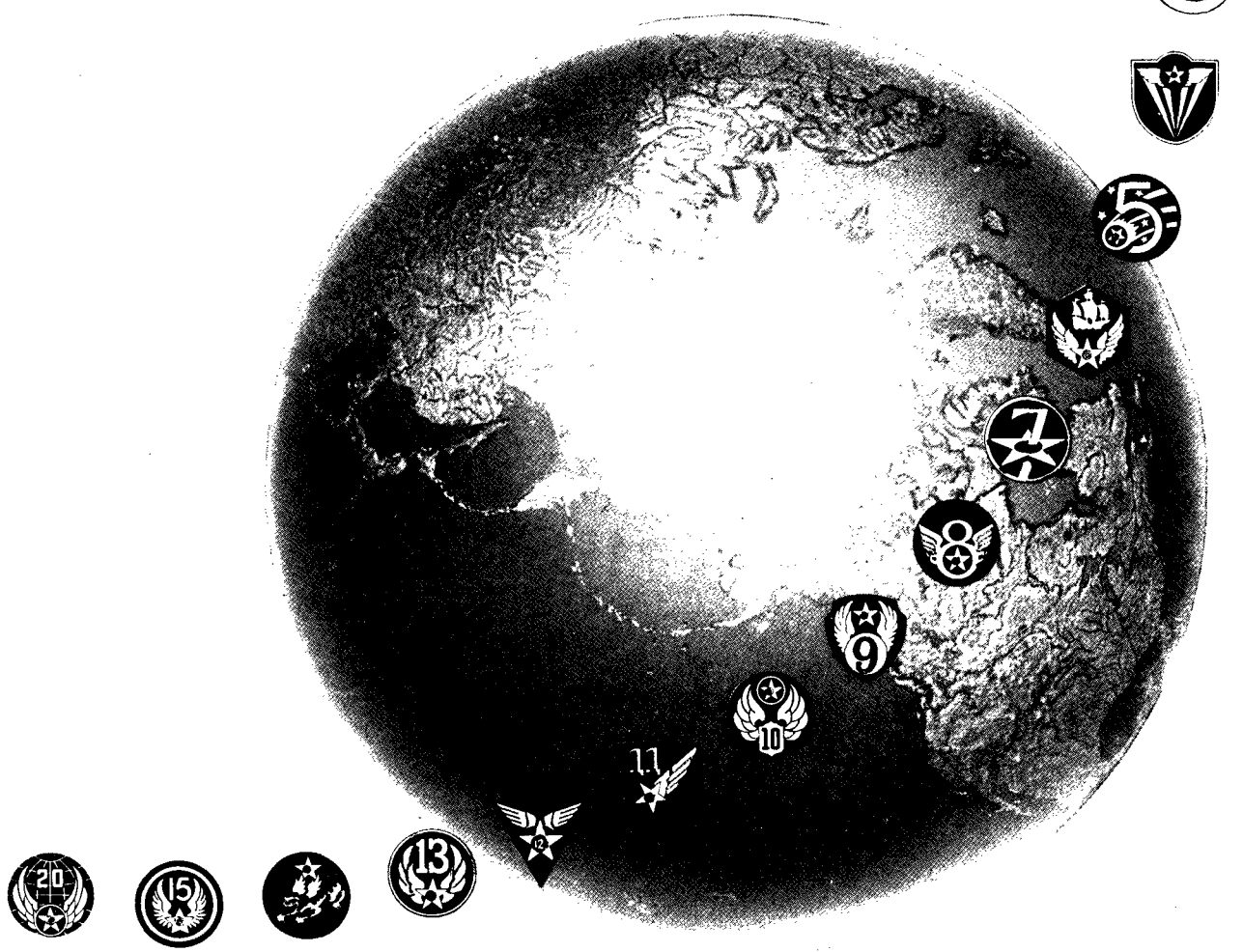
Burma. If you need any further proof that our nurses aim to please, here it is: A flight nurse was the first white woman to visit a remote landing strip in northern Burma. As she was about to leave, she asked the men if there was anything she could send them. One man asked for a red head. Another requested a brunette. A third indicated that he went for blondes. The nurse promised to see what she could do and departed.

A few days later, an ATC Air Evacuation plane landed on the strip with some nurses who were detailed for duty there as a result of enemy air action. There were three nurses. A red head. A brunette. And a blonde.

China. Some of the boys who helped destroy our airfield at Kweilin report that it was, on the whole, a pretty gloomy business. However, a certain spirit of gaiety is said to have prevailed when they came to burning the orderly shack. With it went the First Sergeant's duty rosters, including assignment of the next week's guard detail. ☆

1911. The man fumbling around in this dishpan is Riley Scott who is about to try out his mechanical bombsight. Two 18-lb. bombs hit the target—well, almost anyway.

After three years of war...



We're more than 2,300,000 individuals . . . 75,000 airplanes . . . 16 complete air forces spread around the globe. But above all, we're one outfit, one team. And that oneness gives us the team-power necessary to finish our job.