AIR FORCE

THE OFFICIAL SERVICE JOURNAL OF THE U. S. ARMY AIR FORCES

Pre-dawn in Britain

SEPTEMBER, 1944

MEDITERRANEAN MILLINERY MOTIFS

There's much to be said in the tilt of a lid.

The Brow Beater

The GI Joe

The Fifty-mission

Garrison Cavalier

The Cocksure

The Canteen Killer

The Grease Pot

The Iron Knob

The TS Tilt

The Ernie Pyle

The Morale Builder

The Mel Ott

The Stanley Steamer

Gone With The Wind

The Browned Off

CROSS COUNTRY

Our staff correspondent in Great Britain, Maj. Arthur Gordon, has just returned with this little item which he swears is true. Not long ago, it seems, Lieut. Col. Ben Lyon, the former motion picture actor who is now in the AAF, walked into the office used by Air Force in London with a recording of a robot bomb in flight. Although Gordon, who had heard too much of the real thing, evidenced little interest, the record was placed on a phonograph. The narrator prefaced the program with the dramatic announcement: "Here comes the robot bomb!" Then, from the machine, came the peculiar drone of an approaching buzz bomb. As the record played on, the drone developed into a roar. "That sounds like a real one," said Gordon. "Of course it does," responded Lyon. "Do you think we fake these programs?" The roar grew louder. "Shut that damned machine off!" shouted Gordon, whereupon the phonograph was stopped. A moment of silence followed. "See," Colonel Lyon remarked, "an excellent recording!" He was cut short by a terrific explosion. A robot bomb had struck some 500 yards away.

☆

Now for a quick glance through this issue. You will find a few changes in appearance. For example, on many pages you will find two-column instead of the usual three-column type makeup, and a different type face has been adopted throughout. Both revisions afford more words per page and, we think, improve appearance.

To keep you up-to-date on organizational changes in the AAF, we are publishing on Pages 32 and 33 of this issue a revised edition of the organization charts which have been published from time to time in Air Force. This chart shows the AAF organization and key personnel through August 10. As usual, reprints of the chart are available on written request to the Service Division, Air Force Editorial Office, 101 Park Avenue, New York 17, N. Y. So don't tear out the chart. Write for one so the next reader can have a complete magazine when you have finished reading this copy.

Two new departments are introduced in this issue. "Intercom," Page 13, presents a question of the month and the answers of men recently returned from combat. This month's question is "What one tip would you give to men going overseas?" On page 17 "September in the AAF" reports important events in AAF history which occurred in the current month up to December 7, 1941.

The front cover illustrates a familiar sight at heavy bomber bases in Britain—a ball turret gunner in the glare of an electric light installed in the turret for his convenience as he adjusts his guns in the early morning hours before a mission over the Continent. The gunner is Staff Sgt. Beuford D. Brush.

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AIR FORCE

THE OFFICIAL SERVICE JOURNAL OF THE U. S. ARMY AIR FORCES

BRIEF

DEPARTMENTS

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PACING THE ATTACK

Guns and fortifications in German-held France crumbled into rubble under dive-bombing attacks by fighters of the 8th and 9th Air Forces.

By Maj. Arthur Gordon
AIR FORCE Staff

THE story goes that a GI from Georgia in a foxhole near St. Lo raised his head from the shuddering ground and screamed in his buddy's ear: "Yuh know, ah'm beginn' to think that damyankee Sherman was a right easy-goin', friendly sorta fella aftuh all!"

A few hundred yards ahead of this particular dogface, 1,500 heavy bombers of the 8th Air Force, flying at medium altitude, were unloading more than 3,000 tons of GP and fragmentation bombs on an area five miles long and two wide. Thousands of other doughboys watched bomb-carrying fighters comb the area, saw hundreds of mediums add their bombweight to this cauldron of steel and flame. The date was July 25. The terrific aerial smash was the one that enabled the Americans to break out of the Normandy Peninsula and drive headlong toward Paris.

The resulting devastation, as described by observers who covered the area afterwards, was appalling. The neat orchards and hedgerows and farmhouses looked as if they had been beaten with a giant flail. Dead cows and dead Germans lay sprawled in the craters. The craters themselves were not too large to interfere with tank movements, but roads were pitted, railroads were twisted into fantastic shapes, telephone poles were sheared off like matchsticks.

It seemed impossible that human beings could survive such a barrage, but some did. Those who expected the Germans to be completely "anaesthetized" were too optimistic. The Jerries suffered far more than they did at Cassino, where they had deep cellars in which to hide, but plenty of them survived. The important question was whether they had enough fight left in them to stem the advance that followed. Results proved that they did not.

The weather was cloudy, as usual, but not so bad as that of the day before when the same armada had been forced to return to base without dropping more than a third of its bombs. On both days some bombs fell short. These errors could have been the result either of malfunctions or of poor visibility caused by the dust and smoke of the bombs. The casualties among Allied personnel were regrettable, but they were not unforeseen. The margin for error had been made purposely small. No one doubted for a moment that among the assault troops the lives saved by the air blow far exceeded those lost by it.

The basic reason for this use of heavy bombers as tactical support was simply the desire on the part of Allied commanders to bring maximum pressure to bear on strong German defenses. There was no intention to divert the Forts and Libs more often than was necessary from their primary mission: the destruction of strategic targets. But it was significant that when they were diverted, as on July 18, July 25 and July 30, important ground gains followed.

What the high command thought of the value of all-out bombing of field defenses in open country was best indicated by their continued use of it. The Canadian breakthrough southeast of Caen on August 8, an attack which began at night, was paced by about 1,000 RAF heavies some of which brought their bombs back, because again dust and smoke made dead-accurate bombing impossible. The air support was continued the next day when 600 American heavies hurled down 20,000 fragmentation bombs. This was considerably fewer heavies than the number employed at St. Lo two weeks earlier. The reason probably was the air chiefs' conclusion that after bombing by a certain number of combat wings, the target was so obscured as to make additional bombing unprofitable and dangerous. On that same day, the remainder of 8th Air Force B-17s and B-24s attacked other targets, including launching sites for robot bombs. The Canadian drive, plowing through a defense belt at least ten miles wide, threatened to unhinge the whole German position.

In most of these cases where the heavies were employed, the Allies were facing German defenses in depth, with Jerry solidly dug in and awaiting attack. When the enemy was on the move, however, either forward or backward, the main burden of air support reverted to the mediums and fighters of the tactical air forces.

One of the most valuable contributions made by Allied air power in the entire campaign was the assistance it rendered in breaking up the German counterattack aimed at

How tactical air power was employed for the Allied break-through in France

Avranches, a thrust designed to pinch off the American spearheads driving south into Brittany. This was a full-scale effort by four German divisions, and the work of the fighter-bombers—especially RAF rocket-firing Typhoons—in blasting enemy armor played a large part in saving the Allied armies from what would have been an awkward position had the panzer thrust succeeded.

This protective role, however, was a rare one. When General Bradley said that air-ground cooperation in Normandy was "away beyond anything we believed possible," he probably had in mind day-to-day performance—a day, for example, like July 28, when 70 tanks and 884 other vehicles were reported destroyed by Normandy-based planes alone. The effect on German communications was catastrophic.

There were innumerable reports of direct appeals from Allied tank commanders for air support to bomb a stubborn gun emplacement or knock out a defiant Tiger tank. As a rule, the requests were answered promptly, and although pinpoint accuracy was not always obtained, sooner or later the obstruction was cleared. In one case of complete reciprocity, a P-47 pilot reported to Allied artillery that the

Nazi armored columns in Normandy took a beating from the air.

Germans seemed to be using a certain house as a headquarters. The artillery commander obliged by putting a couple of shells into the building. The Thunderbolt, swooping down, picked off the Jerries as they fled from doors and windows.

From the start, the tactical air forces showed a willingness to experiment boldly and profit by experience. A fairly typical day was June 20—D plus 14. At that stage of the game the Germans, fighting hard, were being pushed back toward Cherbourg. They had reached a fairly strong defensive position west and southwest of the city and, although somewhat disorganized, were in a position to inflict heavy losses on the attacking forces.

It was decided by the high command not to use the heavies but to let the tactical air forces make an all-out effort to harass and demoralize the Germans before the VII Corps moved forward. Although little if any opposition from the Luftwaffe was expected, the airmen knew that the operation might prove expensive; low-level attack against disciplined ground troops usually is. Still, one reason for the attack was to balance losses against objectives achieved and to be guided accordingly in the future. An advantage of this particular operation was that Cherbourg was doomed, the terrain was certain to be captured eventually, and results could be judged by first-hand inspection on the ground and by subsequent interrogation of captured enemy ground forces.

There was little time to plan the operation—about six hours, to be exact; six hours in which to organize an air effort calling for about a thousand sorties against an area three miles wide and seven miles long; six hours in which to get the field orders down to the groups; six hours in which to let the ground forces know exactly what was going to happen. It took some tall hustling on the part of headquarters and all the way down the line, but they did it.

H-hour was 1400. The plan called for ten squadrons of RAF fighter-bombers from the 2nd Tactical Air Force to bomb and strafe the target area for 20 minutes from H minus 80 to H minus 60. Then twelve 9th Air Force fighter-bomber groups were to take over for an hour, from H minus 60 to H. Then eight groups of 9th Air Force Marauders bombing from medium altitude, were to pinpoint gun positions from H to H plus 60. Finally three groups of A-20s were to give the Germans a last-minute shellacking. Weather prediction was 1000-2000 feet overcast, which might call for pathfinder technique. Actually the weather was somewhat better than this, and visual as well as pathfinder methods were used.

The troops were withdrawn 1200 yards. The air attack began dead on schedule and proceeded like clockwork. The fighter-bombers—25 of which were lost out of about 550 attacking—claimed good results from strafing, glide-, and dive-bombing of trains, flak-guns, machine gun positions, troops and motor transport. The bombers, only one of which failed to return, reported excellent to unobserved results. The ground forces were of the opinion that no great material damage had been done, but that the enemy had been scattered and disorganized and that the advance had been made considerably easier.

Prisoners of war who were interrogated later remarked that the ground strafing was much more demoralizing than the bombardment from medium altitude, mainly for psychological reasons. They commented that, from our point of view, the interval between the fighter-bombing and the Marauder attack was too long, for it gave their officers a chance to reform their men.

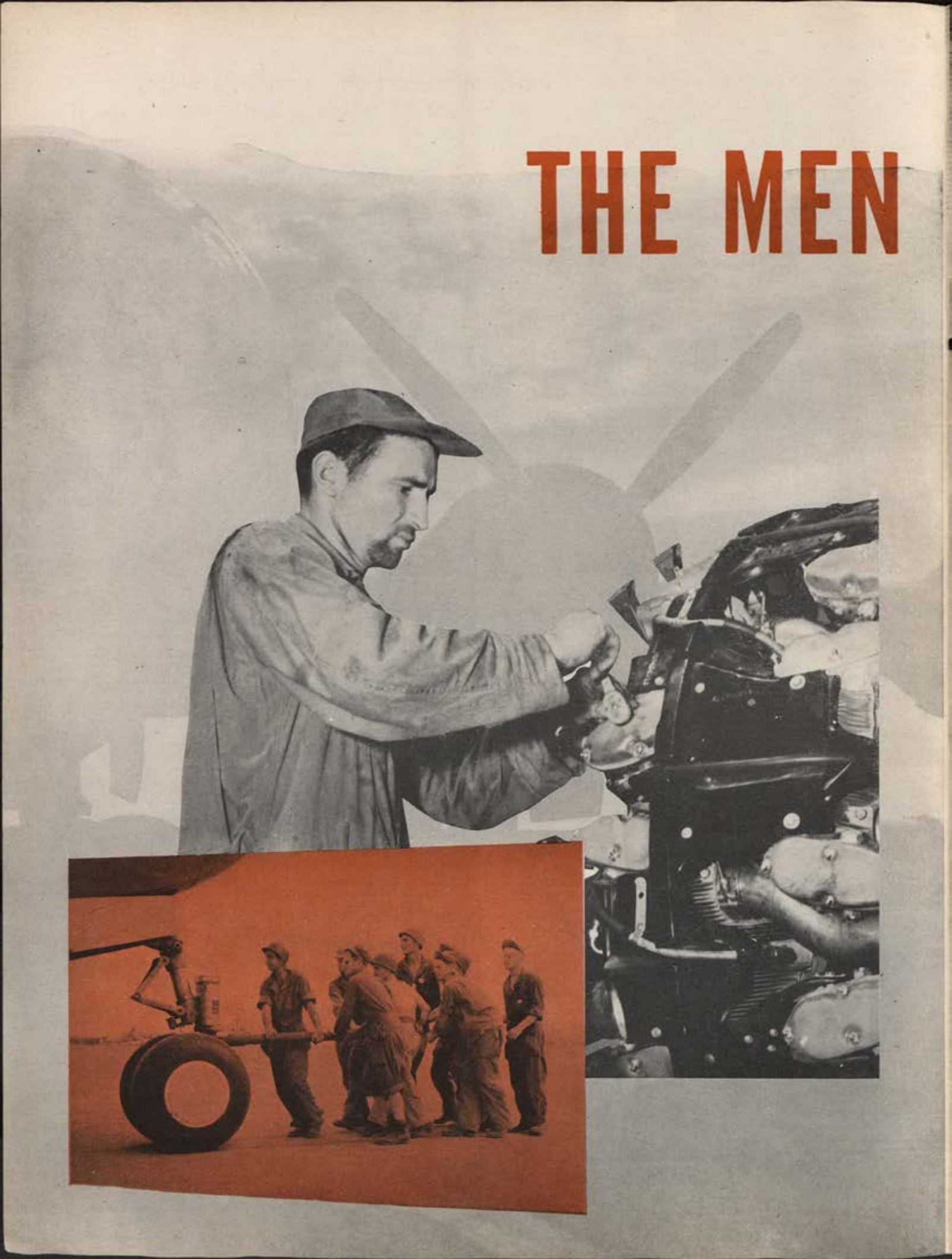
The lesson of the day seemed to be that unless the ground troops moved in quickly after the bombardment, much of its effect was wasted. It also indicated that material damage against an area so large was likely to be relatively low, unless some form of saturation bombing were carried out. The importance of intelligent use of colored smoke and ground markers was also stressed; otherwise the danger of hitting our own troops was considerable.

The question was raised whether or not it would be more effective to have the mediums try to silence strongpoints first, letting the fighter-bombers comb the area just before the ground assault. The losses in planes and diversion of effort from other targets were weighed against the results achieved. June 20 was a typical day, not spectacularly successful but certainly not wasted. And on every day that went by, the airmen learned more.

While tactical support held the center of the stage, the strategic blows continued. Fighter factories that the Germans had laboriously repaired by combining crippled plants were hammered again. The blitz on oil production continued, aided by the RAF's night blows. Most of the fighter opposition was encountered in southern Germany, where Jerry seemed to be concentrating the bulk of his remaining fighters in an effort to meet attacks either from England or Italy. Striking from Italy on July 18, heavies of the 15th Air Force and their escort attacked Friedrichshaven and met

(Continued on Page 41)

THE MEN



Here for the first time is the story of how the AAF put the Superfortress into combat.

of the B-29s

By Brig. Gen. Kenneth B. Wolfe
Commanding General
Materiel Command

Brig. Gen. Kenneth B. Wolfe has been actively concerned with the development, production and operation of the B-29 since the Superfortress was in the blueprint stage in 1939. In February, 1943, he was directed by General Arnold to assume charge of the special B-29 project; in June was placed in command of the 58th Bombardment Wing, and became commanding general of the 20th Bomber Command when it was activated in November. After directing initial operations of the B-29s from India and China, General Wolfe returned to the United States in July to become commanding general of the Materiel Command.

WHEN the time came for our first B-29 outfit to move overseas we were falling short of our own training standards, but by any other standards we had the best trained heavy bombardment organization ever to leave the States.

This merely means that the standards we had set for the B-29 program were virtually out of reach of both men and machines. It is doubtful that we would have accomplished our mission if we had not raised our sights that high.

Our directive from the Commanding General was to commit the B-29 to combat without delay. To carry out his orders, we supervised and expedited all production, flight-tested the experimental planes, flew acceptance tests on all new production aircraft, effected modifications while prescribing changes in equipment for later models, determined the flight characteristics and limitations of our aircraft, established tactics best suited for combat, trained air and ground crews and prepared all squadrons for combat service overseas.

Eleven months after the first combat B-29 rolled off the production line, we had bombed the Japanese homeland.

Much has been said and written about the planes of that first outfit—the 58th Very Heavy Bombardment Wing—but I look back on the preparatory phase of the B-29 program primarily as a struggle of men against unique engineering, production, training and tactical problems.

When D-day came for the 20th Bomber Command in China, and our B-29s took off to bomb the Jap steel center of Yawata, the bombers carried veterans of many air campaigns, including men who had first challenged the enemy after Pearl Harbor as members of the 19th and 11th Bombardment Groups. Men who had helped engineer the B-29 through production also were there, some flying as regular combat crewmen. At the bases were hundreds of ground men who had pioneered their jobs and become specialists at them. In the background were hundreds of thousands of Chinese coolies who had carved out our airfields by hand. Back home there were more thousands of aircraft workers who had given us our planes. How these men—working together—made that first B-29 mission possible is the manpower story behind this three-billion-dollar gamble on long-range heavy bombardment aircraft.

We started from scratch. We began with what was still, by military necessity, an incompletely designed, experimental airplane—more complicated than any ever before used in aerial warfare. When the 58th Bombardment Wing was activated on June 1, 1943, we had no personnel, no planes, no precedents.

As our first step, we moved in with the Boeing company at its Wichita, Kan., plant and we brought along some of the top engineers of the Materiel Command. Our test pilots were experienced command pilots; our crew members were high-ranking experts who had helped develop the equipment we were to fly. Our production men had been working with the B-29 since the aircraft was on blueprints in 1939. Our training instructors were veterans of more than a year of combat operations.

Officially, we received our first experimental XB-29 from Boeing on May 28, 1943. Two weeks later, the first production-type plane was flown successfully. The first of the combat B-29s rolled off the line in July.

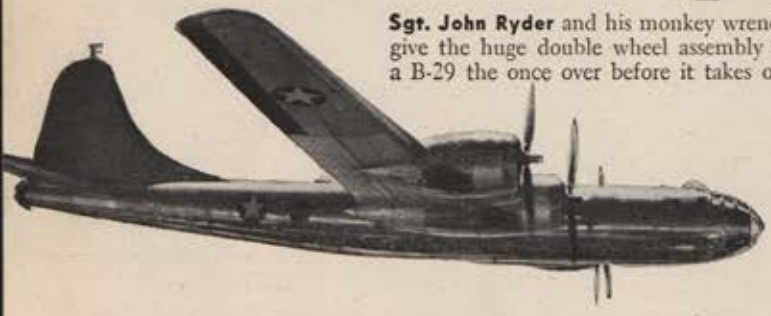
While we were flying continuously to test all of the capabilities and idiosyncrasies of the new bomber, we organized the staff of the 58th Wing, which later was to become the 20th Bomber Command. Brig. Gen. Laverne Saunders, former CO of the 11th Bombardment Group and air adviser to Admiral Halsey during the Solomons operations; Col. Richard H. Carmichael, who had formerly commanded the 19th Bombardment Group in the Southwest Pacific; Col. Leonard F. Harman, B-29 project officer from the Materiel Command, and others of equal caliber were selected as staff members.

Already we had started ground crew training in the Boeing factories, with our mechanics working side by side with the men and women who were building the B-29s. Our men worked on the flight lines of Boeing at Wichita and Bell at Marietta, Ga., where we were flying accelerated service tests. At the same time, sub-assemblies were being shipped to train new factory workers in B-29 construction at the Bell plant.

New crews were checking out in the B-29s while they

The bigger the airplane, the bigger the job of maintenance. In the photo at left, T/Sgt. Frank Chancilla installs a rocker box cover on a B-29 engine in India. At the same base, mechs (inset) engage in some heavy work at the nose of a Superfortress.

Sgt. John Ryder and his monkey wrench give the huge double wheel assembly of a B-29 the once over before it takes off.



were being flight-tested. As rapidly as these tests uncovered "bugs," engineers took the problems to Wright Field's laboratories and worked them out. Their expeditious handling of our design and mechanical problems continuously contributed to improve the performance and reliability of our new plane. We were rolling because we had to roll. We were accomplishing a week's research, testing, modification and training every 24 hours.

Near the Bell plant, on an unpretentious Southern estate, we set up the first headquarters of the 58th Wing. The area was officially the Cobb County Army Air Field and it was the logical choice for our headquarters at that time since modifications and most of the Army's B-29 flight-testing were scheduled for Marietta. From this headquarters, on June 21, General Order No. 1 was issued announcing my assumption of command of the "58th Bombardment Operational Training Wing (Heavy)."

In September, to be near tactical units then undergoing training, we moved to Smoky Hill Army Air Field at Salina, Kan.—a post so forlorn that our GIs jokingly asked for theatre ribbons for serving out of the States. We had only a few B-29s for flight training but we had to instruct our crews in long-range, high-altitude formation and instrument flying. We decided to answer our immediate problems with other bombardment aircraft.

Fifty B-26s were obtained to familiarize pilots and co-pilots with tricycle-gear landing and glide characteristics of a high-wing-loaded airplane. Later we secured B-17s because of the similarity of its mechanical parts to those of the B-29 and because reasonably long-range, high-altitude missions could be flown with these planes.

We set up four operational bases in Kansas to house new personnel on arrival. A bombardment group from Panama and another from Alaska formed the nucleus of these lower echelon staffs. The Panama outfit later became the first unit in the AAF to have a B-29 assigned to it. Graduates from airplane mechanics' schools, the Lowry Field armament school, Truax Field radio school, the Boeing flight engineer school, and from navigator and bombardier schools began to flow in for indoctrination in their new assignments. Occasionally they saw a B-29, but most of them spent many months with synthetic training devices, in high-altitude pressure chambers, on firing ranges and in other types of planes before they set foot in a Superfortress. To familiarize as many new ground crews as possible with the mechanical

Pfc. Jimmy Carmichael and Cpl. Joe Czeremysika, armorers of the 20th Bomber Command, overhaul .50 caliber machine guns in the shade of a Superfortress at a newly constructed airbase in India.

Hundreds of thousands of workers using primitive methods, constructed the huge B-29 runways now in use throughout China. Construction scene shown at right above is at the Kwang Lai airfield.

The three mechanics in the photograph at right have been distracted momentarily while at work on the engine cowling of a B-29. The photo graphically illustrates the size of a Superfortress engine.

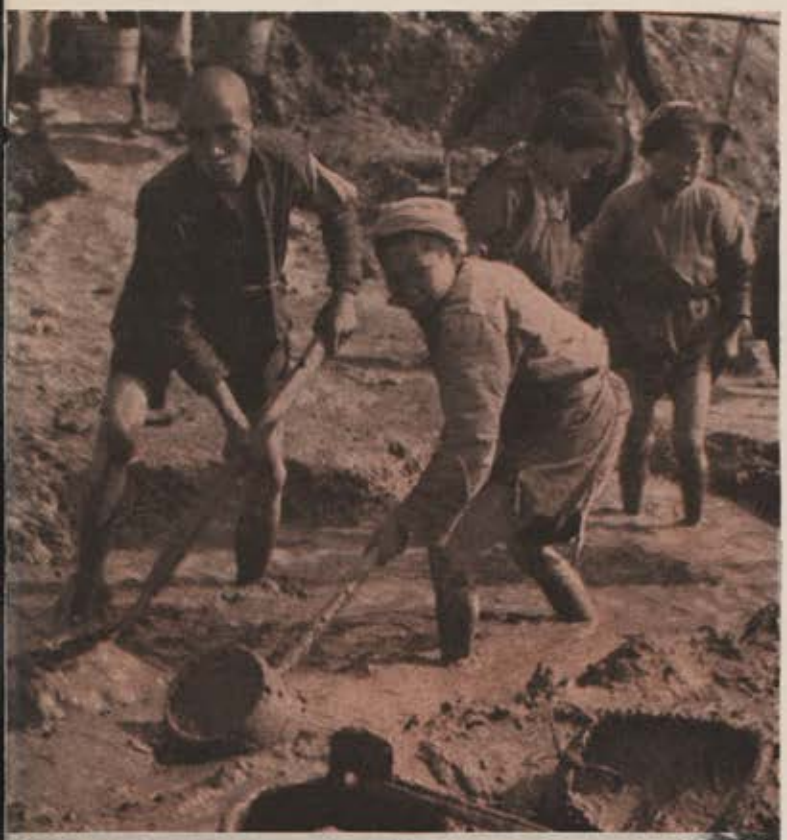
intricacies of the B-29, and at the same time keep the few we had in flyable condition, we assigned our ground crews to round-the-clock operation—three eight-hour shifts.

At Salina we benefited from the experience of the 2nd Air Force in training of heavy bombardment groups. Although our problems were different, training methods essentially were similar. Selection of personnel specifically qualified for B-29 work necessitated constant review of training schools and individual requirements, particularly since about fifty percent of the personnel supplied at this time proved to be physically disqualified for high-altitude combat crew duty. Fortunately, many of the rejected men were found suitable for ground crew work.

While trying to speed up production of the B-29's new

2200-horsepower engines, which was falling behind schedule, and trying to stimulate the slow operation of modifying B-29s with unskilled personnel, we also had to organize our tactical units and solve the logistics problems of moving all units overseas and providing for their maintenance in the theatre of operations.

Meanwhile, the first tables of organization and equipment for B-29 squadrons were being drawn up under Col. Claude E. Duncan, and A-4 was obtaining supplies from Air Service Command and scheduling them for shipment to ports of embarkation.



Aggressive cooperation of ASC headquarters in supervising the training of B-29 maintenance and supply personnel and in expediting the flow of spare parts to our operational bases saved our own staff many headaches. Planes seldom were grounded for lack of spare parts during our training program.

After full study of possible maintenance and supply plans, we prepared to set up a maintenance squadron at every field to be used by B-29s. Such squadrons would be able to keep the planes in operation at forward as well as rear bases. The training of these advance squadrons was a priority project because we had to ship the men and their equipment by boat at least two months before our air units left the States. The final decision required the movement of ground units in January and air units in March. How to house these men and how to set up our bases in India and China, and how to operate and maintain our planes once we arrived there were added worries. We were continually sending various staff members from our organization to the CBI to lay the groundwork for our movement to the theatre. And at this time the fact that we were to operate from bases in India and China was still highly secret information.

While this work was progressing, we were attending to one of our most vital assignments: the drafting of our recommendation to General Arnold on how we proposed to use the B-29 tactically. Thus, long before we had any tactical squadrons trained or equipped, we had worked out with the Air Staff the plan of attack which our aerial task force was committed to accomplish.

Progress of the training program upon which the success of our missions hinged was discouraging at this stage. We didn't have enough planes for complete training of flight crews, and our crew specialists and ground personnel had to be given extra training to measure up to the high standards we had set, despite their completion of specialized courses in AAF schools.

After hundreds of hours of semi-operational flying, we had determined that most efficient use of the plane could be attained with a crew of eleven men. The pilot and plane commander and the co-pilot were assigned the conventional responsibility of flying airplane, except for operation of the power plants. This task was assigned to the flight engineer officer who would adjust the carburetor mixture, regulate manifold pressure, transfer fuel and, in general, control the power output of the engines at all times, subject of course to instructions from the pilot. His training had been thorough—sixteen weeks in aircraft mechanics' school, twelve weeks in officer training and maintenance engineering, twelve weeks in B-29 mechanics and electrical specialization and ten weeks of flight engineer training.

Indian bases were built with native labor and transportation. Army insignia lends GI touch to the elephant.

At first, our new flight engineers were eyed suspiciously by pilots as surplus personnel usurping some of their functions. However, as crew-team training progressed, the value of keeping one man's complete attention on power and fuel system problems was proved, and the flight engineers ..were accepted in good standing with the combat team long before our planes left the States.

Navigators and bom-

bardiers were graduated from regular schools but they needed additional training on some of the specialized equipment in the B-29. Radio operators usually were well trained but they, too, needed additional time on the specific sets they had to operate in the Superfortresses.

Training of gunners presented a difficult problem because we had so few planes with remote fire control installations. Although no one in the AAF was experienced with such equipment, Eglin Field had conducted tests indicating that three times as many hits could be expected by use of the system in comparison with conventional flexible guns and power turrets, with which our gunners already were familiar. Training on synthetic devices and on a mock-up system comprised the major portion of our gunnery instruction. Some aerial gunnery practice, however, was squeezed into the program after squadrons received enough planes to catch up on flight training early in 1944.

Because there was no background whatever in the AAF for training personnel on any type of B-29 equipment, our policy was to insist that every man who was to have any responsibility in operation or maintenance of the plane had to know its structure and equipment from wing tip to tail fin, including all of its capabilities and limitations under combat conditions.

Colonel Harman, who had grown up with the plane from the drafting board, summed up the AAF attitude this way: "We think a hell of a lot of knowledge about the B-29 is necessary before any man can develop all of the capabilities that have been built into the airplane by the hundreds of engineers and scientists who created it as a military weapon."

When we entrust eleven men with a million-dollar weapon, we have a right to expect them to use it to the maximum of its effectiveness. Every man had to be an expert.

Now and then, we established new training aids and methods to attain our high standards. In addition to his many engineering contributions, Col. Howard H. Couch, chief of the technical staff who later disappeared on a routine flight over the India-China "Hump," introduced a pocket-size picturized training manual that enabled our men to learn in about fifty minutes the same information that previously had required some two hours with standard training manuals. Every short cut presented was given a trial—and was adopted if it contributed to more rapid and more effective training of our men.

This crude, hastily-built stand served as control tower at B-29 base in China.

Crew-team training, emphasized by the AAF in all other bombardment schools, was even more essential in the B-29 program because of the plane's size and its engineering design. A high degree of teamwork was demanded not only between individuals of each crew, but also among all B-29 combat units. Our policy insisted that units should be interchangeable. There was no room in our tactics for first and second teams among bombardiers, navigators or other crew members.

Late in December an outsider might have judged our training schedule with severity. The average crew had flown only eighteen B-29 hours, some of it in formation over 20,000 feet. Only one Superfortress had flown a long-range mission. Only 67 men had been checked off as first pilots of B-29s. Planes were flying an average of only two hours out of 24. We weren't proud of our record at the time, but it was the low ebb. We had begun to realize that to keep our appointment over Japan we would have to complete some phases of our training after we had moved to our overseas bases. Yet we felt, with justification, that we had made great strides in our training program.

Our men had undergone intensive training in B-26s and B-17s. Every plane commander had participated in two separate wing training missions—something never before accomplished by any heavy bombardment organization to leave the country.

From altitudes above 20,000 feet we had "bombed" out of existence the industrial heart of many a Midwestern city. Our B-29 missions had been intercepted by P-47s and P-51s simulating attacks from every conceivable angle to give us experience in the best defensive formations and the most effective evasive tactics.

Our wing, group and squadron staffs probably had worked the hardest during these missions, for they were doing the planning that customarily falls on the desks of an air force headquarters. Since the Air Staff had decided to make our organization a separate air force when we moved overseas, it was essential that our staff should be equally as competent in their duties as our combat crews.

From experience we had learned that greater emphasis on mission briefing and interrogation would contribute to better target identification and improved bombing efficiency. Some particularly desirable officers, long earmarked for our organization, were requested from the 8th Bomber Command's Central Interpretation Unit and added to our A-2 staff to strengthen further this program. Our wing A-2 conducted a thorough survey of intelligence procedures in the 8th, 9th and 12th Air Forces before organizing our own A-2 section from the top men graduating from the AAF's intelligence schools.

Particularly important to 20th Bomber Command operational flying was a thorough indoctrination in high-altitude pressurized flying. Our flight surgeons attended the aero-medical schools at Randolph Field, AAFTAC and Wright Field, where they underwent explosive decompressions in special altitude test chambers. The 10th Altitude Training Unit was moved to one of our fields to indoctrinate all flight personnel in proper use of electrically heated clothing, pressurized oxygen masks and emergency procedures to be taken in the event cabin pressure suddenly escaped.

Training in emergency first aid was stressed among air crew members to safeguard lives of men who might be wounded six to eight hours away from base. To demonstrate conclusively that plasma could be given a wounded man under extreme conditions, Maj. D. M. Green successfully administered plasma in a B-17F flying at 36,000 feet. Flight surgeons also carried on extensive research with new rations and food warmers. They modified flying clothing with zipper openings to facilitate first aid in flight. They worked out litter-hanging systems in the bomb bay and developed a nine-pound aluminum litter that could be slid through the tunnel between the front and middle sections of the B-29.

Further augmenting our staff of specialized personnel were two civilians, Dr. Hamilton Jeffers, who in Kiska had already accomplished valuable work with the operations analysis section of the 11th Air Force, and Dan B. Dyer, an expert

(Continued on Page 44)

SHOOTING THE BREEZE

USSR. On one of the first fighter-strafing shuttle missions between Italy and the Soviet Union, Lieut. Richard E. Willsie had both engines of his P-38 shot up and he bellied in on a Romanian meadow. Flight Officer Richard T. Andrews went down to rescue him. He landed his P-38 on the meadow, Willsie jumped in and they flew to their Soviet base in the single cockpit. The next day the pilots were dragged out for photographs but it took them a long time to get into the same cockpit again. After several attempts, Andrews fumed: "How the hell did we do it? Yesterday we just jumped in and fit the first time."

Egyptian Sudan. Tech. Sgt. Wilbur Stone of Fort Meade, Md., on temporary duty with the North African Wing of the Air Transport Command, had his billfold stolen in Khartoum. He reported the loss to police, then boarded a plane for India. The wallet was found and placed aboard a later plane, addressed to Stone. The plane crashed and burned, killing the passengers and crew, but the wallet was thrown clear of the wreckage. It was returned to Khartoum and held by authorities until they had completed an investigation of the crash. Stone, meanwhile, had returned to the States. Again the wallet was addressed to him and placed aboard a plane which also crashed and burned—but again the wallet was recovered. Nine months after it was stolen in Khartoum, the wallet was delivered to Sergeant Stone in Maryland.

Britain. P-51 pilots walking to their planes for an escort mission over southern Germany, were given a promise by pretty, blond-haired Ada Wattenmaker, Red Cross Clubmobile girl from Charleroi, Pa. "A kiss for every pilot who shoots down a German today," she said. After the P-51s returned, 13 pilots lined up outside Ada's wagon. Only one asked for coffee and doughnuts.

Inside Germany. From a Nazi prison camp 2nd Lieut. Richard Perle, a B-17 navigator, wrote a special request to his parents on Long Island, N. Y. The parents promptly mailed a $20 check to Col. Eugene A. Romig, commanding officer of an 8th Air Force bomber base in England. Colonel Romig presented the check for twenty bucks to Sgt. Dale Schindele of Manly, Iowa. Schindele is the guy who packed the parachute with which Perle bailed out over Germany.

Central Pacific. Three squadron clerks of the 7th Air Force strolled along a jungle trail near the top of Mount Topatchau — Saipan's highest peak. Tech. Sgt. Ellis Shelhamer, Tech. Sgt. Albert F. Parsons and Cpl. Clifford Gilham were looking for salvage. Near the top of the peak they noticed a fellow traveler, but he turned out to be a Jap and they shot him. Suddenly a Yank sniper patrol on the ridge above, mistaking the three Americans for the enemy, opened fire with machine guns, automatic rifles, carbines and hand grenades. The clerks were in a tight spot. In the heat of this confusion a Japanese machine gun crew opened up on the Yank sniper patrol. Protected by this Jap fire, the clerks hastily withdrew from the action.

Italy. In Caserta our troops found an abandoned brewery and decided to whip up a batch of beer. They got permission, but couldn't find any hops. They wrote the proper people and the hops were given a high priority and shipped to Italy by boat. After long, thirsty waiting the boat finally arrived. The boys were on hand for the unloading, yelling for their hops. "And, just what are hops?" the unloading crew asked. When the smoke cleared it was learned that the hops had been mistaken for mule feed and sent to a fort nearby where there were mules. The boys rushed over and found that the mules had eaten the hops. That did it. No future plans were drawn for beer-making in that part of Italy.

Britain. When a B-24 reached Britain in flames after a mission over Europe the order was given to hit the silk. Lieut. Robert L. Sanders, the bombardier, found that his chute had been damaged by the blaze. Lieut. Robert Callahan, the navigator, was about to make the jump, and Sanders straddled his back for the bail out. As the two lieutenants floated down, Sanders crawled around to face Callahan so they could hold on to each other. Despite their combined weight of 320 pounds, the chute opened with only a slight jolt and they landed in a British field. Callahan had a fractured ankle, Sanders, an ankle sprain and bruises.

Central Pacific. Two sergeants on a newly captured base in the Marshalls have a happy domestic life in a shack built from materials found in Jap caches and washed in by the tide. Here 1st Sgt. Walter Cash and Tech. Sgt. Robert Craft have a washstand of Jap tin and a helmet for a washbowl. Their shower bath, made from a jumble of lumber and gears, works with a water-wheel of rope and beer cans. On one side of the shack is a windmill-driven laundry machine, and beside it a wind-powered sea shell polisher. Atop a coconut tree, a water-filled canvas bag swings in the cooling breeze—their refrigerator. Cash and Craft spend their back porch evenings on a salvaged car cushion, listening to American radio programs on their short wave set. ☆

This air evacuation unit is loading an injured soldier aboard a transport plane in England to fly him back to a general hospital.

Arrival in the United States. Litter cradle removes injured patients who soon will be en route to hospitals near their homes.

HERE in the States the AAF is running an airline that for popularity can defend itself against all comers.

It's a 24-hour GI airline for the wounded, and that means air evacuation. Every day more than 100 patients just arrived from overseas are evacuated by air from U. S. ports to hospitals in the interior. Each patient is flown to a hospital as near as possible to his home town, whether it be in Georgia, Kansas or Montana.

This is the last lap in the AAF's world-wide air evacuation service. This is the flight a guy waits for.

"No one can know the gladness of soldiers going home until they see men come aboard our planes," says Lieut. Doris Nason, flight nurse on one of this airline's C-47s. "Privates or generals—they are all alike when they are going home. An infantry private sits between a quartermaster captain and an air force colonel, but they all get the idea. They talk about where they are going, not where they have been, and before long it's like a picnic.

GI AIRLINE for the wounded

BY S/SGT. E. T. WALLACE
AIR FORCE Staff

PHOTO BY T/SGT. ROGER COSTER, AIR FORCE STAFF.

The last lap in air evacuation takes combat casualties to hospitals near their homes throughout the United States.

"I have watched men become tense and nervous when we get into the air. For a long time, they stare out the windows, then gradually they relax and settle back realizing that this is it—they are in the States and going home!

"Pretty soon the snapshots will come out of the billfolds. A nurse gets to know about when they will appear. A sergeant will tell a colonel about a baby son he has never seen—already two years old. And the colonel, not to be outdone, will exhibit a picture of his daughter and announce that she will start school next year." These are the things a nurse comes to know about the men she takes home.

Air evacuation within the United States completes the job begun in combat areas. It provides the safest, fastest and most comfortable means of moving wounded men and, while a large part of the general combat evacuation job must be done by boat and rail, air transportation is preferred by most of the men.

Men flown from overseas are landed at nine Air Debarkation Hospitals recently designated when domestic evacuation was begun on a larger scale. These hospitals, along the United States border and coasts, are located at Presque Isle Army Air Field, Presque Isle, Maine; Dow Field, Bangor, Maine; Grenier Field, Manchester, N. H.; Bradley Field, Windsor Locks, Conn.; Great Falls Army Air Field, Great Falls, Mont.; Westover Field, Chicopee Falls, Mass.; Hamilton Field, San Rafael, Calif.; Mitchel Field, L. I., N. Y., and the AAF Regional Station Hospital, Coral Gables, Fla.

Debarkation officers, assigned to each of these hospitals, handle the distribution of air evacuees. Under the plan, each man brought back to the United States is allowed to specify in which part of the country he wishes to be as-

signed for hospital treatment or convalescent care. To accomplish this, the 48 States have been grouped into 22 geographic areas and, while a man can have no assurance that he will be taken to a government hospital in his home town, he will certainly be sent to a hospital relatively close to his home, providing it can give the treatment he requires.

For example, a man requiring bone surgery will be sent to the hospital nearest his home which is qualified to perform this treatment. Where it becomes a matter of getting a man close to home, or providing the finest care for his particular case, he will be sent to the appropriate hospital.

In this event he will be close enough for his family to visit him, and for him to visit his home on leaves. Even if he is 300 miles from home, that is more comforting than the 3,000 to 10,000 miles which separated him from his family in the combat theatre.

Whether you arrive in the States by way of a debarkation hospital in California or Connecticut, the procedure for sending you to your home area is the same. If a walking patient, you are taken immediately to the admitting office and put through a screening process. If a litter patient, you are taken to a hospital ward and interviewed there. The screening, done by board of doctors, determines the type of medical care you need, reveals whether you are able to continue the journey and gives you the opportunity to designate where you wish to be sent.

This information is reduced to a code of letters and numbers for each man. The numbers are then sent to the AAF Medical Regulating Officer in Washington, D. C., where they are given the highest priority. The regulating officer, Lieut. Col. Robert H. Looney, in the office of the Air Surgeon, decodes each number to make the assignments to hospitals. A typical code number will reveal these things about an evacuee:

Whether enlisted personnel or officer; male or female; the general nature of wounds or sickness; whether a litter or walking patient and the geographic area preferred. It does not reveal whether the person is white or black.

Assignment to hospitals in the interior is done through a regulating office in order to coordinate the requests from all nine debarkation hospitals. The regulating officer has daily information on the number of beds available in some sixty government hospitals so he can reserve a place for each man before he is moved from the debarkation point.

After these assignments have been made, the regulating officer returns the list to the embarkation officer, together

These enlisted technicians of an evacuation unit of the 9th Air Force were the first to land in France and bring back casualties.

Flight nurse checks her passenger list carefully as ambulatory patients board C-47 at Michel Field. This C-47 carried 24 evacuees.

Evacuation plane has just brought in this soldier who is being rushed to Chicago where specialists will attempt to save his eyesight.

Morale is high when destination is a hospital near home. Wounded soldier shares candy with Army nurse injured overseas.

with orders for the shipment by air. Everything necessary for the movement is included in these orders. Each walking patient is assigned a seat number in a C-47 and litter patients are alloted space. The regulating officer then requests the required number of planes to make the evacuation and they are ordered to report to the hospital making the shipment.

Arrangement to transport men to the planes is made by the debarkation officer, under a foolproof system which enables ambulances and station wagons to take as many as 200 men from various wards and barracks and move them to their assigned planes for shipment to a dozen or more different hospitals.

Each plane usually carries both litter and walking patients, since persons assigned to the same hospital are transported together.

Before a flight leaves a debarkation hospital, the nurse on each plane calls her destination hospital to announce the estimated time of arrival. When the planes take off the nurses know that their patients are expected and that ambulances and station wagons will meet them.

All government hospitals in the United States are located within an average distance of five miles from an airport. Some are as close as one mile, and others are forty miles, but in no instance is it necessary to transfer air evacuation patients to railroads to complete their journey.

In the assignment of men to hospitals in the United States, AAF personnel generally are taken care of at AAF hospitals, while ground and service forces personnel are sent to general hospitals. AAF personnel may be sent to general hospitals for specialized treatment, but they are returned to air force facilities for convalescence and redistribution. Only AAF patients who live in the immediate vicinity of debarkation hospitals remain in them for definitive treatment.

Evacuation by plane is considered an air mission, not a medical operation. It is the job of the Air Transport Command. Credit for a mission's success is divided among the pilots, the ground crews and the medical personnel who care for the patients in flight. The medical crew for domestic evacuation is composed of a flight nurse and a surgical technician (staff sergeant), both trained in the AAF School of Air Evacuation at Bowman Field, Ky. The enlisted men are volunteers for the service, and the nurses are selected from those on duty at AAF hospitals. All are put through rigid basic training, drilling and bivouacs, in addition to courses in air evacua-

(CONTINUED ON PAGE 21)

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.

THE QUESTION: What one tip would you give to men going overseas?

Staff Sgt. Peter Van Slyck, armorer, England: "Don't pay attention to rumors. You'll get rumors that your missions will be changed, that your bombers will do unlimited missions, that you're going on base defense until the war's over. Our supply officer got some sun tan uniforms and the rumor arose that we were going to China. Those rumors shake your morale. You don't know what to believe and what not to believe. Rumors are as bad as careless talk. Don't believe any of them and don't be a rumor monger. Just do your job and forget them. Don't believe anything until you see it—and then it ought to be countersigned by authority."

Staff Sgt. William Clough, gunner, Italy: "Watch your voice communications. Be calm and speak clearly. Don't shout and scream and get excited. When one man hollers, another man hollers louder to tell him to be quiet and then you have nothing but confusion. On a flight over Italy, an ME 410 came in and the tail gunner saw him. But he yelled so loud, we thought something was wrong with him. Everybody started screaming to find out what was wrong with the gunner. When I saw the ME I couldn't cut in to give his position. If that had been an FW or a 109 we would have been in bad shape. Go easy on the intercom and live longer."

Staff Sgt. Ernest Carson, crew chief, Africa, India: "Hang on to your tools. When you're in a combat theatre, you can't duplicate every missing tool. If necessary, sleep with them. When I went to chow, I used to carry a two-foot screw driver in my pocket because it was the only one I had and I couldn't afford to lose it. Put a guard on your tool kits and post somebody to watch the guard. Too many planes have been grounded because the right tools weren't around to fix them. We wasted a lot of time making tools when we could have been fixing planes."

Capt. Robert Brown, bomber pilot, England: "Learn to fly all the formation you can and make the co-pilot fly as well as you. Learn to fly formation for long hours because you will have to in combat. Learn to save gas. If you have 45 inches one minute and 15 inches the next, that's bad. One pilot will fly a seven-hour mission and burn 200 gallons more than another pilot flying the same mission. It is your responsibility to see that your co-pilot knows formation flying. A fair pilot and a fair co-pilot are much better than a good pilot and a poor co-pilot."

Capt. James Starnas, bombardier, Southwest Pacific: "Read the intelligence reports. That's the most important thing in combat. We spent two hours a day reading reports of previous raids. They tell you everything about your theatre. That goes for every crew member. You'll find information about targets and if you hit an area once you are going to hit it again. The reports give you dope on interception, AA disposition, terrain and topography. If you're shot down, you'll know what to expect. Escape routes taken by other men are there. The success or failure of your missions depends on reading the intelligence reports. That's how to learn the score."

Lieut. Gordon Burlingame, fighter pilot, England: "Know instrument flying. You have to know how to handle your ship smoothly on instruments. On an escort mission to Frankfurt we went into an overcast at 11,000 feet and we were still in it at 25,000. If you don't know instruments in a case like that, you're finished. Don't rely on any one instrument—it may be shot out. Use every available means and keep checking one instrument against the other. You can't horse around. I've seen men spin out of overcasts and crash because they didn't know the full-panel instrument system. Those instruments are on your panel for a damn good reason. Learn to use them."

C-47 WORKHORSE

The C-47 has been our only means of supply in many theatres and has kicked up its heels in combat, too.

OF THE AAF

By Maj. Charles D. Frazer
AIR FORCE Staff

WHEN the transport plane had gained altitude above Morrison Field, the pilot dug into his pocket for a long white envelope. It contained his orders and until he broke the seal he had no idea of his destination. All he knew was that he and 35 former airline pilots with instrument ratings had been given a super-secret mission calling for a two-year absence from the States.

The orders read that his outfit was to fly to the Far East, by way of South America, to serve in the American-India-China Aid Project. The planes were commercial DC-3s converted to military purposes. This was early 1942, when the U. S. and her Allies were being clobbered on every front and planes were where you found them.

Several days later, this group left Natal. The first DC-3 to take off groaned under its four-man crew, five RAF passengers, 1,623 gallons of gas, and personal and mechanical equipment for a two-year stay.

Running up his engines at the foot of the runway, the pilot knew that never before had a DC-3 carried a gross of 35,500 pounds on an operational flight; never had one attempted the 1,970-mile hop across the South Atlantic. He was in the air, laboring, at 4,500 feet and just cleared a 400-foot hill three miles beyond the field. And he flew 100 miles before he could get his creaking plane up to 7,000.

The 36 planes and crews arrived in the Far East just as the Japs were pushing into Burma. They promptly began evacuating thousands of wounded and still other thousands of frenzied men, women and children who mobbed the planes at every landing, pushing and jamming to get aboard. Fantastic loads were brought out. One pilot, on a trip from Myitkyina, carried 72 wounded soldiers. Probably the record haul of passengers was 74 in a single flight.

This was more than heroic stuff. The mass flight across the South Atlantic—still regarded as a remarkable feat—and the subsequent evacuation work proved that the DC-3 could handle loads far greater than had been anticipated and that it could operate successfully over long, open sea routes. At the time, with the war just begun, this idea was almost revolutionary.

Since then, the Army C-47—military version of the DC-3—has sweated out millions of miles over open seas and uncharted mountains in all kinds of weather. Old Fatso has struggled in every theatre with unbelievable loads of margarine, oatmeal, canned goods, gasoline, ammunition, torpedoes and everything else in the supply depots. Pilots have taken off with 32,000 pounds gross or more from short, bumpy fields that a Piper Cub wouldn't look at back home and have put them down on landing strips fit only for a baby Australian wallaby. Some of these ships have, in grunting toil, flown more than half the distance to the moon.

But the C-47 has been much more than a cargo plane. It has taken part in every major invasion and assault—carrying paratroopers, airborne infantry, jeeps, bulldozers, field guns and even mules. It has brought back to hospitals thousands of battle casualties. It has been in dogfights with enemy planes and come out of them in one piece. It has even performed a type of dive-bombing.

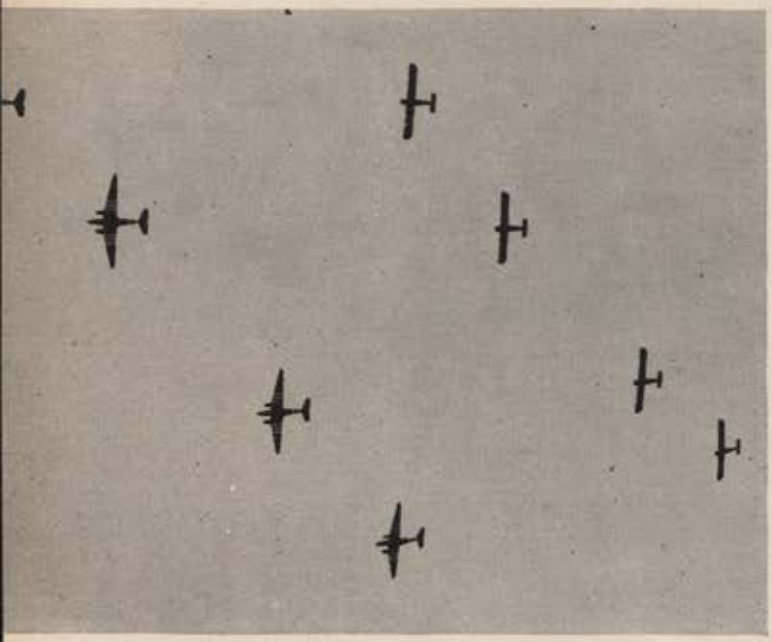
Development of this Army cargo plane began, really, in 1933, with the introduction of the original DC-1. It was an experimental plane built by Douglas at the request of Transcontinental and Western Air as a twin-engine replacement for the out-moded three-engined Fords and Fokkers. Only one DC-1 was built, for the plane gave such a speedy and economical performance that TWA ordered several ships of that type with modifications.

These were the DC-2s. They went into operation in the spring of 1934. From our present viewpoint they took commercial aviation out of the barnstorming stage and, for the first time, provided real comfort for passengers. Their speed nearly doubled that of previous commercial aircraft. Nearly every domestic airline soon had a few DC-2s flying its routes and many foreign countries ordered them. KLM, the Dutch airline running to Batavia, entered a DC-2 in a London-to-Australia air race. All other entrants were specially-built speed planes. The DC-2, carrying a full load of passengers and making every scheduled stop on the airline, still managed to place second in that race, whipping into Melbourne right on the rudder of the winning ship.

Out of that DC-2 grew the first all-metal cargo plane ever used by the Army—the C-33. This was the forerunner of numerous other Army personnel transports such as the C-39, which have grown out of the DC line.

In 1935 the Douglas Aircraft Company introduced the DC-3, which, while it had many modifications and was considerably larger, was nevertheless merely the big brother of the DC-2 in general design.

This plane became even more popular with commercial companies, who established with it scores of both speed and safety records. The Air Corps experimented with several adaptations of the plane and one of our early medium bombers—the B-18—was a distant relative of the DC-3.



France. C-47s, such as these troop carriers (above) played a big role on D-day. The transport below was the first to land in France.

Burma. This C-47 of the Air Commandos is performing one of the most delicate of air operations—snatching a glider off the ground.

Shortly after the war began, scores of commercial DC-3s were hustled into the Army, Navy and Marine air arms until a high-level production of military versions could be obtained. This was quickly done and the C-53 soon began making its appearance on the AAF's extending routes. The 53 was identical to the commercial airliner, except for a substitution of bucket seats for the more luxurious reclining jobs; it is solely a personnel carrier.

Conversion of the DC-3 to a true cargo plane, however, involved many changes. First, it called for a reinforced bottom and floor and a wide loading door capable of admitting heavy machinery and weapons. Also, numerous changes in production methods were necessary if these planes were to be turned out in volume. Hand riveting was replaced by automatic riveting wherever possible. Fiber replaced aluminum in many parts of the aircraft interior. Forging was used on certain parts instead of gas welding, and flash welding was introduced extensively. All this was accomplished with no loss of strength and frequently with greater ease of interchange or replacement of parts.

By September, 1943, more than 2,000 C-47s had been built at Douglas' Long Beach, Calif., plant. By February of this year, more than 2,500 C-47s were being flown by Air Transport Command alone, to say nothing of another couple of thousand to troop carrier and other units or in use by the Navy and Marines, with the designation R4D-1.

As the war progressed, the suspicion began to grow that the C-47 could do anything.

The interior of the ship was so rigged that litters could be quickly installed, transforming it into what is in every sense a hospital plane. The Materiel Command at Wright Field put on floats to make it a rescue plane as well.

Soon it was found that the C-47 was a fine glider towplane because of its robust construction, and it became the first plane ever to tow a glider across the Atlantic.

So far, no armament has ever been installed in a C-47 but it does have vents in the windows out of which guns have been poked on many an occasion with good effect.

Today, the AAF has faster and bigger cargo planes—notably the C-54, or DC-4—but the enemy has nothing to compare with the C-47. The JU-52, Germany's best, has neither the range nor the speed nor the load capacity of the 47. From a pilot's standpoint, the 47 is perhaps not so easy to handle as the newer 54 but it is steady and reliable, its conventional type landing gear has stood up remarkably well under the worst conditions which could possibly be found, and as one veteran puts it, "The ship feels like an old pair of shoes." And while some have cracked up and some have been shot down, nobody ever heard of one wearing out.

As an example of the C-47's war exploits, take Asia. There, since the beginning of active operations, C-47s have struggled manfully over what is known as the meanest, toughest and most hazardous air route in the world—the 700-mile flight across the Himalayas from Assam Province in Northeast India to Chungking. They have helped literally to keep China alive, flying supplies in daily across a limitless stretch of 20,000 foot peaks and uncharted passes, all the while being within reach of Jap fighter planes.

More supplies go over this route than ever were transported by way of the old Burma road. More planes fly the route daily than leave LaGuardia Field in New York, and in planes and personnel the operation exceeds any three airlines in the United States.

C-47 pilots in this area have met every type of weather and flying difficulty in the world. One pilot, for example, trying to get around a typhoon in a heavily loaded ship, found himself in a strange pass at about 16,000 feet when an updraft suddenly whirled him to 28,000. He knew he

could only keep the ship steady and ride on up and, somehow or other, the C-47 took the strain in stride.

Pilots in Asia, unlike any others, welcome bad weather and storm fronts for then they know that at least the Japs can't find them. In the early days it was SOP to fly just beneath a cloud layer so that when fighters appeared, the transports could merely duck up into the soup for cover.

Recently, in Burma, C-47s launched one of the most spectacular military operations of the whole war. When the Air Commandos were landed 150 miles back of the Jap lines in North Central Burma, C-47s towed the gliders, carried reinforcing troops and maintained supplies during the entire operation. Low losses of personnel were attributed to the accuracy of the C-47 pilots, who put the gliders right over their fields for a drop into high grass.

During this campaign an "engineer-bombardier" was born. Lieut. John Sandichs, a transport pilot, while returning from a flight to Burma, spotted a Jap outpost on top of a hill. For a gag, he called out, "On target. Bombs away." His engineer, Richard Belcher, astonished him by replying "Bombs away." Looking back, Sandichs saw a mortar bomb leave the window of the C-47. The hit couldn't have been better and the post went up in debris and flame.

Striking the Japs from another side are the troop carrier and transport outfits of the Southwest Pacific. Ever since we began to strike back at the Japanese in New Guinea and the Solomon Islands, the C-47 has played an active, not to say indispensable, part in every major military operation.

The scale of the work may be indicated by the fact that in 1943 the Troop Carrier Command of the 5th Air Force, under Brig. Gen. Paul H. Prentiss, flew supplies and troops a total of more than 18,000,000 ton-miles. They carried 140,000 tons of cargo and personnel in areas where enemy action was frequent and lost only five aircraft due to enemy action. They are credited with evacuating 1,038 sick or wounded men from advanced bases to hospitals in advanced areas, 3,891 from advanced to base hospitals, and 1,985 over 600 miles of water to hospitals in Australia.

During the famous paratroop operation in the Markham Valley, flocks of C-47s flew American paratroopers in behind a smoke screen and carried out the lowest mass jump ever attempted with an extremely small rate of loss. While carrying supplies to that area, nine C-47s in one day hauled 500,000 pounds of cargo to an advanced base, averaging 55,000 pounds per plane for the day.

After Lae had been taken, the Allies moved further up the coast of New Guinea, capturing Hollandia and Wakde, where the 47s continued intensely active. Within 48 hours after our invaders had hit the beach at Wakde, engineers had the Wakde strip in shape and the first planes to land were the big twin-engined transports with reinforcing troops for the mainland offensive.

It was in New Guinea that Lieut. Mayhew W. Fishburn of a troop carrier squadron had the luckless experience to find himself in a dogfight with a Jap. He took off from an army airbase at dawn with a cargo of tar barrels for a front line airstrip. Just at that time, five Zeros chose to give the base a low-level strafing. One Jap pilot, seeing a fat 47 up there like a sitting duck, broke formation to get it. Fishburn pulled over in a screeching bank and the Jap's bullets hit the tail surface but didn't damage the controls. Fishburn, with some 30,000 pounds of airplane on his hands, ducked and dodged, rolled and banked like a fighter and broke every CAA regulation in the book. The Jap made repeated attacks while Fishburn wildly maneuvered—straightening up, pulling away sharply, banking almost vertically, and cutting back the throttles to make the Jap overrun.

On his second pass, the Jap caught the 47 amidships and

(Continued on Page 26)

SEPTEMBER IN THE AAF

. . . BEFORE DECEMBER 7, 1941

1906, SEPT. 30: First Gordon Bennett balloon race is won by Lieut. F. P. Lahm.

1908, SEPT. 3: First test flight of the Army's flying machine is made by Orville Wright.

1911, SEPT. 26: Official three-man world flight endurance record is set by Lieut. T. DeW. Milling. Time: 1:54:42.

1914, SEPT. 1: First Aero Squadron is organized. Strength: 16 officers, 77 enlisted men, 8 planes.

1917, SEPT. 1: First Aero Squadron arrives in France.

1917, SEPT. 20: Balloon Section, AEF, created.

1918, SEPT. 12-15: Air armada of 1481 planes participates in St. Mihiel drive.

1918, SEPT. 18: Unofficial world airplane altitude record of 28,899 feet is set by Maj. R. W. Schroeder.

1920, SEPT. 11: Three airships fly formation under radio direction.

1920, SEPT. 24: Air Service strength this date is 896 flying officers, 275 non-flying, 7546 enlisted men.

1921, SEPT. 23-26: Bombardment test flights result in sinking of battleship Alabama by 2000 lb. bomb.

1921, SEPT. 28: Official world airplane altitude record of 34,508 feet is set by Lieut. J. A. Macready.

1922, SEPT. 4: First transcontinental crossing within 24 hours is made by Lieut. J. H. Doolittle.

1922, SEPT. 14-23: First transcontinental airship flight is made by the non-rigid C-2.

1923, SEPT. 5: Condemned naval vessels New Jersey and Virginia destroyed in Army bombing tests.

1923, SEPT. 13-DEC. 14: Double transcontinental tour, anticipating national airways, is made by Lieuts. J. F. Whiteley and H. D. Smith.

1925, SEPT. 15: The RS-1, first semi-rigid helium airship to be constructed in America, is completed.

1938, SEPT. 15: Collier Trophy is awarded Air Corps for development of pressurized cabin substratosphere plane.

1938, SEPT. 21: Daedalian and Columbian Trophies are awarded the 19th Bombardment Group for record of 10,942 flying hours with only one accident.

1938, SEPT. 22: Maj. Gen. H. H. Arnold is appointed chief of the Air Corps.

1941, SEPT. 5: Nine B-17s fly from Hawaii to the Philippines in first movement of heavy bombers by air across western Pacific.

this is your ENEMY

Jap AA Tricks

Pickaback Plane

Truth, Jap Style

Jap Flak Traps and Tricks. In addition to their usual antiaircraft installations, the Japanese have been using many ingenious devices for action against our low-flying aircraft. In several instances, lures have been set up to bring our planes within the effective range of specially installed concentrations of AA weapons.

Recent photographic reconnaissance showed two dummy four-engine airplanes, which looked very much like our B-24s, located just off the runway on an island in the Southwest Pacific. Almost white, they appeared to be made of coral or else painted on the ground.

These dummies were placed within the arc of fire of the most concentrated antiaircraft artillery in the area. Guns within a radius of 2,000 feet totaled 24 automatic cannon and four, possibly seven, heavy antiaircraft weapons. The obvious purpose of the fake planes was to entice our flyers to come down and take a look, thereby coming directly in range of the AA concentration.

Wrecked and beached barges have also been used by the Japs as antiaircraft traps. One report on this activity said, "A run was made on a probably wrecked barge at treetop level. When directly over the target, the attacking aircraft was seen to smoke and plunge straight into the sea without a pull-up. During the run, eight .50 caliber machine guns appeared to fire from a nearby group of houses. Four additional guns were spotted in the vicinity. The guns were set up so that when the aircraft crossed the shoreline, the fire converged at a point beyond the two positions."

Another type of Jap antiaircraft trap or decoy is the "floating" explosive, brilliantly colored or lighted to attract attention and investigation by airplanes. A plane which approaches within the effective radius of the explosive actuates a firing mechanism in the raft or box and thereby "shoots itself down."

A similar device has been reported in use by the Japs against planes flying at minimum altitude over land. These "land mines" may be fired by sonic devices or manually by an observer.

The Japs also have used "anti-strafing cables" suspended between trees or hills to protect probable avenues of approach against attacks at minimum altitude.

Technically, these devices are not impressive. When denied the advantage of surprise and countered by proper evasive offensive measures, they are inefficient weapons. They do prove again that the Jap depends heavily upon trickery and surprise.

New Jap Guns. The principal Jap aerial weapons at the beginning of the war were the 7.7 mm, the low-velocity 20 mm, and a few 12.7 mm guns. Now they are substituting the 20 mm and the 12.7 for the 7.7 and developing more powerful 20 mm guns.

The higher velocity 20 mm anti-tank gun, which has been generally abandoned for anti-tank use, has appeared as a free mount in bombers, despite its comparatively slow rate of fire. In order to meet the demand for guns of larger caliber, single-shot 37 mm tank guns have been mounted in Jap fighter planes. There have been reports also of 13 mm and 25 mm guns being mounted in some aircraft.

Enemy's View of the Enemy. In an interview over the Tokyo radio, Japanese war correspondents back from the combat zones reported, "By and large, the enemy is afraid of dying. He hopes for rescue. Even when he is raiding our base at Rabaul, he is harnessed in a parachute and expects to be saved even if his plane is downed. Japanese pilots never use a parachute when attacking the enemy. If his beloved plane goes he goes with it. The enemy does not hesitate to become a prisoner. There is that spiritual difference between the enemy and our pilots.

"The enemy pays a great deal of attention to losses in personnel and takes a serious view of it. (You're damned right.—Ed.) Sometimes the enemy dispatches a rescue ship to pick up possible survivors from the sea, and sometimes such rescue ships have been sent out even before the raid was made. Because the enemy seems to value personnel so much, we have even been advised from our forward bases that instead of announcing the number of carriers and fighters scored on the enemy, we should publish the number of pilots we deprived."

Truth. Japanese radio report: "Japanese base, China front. In a midnight raid last night on the Hanchung airfield, the Japanese Air Force set ablaze at least eight enemy fighters and damaged two others, beside setting ablaze military installations."

The official 14th Air Force report of the same operation: "Hanchung was attacked by twelve enemy bombers which caused numerous holes in the runway. There was no report of any friendly planes lost."

The Japanese press: "Intercepting a combined enemy formation of twelve bombers and fighters which attempted to raid a railroad bridge on the Yellow River, Japanese fighters shot down three P-40s and one B-24. Only slight damage was suffered by Japanese ground installations while no damage was caused to the bridge."

The official 14th Air Force report: "Six B-25s with seventeen escorts successfully attacked the storage area south of the Yellow River bridge and bombed and strafed the railroad bridge. Two direct hits on the Northern New Bridge blew out an abutment. Enemy aircraft destroyed, four, two probably destroyed. Friendly aircraft damaged, one, minor."

Betty. In an effort to match our medium bombers, the Japs decided that they needed a bombing aircraft with high speed and long range. So they manufactured the Betty. Compared with our B-25 and B-26, the Betty has an extra thousand miles of range and at least equal speed.

But there is the usual catch. To get this range and speed, the Japs sacrificed armor and armament, just as they did with their Zero. By the extensive use of magnesium, they have in the Betty an unusually lightweight airplane. Magnesium, however, is a highly inflammable metal which is apt to burst into flames as soon as it is hit.

So far, the Japs haven't done much to give the Betty and her crew any additional protection. An examination of several wrecked planes shows that a little armor plate has been provided to protect the tail gunner, and heavy rubber mats have been added on the fuel tanks. But these measures were temporary, obviously taken in the field and not made a part of the standard equipment.

Betty's usual armament includes one 20 mm tail cannon, one 7.7 mm nose gun, another in the dorsal turret and one 7.7 gun on each side. In newer types, the side blisters have been removed, leaving open ports. This gives the side guns an increased arc of fire. It is possible that the dorsal turret now carries a 20 mm cannon.

Betty's armament is not completely inadequate. Even the earliest models had nose and tail turrets which could be rotated 360 degrees by hand. This permits the gunners to cover any attack angle, both front and rear. In this regard, Betty's armament was slightly ahead, but the Japs could not —or would not—keep in step with our improvements and they soon were left far behind.

Generally, the design and craftsmanship of the Betty is excellent. An interesting characteristic is that Betty's bomb bay doors are removed at the field before the take-off.

This bomber clearly indicates that the Japs still know how to make a good fighting airplane—but it also shows that they have not yet applied the lesson of the importance of armor and armament.

Pickaback. An unusual German "bi-plane" was seen by the crew of a Mosquito on patrol over France. On closer observation, the "bi-plane" turned out to be a small aircraft attached to the top of a larger twin-engine type. At the same time that the pickaback plane was noticed an Allied convoy was seen in the channel nearby.

The Mosquito crew members reported that they could see between the two aircraft which appeared to be connected at the trailing edges of the main plane. The pickaback plane was flying at an estimated speed of between 200 and 250 mph when the smaller ship suddenly lifted from its larger component, banked steeply and flew away at right angles. The larger plane turned over on its back and dived straight into the sea without displaying any tendency to spin or glide. It hit the water about three miles east of the convoy and caused a terrific explosion.

No evasive action had been taken by the composite aircraft previously, and it was proceeding on a straight course for the convoy when sighted. The controlling pilot apparently saw the Mosquito and jettisoned the larger craft. It was not possible to determine whether the propellers of the expendable plane were working.

It is believed that the composite plane flies on three engines under the complete direction of the pilot of the top plane. Reports indicate that usually the top plane is an ME-109 and the lower ship a JU-88. In making an attack, the ME pilot releases his aircraft from the JU and the lower plane continues at a shallow angle of descent under the control of an automatic pilot.

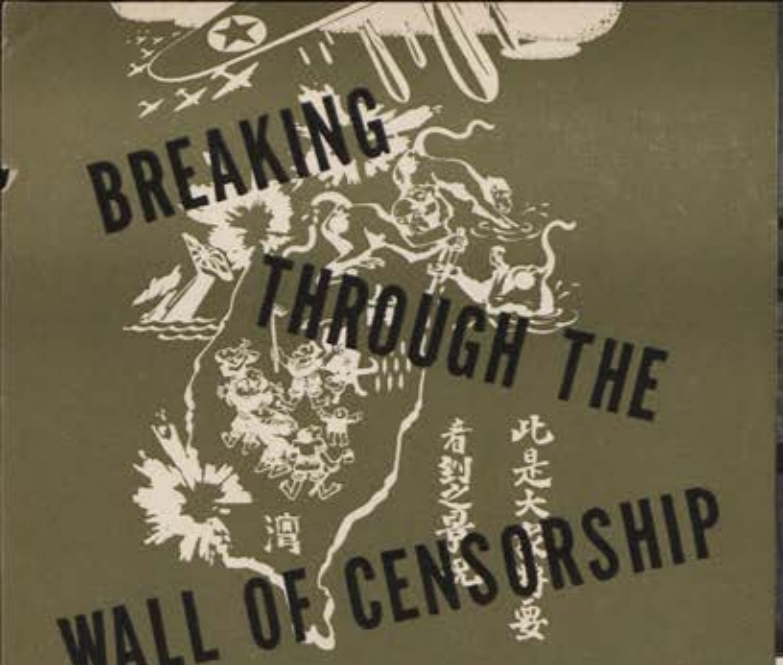
A new nose section which has replaced the regular nose of the Junkers contains an explosive charge in the manner of the flying bomb. No doubt the pickaback planes will prove highly vulnerable to fighter interception due to reduced speed and make comparatively easy antiaircraft targets.

Putting on the Bite. A Jap soldier on Attu disclosed how the characteristic buck teeth of the Nips can be put to use for the Sun Emperor. The Jap's body was found beside a U. S. Signal Corps telephone line. He had gnawed away six inches of the insulation, shorting the circuit. ☆

Using simplified launching sites that were easier to camouflage and to repair, the Germans in mid-August kept hurling their robot bombs such as this one on southern England with London as the principal target. Some of the buzz bombs were reported to be carrying incendiaries in their warheads while others were equipped with cable-cutters. But the majority still carried a load of HE equivalent to a German general-purpose 1,000-kilogram bomb, or one of our own 2,000-pounders. Fuzed for instantaneous explosion, the thin-skinned robot wrought most of its destruction through its terrific blast. There was no fragmentation to speak of, and seldom any demolition caused by earth shock. Jerry had an ugly habit of timing his salvos for the lunch or afternoon rush hours. Most of the casualties continued to be from flying glass.

This is the manner in which the Japs have attempted to camouflage trains by day in Burma. Our strafing pilots have not been fooled by this concealment. They fly down the railroad tracks instead of across them.

BREAKING THROUGH THE WALL OF CENSORSHIP



As UNREST spreads among the enemy on home and battle-fronts and sabotage by the underground increases in Axis-occupied countries, the AAF is actively engaged in agitating the growing turmoil through psychological warfare operations.

By dropping leaflets and newspapers on enemy territory, AAF bombers bring the truth concerning war aims and developments to soldiers and civilians from whom the facts have been concealed by Axis censorship. Resentment at being duped by their leaders results, or doubt and confusion, at least, are created. Through this "white" bombing medium, citizens of occupied lands learn that liberation is at hand, and their resistance becomes bolder. When the home area of an oppressed people must be bombed by the Allies, the strategic necessity for the action is explained by leaflets such as the one reproduced above. The sketch and the script (enlarged at left) told Chinese residents of Formosa that the island was being attacked in order to expel the Jap "monkeys." Photos on this page show three stages in AAF leaflet distribution.

此是大衆將要
看到之景況

"Bombs" are packed with propaganda matter at AAF base overseas.

Ready to be hoisted into B-17 are five 300-pound leaflet bombs.

Leaflets are scattered to winds when bombs split open in air.

GI AIRLINE

(Continued from Page 13)

tion. When a unit has completed its training it is shipped to whatever part of the world it is needed. Those serving in the United States are stationed at Memphis, Tenn., Wilmington, Del., and Romulus, Mich.

Planes used in evacuation are not to be called "airplane ambulances." We have cargo planes which are used to evacuate the wounded. It is the primary job of these planes to carry troops and war supplies, yet the Commanding General of the AAF will provide them for evacuation wherever they are needed.

Air evacuation policy provides plane transportation for all types of wounded persons, except those suffering severe chest wounds which might be complicated by collapsed lungs. All nerve cases may be transported except closed-ward mental patients.

Domestic flights are made at safe altitudes, below 9,000 feet, although fixed and portable oxygen systems are carried as standard equipment. So is blood plasma which may be given in flight. Nurses credit their pilots with extreme consideration for the patients, reporting bad weather in time for them to brace the litter patients and have the sitters buckle their straps. Air evacuation has made an exceptional record of safety. As for comfort, let Flight Nurse Nason explain from her experiences.

"We get some boys who have never flown before," she reports, "and I guess this trip means more to them than any of the others who have come all the way by air. They tell me about coming home by boat, and they can hardly realize that within a few hours they will be home by air.

"The boys from the South get excited at the very thought of getting down there where it is hot. I don't know why, but they all talk about how much they like it hot. Midwesterners, getting close to home, can ride for hours, just watching the ground. They watch those long section lines which you don't find anywhere else. To Midwestern boys they are the first sight of home."

Lieutenant Nason says she is particularly proud of her record for driving away air sickness, at the same time rapping on wood, the handle of a litter above her head.

"I watch my boys to see if any of them get a white ring around their mouths," she explains. "That means they are about to get air sick. If a boy gets to feeling too bad I let him smell some ammonia and, well—sometimes I sit down and hold his head in my lap.

"I didn't learn that in training, but I get good results." ☆

TO THE RESCUE

Using the Gibson Girl Aloft

During a mission in which severe flak had been encountered, a B-17 pilot decided that a ditching was inevitable, but he could not send out a distress signal because all aircraft transmitters were out. The radio operator therefore attached the trailing antenna to the Gibson Girl and cranked out an SOS. Bearings were taken on this call, but since the signal was automatic, rescue agencies assumed it was being sent from a dinghy. As the plane flew on, another fix was taken and it was assumed that this came from a second dinghy. The Fortress ditched soon afterward, but the rescue planes were searching the positions of the fixes. Eventually, flares shot from the dinghy attracted a plane and the crew was rescued.

The radio operator displayed ingenuity in using his Gibson Girl with the trailing antenna. Had he realized that coastal M/F and D/F stations would assume the signal came from a dinghy, he could have clarified the situation with Q signals, keyed manually. This is not a criticism of the radio operator; he acted more wisely than most of us would in such an emergency. Yet, we can profit by a study of the situation.

Lesson Number 1 has been indicated: If you are in distress and transmitters are out, use the Gibson Girl with your trailing antenna and you will put out a strong signal. (Only short range is possible on fixed antenna with SCR 578.)

Lesson Number 2: Using the hand key on the Gibson Girl, send a few "Q" signals to indicate that you are still airborne and then switch back to automatic. QAL, QUG or QAH are suggested.

Lesson Number 3 is for the man who monitors the distress frequency. If he gets an SOS from a Gibson Girl with the message tacked on, "I am flying at 3,000 feet," he should take for granted that a Gibson Girl may be used while the crew is airborne. If you are getting a fix which appears to be moving steadily, indicate this when you give your report.

Ditching the A-25

If you fly an A-25 you probably have played around enough at high altitudes to know its stalling characteristics with full flaps. Ditching instructions, however, tell you to use some flaps with most planes. If you have guessed that your A-25 is an exception you are absolutely right. The NACA Laboratories at Langley Field, testing with model planes, have found that the A-25 can be ditched satisfactorily with no flaps. However, with flaps down, the plane noses down and pancakes onto its back. NACA strongly recommends that you ditch the A-25, if ditch you must, with flaps all the way up.

Getting Them Back

The first problem in emergency rescue is to locate the survivors. The second and frequently more perplexing problem is to bring them back alive. In the English Channel the RAF rescue launches have been very effective, due largely to efficient coordination between rescue planes and the boats but due also to the large number of rescue units available to search a relatively small area. In the South Pacific Navy PBYs have done a remarkable job, but there are places where a PBY cannot land—in a turbulent sea or in an uncleared jungle. Nor can a rescue boat steer too close to enemy positions. One of the major means of solving this problem in the AAF is the development of the airborne lifeboat for rescue at sea.

The British have been using the airborne lifeboat with considerable success where aircrews are forced down near enemy territory. American engineers received valuable assistance from British designs and operational reports, so that ours will be the latest thing in airborne lifeboats. Production is under way and boats should be available to the theatres in a few months. (For a description of airborne lifeboats and their development, see "Technique" in August AIR FORCE.)

Notice to Doodadlers

Ditching reports occasionally tell of an airman whose Mae West did not inflate because the valve was open and all the gas produced by the CO_2 cartridge escaped. This danger must be checked by the wearer of the vest, and the final check should be made when ditching becomes necessary.

Many people are "doodadlers"; they like to play with something, especially when they are nervous. The valve on the life vest is easily accessible to idle fingers, and it can be unscrewed by a doodadler without his realizing that he has doodadled with his life.

When a vest is not entirely deflated it will expand at high altitudes. Sometimes airmen unscrew the valve to deflate the vest and forget to screw it tight again.

It is almost impossible to fill a Mae West by mouth while trying to swim in flying togs; several men have drowned in the attempt.

So add this to your ditching procedure and practice it when you drill: check the valve on your Mae West as soon as the ditching order is given.

Prepared in collaboration with Emergency Rescue Branch, Headquarters, AAF.

By Air Commodore C. S. Wallingford

Former Commander of the RNZAF in the Pacific Area, now in charge of RNZAF Operational Training Units.

RNZ

ALTHOUGH the average bag of the Royal New Zealand Air Force in the South Pacific is about twelve enemy aircraft destroyed to every one lost, we still emphatically believe that squadron credit is more important than personal credit, and frequently the enemy planes which we destroy are incidental to the mission performed. Particularly is this true when our fighters are acting as cover for U. S. bomber formations in strikes against the enemy's installations.

It is not advisable to go into detail about the nature of RNZAF operational procedures anymore than it would be to discuss those of the AAF. Not only would such statements be unwise militarily but they might well be incorrect for our operational details are constantly changing just as yours are changing. However, one element constantly stressed, remains static with us. That is air discipline. Briefly, air discipline to us means sticking to the job assigned at briefing and following operation procedures.

Even in fighter action our accent is on teamwork; the individual is curbed in his personal ambitions. It is impressed upon him that cooperation with the squadron comes first. The fleeting opportunities to strike at the enemy must be restrained because if the flyer leaves his job, he is weakening his whole squadron as well as presenting an opening for the enemy to strike at the bomber formation he is supposed to be covering.

Escort duty is not a particularly welcome duty. By the very nature of his work, a fighter pilot is looking for trouble and nothing suits him more than going out on an offensive sweep. But the bombers must be covered, and this job must be done in the most competent manner possible.

Perhaps it is for that reason that we believe in building up the squadron rather than glorifying one or two individuals. Our best squadron leaders have knocked down few planes and received even less publicity. It is not unusual to find that every man in the squadron has more planes to his credit than the flight leader. This is easily understood for it is the flight leader's job to lead his squadron into combat. Most of the time he will make the openings and thus furnish an easy opportunity for a less experienced man to make the kill. The nearest analogy to our use of the squadron leader is your quarterback in football who calls all the plays but seldom carries the ball.

Generally in the RNZAF a man gets a decoration not so much for the number of Zeros he has brought down but the manner in which he does it. A great deal of harm can be done if a chap gets a Zero but in so doing weakens the whole formation and perhaps gives the enemy a chance to get some shots at a bomber. If a man can get an enemy aircraft and at the same time provide cover, he then is really doing his job. For that reason there are occasions when a flyer who has shot down only one plane will receive a citation before another man who has five or six to his credit.

And, by the same token, it does not matter that a flight commander will go through all manner of action and not get any enemy planes. Instead, he gets the credit for the number of planes shot down by his squadron and, most important, for the manner in which his squadron carries out its mission.

ALTHOUGH a great many of our pilots are enlisted men, our squadron leaders are generally older and more experienced officers. We have not found it necessary for all of our pilots to be officers. We have gone through an evolution somewhat similar to the cavalry. At first when warfare on horseback was carried out, all of the men were knights. Then it was shown that a man did not necessarily have to be a knight in order to fight well, and eventually it worked out that most of the horsemen were regular soldiers being led into combat by officers, who could guide, direct and lead them.

Approximately fifty percent of our pilots are officers. In time most of our pilots and aircrew members qualify for commissions, and every opportunity is given them to achieve this status. When their wings are awarded during the last phases of training, some of the men are given commissions. No arbitrary number is set but it is determined by the grades the cadet makes as well as by his actions in proving himself qualified to assume the responsibilities that go with being an officer.

The remainder of the men become sergeant pilots. The sergeant pilot remains in grade approximately six months and then is promoted to flight sergeant. In another six months, he becomes a warrant officer. The next promotion,

RNZAF ground crew in New Hebrides changes fighter engine.

Hudsons of the RNZAF fly over the Solomons on a mission.

The success and popularity of our RNZAF companions in the South Pacific can be measured in terms of the job they are doing against the common enemy.

to the rank of pilot officer, is the equivalent of your second lieutenant. However, a flyer does not necessarily have to go through all these steps. At any time during any of these grades, he can be directly appointed to the rank of pilot officer upon recommendation of his senior officers.

None of this should in any way reflect upon the flying ability and skill of the sergeant pilots. In a majority of instances, they make excellent section leaders (a section is usually a four-plane formation within the squadron) and often they have officers following them. But it has been demonstrated that a man may be a wizard in the air and yet not have the aptitude, the desire or the experience and qualifications to take on the responsibilities demanded of an officer on the ground.

Naturally, we are trying to improve our tactics and technique and plenty of leeway is given in the manner in which missions are flown. For that reason, we have as staff officer a highly qualified and experienced pilot, who studies carefully combat reports from a standpoint of operations and tactics. At group headquarters (our group corresponds to your wing) he breaks down these reports and, when the occasion demands, makes candid and often sharp criticism. In one instance, we had a highly successful mission with regard to the number of enemy planes downed. Our flyers were sitting back applauding themselves when they were brought out of their happy aurora by a piercing analysis of the mistakes made. Through the staff officer's criticism, they soon realized that had the enemy been a bit smarter, the results might have been overwhelmingly in his favor.

It isn't that we belong to the spare-the-rod-and-spoil-the-child school of thought. Our men get credit when they deserve it, just as they receive candid criticism and censor when necessary. Nothing can substitute for experience, but criticism goes a long way toward keeping the men on the rails, especially some of the flyers who become extremely overconfident after four or five successes.

Another principle that we hold to is the importance of the physical fitness of the men. We maintain our aircraft to the best of our ability and we do the same with our flyers. Following the same general principles as the AAF, the Navy and the Marines in this theatre, we rotate our squadrons to give the men a chance to leave the tropics and go to a cool climate, even if for only a limited time. We have a great physical and an even greater psychological advantage over your men. Our flyers can go home on leave, since New Zealand is not too far from the theatre of operations. This also accounts for the fact that our tour of duty is longer than yours.

However, the rest leave is but a small part of the time the squadron spends away from actual fighting operations. The majority of that time is devoted to operational training in new tactics which we have learned and in which we are aided by your experience and men.

In very few other instances do we differ from your AAF and, were it not for the different markings on the wings and fuselages of our planes, we would be practically indistinguishable. Not only do we all operate in the closest coordination and friendship, but we are flying your planes in our operations. For standardization we have kept down the types of planes flown. Principally, we fly P-40s, your Navy's Corsairs and Dauntlesses in fighter and dive-bombing operations.

For transport service we fly the C-47, which, by great coincidence, we also call the C-47. We maintain a transport squadron which corresponds to your Air Transport Command for inter-island traffic to and from New Zealand.

Our bombers were formerly Hudsons. This plane has been superseded by the Ventura, your B-34, although the modified plane that we employ is the Navy type P-1. The Hudsons have been principally used for overseas reconnaissance, convoy escort and antisubmarine patrol.

There is no denying that reconnaissance and searcher are very tiring and difficult, with none of the usual glamor and little excitement. It is hard for the men to realize that the negative information they generally bring back is definite information and as important as positive information. To keep them in operational trim and to provide them with a change, we generally give each bomber crew a minimum of one strike. Now, as we get more and more bomber squadrons and are using a much improved plane, this policy is paying off. We are flying an increasing number of strikes of the type best suited for our smaller bombers.

A great many kind things have been said of the RNZAF by the Americans with whom we fly. This is not the place for flowery statements. All we can say is that we are fully cognizant of the aid which you sent when our island appeared to be the Jap's next invasion point. We consider it an honor to fight alongside your forces to drive the enemy from every island he has touched and destroy him. ☆

Panoramic view of an RNZAF installation in the South Pacific.

Call it "ZEKE"

If you wondered about our hillbilly code names for Jap aircraft — here's why.

WHEN a combat report states that "TONY was taking HELEN home," it is the result of a carefully designed program for tagging Japanese aircraft with such names as those used in this description of a Jap fighter escorting a bomber back to base. The system used by the AAF in assigning code names to Japanese airplanes has assisted greatly in speeding up the collation and usefulness of our growing technical intelligence on enemy aircraft types.

The development of these colorful code names began in the Southwest Pacific in the early days of the war. At that time, all Japanese airplanes were identified as Zeros if they were fighters or as "Mitsubishis," if bombers. There was no formula for differentiating among types, because there was no method of designating them. The result was confusion—

in signals, in correspondence, in files, in order of battle, and even in the exploitation of intelligence. Information was pouring in on Jap planes but there were no pegs on which to hang it, and there were no handles by which it could be exchanged conveniently.

The problem of clearing up the nomenclature mess in the Southwest Pacific was labelled "urgent" and given to the theatre's Air Technical Intelligence Unit for immediate action. The section at that time consisted of one commissioned and two noncommissioned officers, who had been struggling with the difficulty even before they left the States.

Discovery of Japan's official names for its aircraft helped but little. For one thing, the official monickers generally were not verified until well after scattered and sporadic descriptions had already furnished us relatively complete identification. Principally, however, the official names were as unwieldy as anything we had yet devised. What we know as the ZEKE, for example, is known to the Japanese as Type Zero Mark I Carrier-borne Fighter Model I, or as Type 0 Carrier-borne Fighter Model II, manufactured by either Mitsubishi or Nakajima.

As cumbersome as such designations were, some AAF agencies were using them, where known, for lack of anything better.

Other agencies were attempting to describe the Japanese types by using the name of the manufacturer. This only added to the confusion, as it had been proved that more than one manufacturer frequently produced the same type of airplane.

The term "Zero"—or other numbers—was, of course, inadequate. "Zero" meant simply that the airplane had been first accepted by the Japanese Army or Navy in 1940. Many types were known to have been accepted in that year—all of which were then being lumped together without distinction under the same classification.

Southwest Pacific's ATIU decided that under the circumstances the only practicable solution would be to start anew and institute a comprehensive system of its own for naming all Japanese airplanes. This was put into effect in July, 1942.

All known airplanes were given short, snappy, personal names. Fighters and observation planes were made masculine; all bombers feminine.

The system was adopted. The officer in charge of ATIU was from Tennessee, so all Jap fighters emerged at first with distinctly hillbilly code names: NATE, RUFE, JAKE, PETE, ZEKE and so on. Wherever possible, an attempt was made to tie in the code name with some feature of the type; for example, ZEKE was so named because it was the best known of the "Zero" types.

The code name method was quickly adopted by all air units in the Southwest Pacific, and it worked so well that ground and naval forces took it up, too. The confusion was gone; classification of enemy planes became simple and orderly.

No security classification was given to the code names. On the contrary, they were publicized among the Volunteer Air Observer Corps. The new titles were remembered easily and aided considerably in identification.

Evidences of new types poured in so rapidly that the supply of hillbilly names was soon exhausted. When that occurred, some of the men in the Allied Air Forces asked immediately that Jap fighters be named after them, and bombers after their wives or sweethearts. There also were requests that new Japanese planes be named after some of our outstanding airmen.

Such requests were heeded in a number of cases, although primary consideration was given to a name that could be connected in some way or other with the type itself. ATIU members explained, that the double-tailed NELL could be recalled easily as the twin-finned belle, that DINAH had a nice "linah." TONY was so named because one of the first reports regarding it was thought, mistakenly, to have described this in-line engined fighter to be of Italian make.

By the end of October, 1942, more than 65 known operational and non-operational types had been distinguished and named—as contrasted with the dozen or so known haphazardly before the code system was instituted.

During the development of the system, the China-Burma-India theatre cooperated closely and sympathetically with the Southwest Pacific in the selection of code names and with technical intelligence generally. On the whole, however, inter-theatre communications lacked uniformity in designation. There was still no official terminology.

Late in 1942, the Allied Air Forces in the Southwest Pacific, supported by the CBI theatre, requested official adoption of the code names and of the code name system by Washington and London. Washington approved late in December, 1942, and London followed sometime later.

Original code names for newly discovered types are still allotted by Allied Air Forces in SWPA, but are first coordinated with Washington, London and India. An exception is TOJO, the formidable new Jap fighter. It was first spotted in China and dubbed TOJO there. A request was made that the name be allowed to stick and all coordinating parties agreed.

By 1943, the designating technique in SWPA had passed beyond the stage of naming new types after individuals. One reason for this was the rapidity with which many of the Japanese planes became non-operational. BEN and FRANK, for example, which had been named for intelligence officers in the 5th Air Force, faded quickly out of the picture. Very few of the presently operational Japanese types were named for individuals. Names are now chosen, on the basis of the original policy, for distinctiveness and for some relationship with the plane's origin or characteristics.

One recent exception, however, is LIZ. When positive evidence was received that the Japanese were using a land-based, four-engine bomber, an intelligence officer from AAF Headquarters in Washington was visiting the Southwest Pacific. In Washington he had been a supporter of Southwest Pacific ATIU, which made him a very highly regarded officer in these parts. As a mark of respect to him, the new bomber was named LIZ after his daughter.

The present list totals about a hundred names, representing hillbillies, sweethearts, wives, daughters and airmen. Whatever their origin, the names have speeded up the combat exploitation of our knowledge of the enemy.

Under a new joint arrangement between the Army, Navy and British, the sole authority for the assignment of new Jap code names is the Technical Air Intelligence Center, Anacostia, Washington, D. C. ☆

SOME OPERATIONAL TYPES OF JAP AIRCRAFT

CODE NAME	DESIGNATION AND TYPE
TONY	T 3; single-engine, single-seat fighter
TOJO	T 2, Mark 1 & 2; single-engine, single-seat fighter
NICK	T 2; twin-engine, two-seat fighter
OSCAR	T 1, Mark 1 & 2; single-engine, single-seat fighter
ZEKE	T 0, Mark 1 & 2; single-engine, single-seat fighter
HAMP	T 0; single-engine, single-seat fighter
RUFE	T 2; single-engine, single-seat, fighter, float plane
PETE	T 0; single-engine, reconnaissance, float plane
JAKE	T 0; single-engine, reconnaissance, float plane
DINAH	T 100, MARK 1 & 3; twin-engine, reconnaissance
JUDY	T 2; single-engine, reconnaissance
IRVING	T 2; twin-engine, reconnaissance, night fighter
VAL	T 99; single-engine, dive bomber
KATE	T 97; single-engine, torpedo bomber
BETTY	T 1; twin-engine, medium bomber, torpedo bomber, reconnaissance
HELEN	T 0; twin-engine, medium bomber
LILY	T 99; Mark 1 & 2; twin-engine, light bomber
SALLY	T 97; Mark 1, 2 & 3; twin-engine, medium bomber
NELL	T 96, Mark 2; twin-engine, medium bomber, torpedo bomber
EMILY	T 2; four-engine, patrol bomber

WORKHORSE OF THE AAF

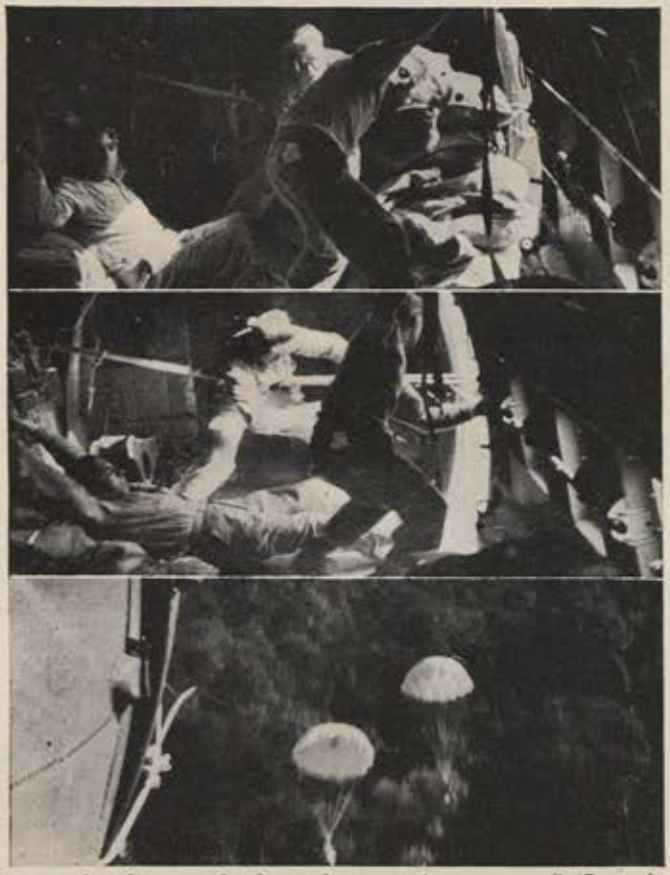
(Continued from Page 17)

there was a flash in the radio department from a direct hit. The radioman, however, was able to keep in touch with the tower. By this time, the 47's violent maneuvers had shaken the cargo loose and tar barrels were bouncing merrily around the cabin. Another pass sent a shell fragment through the cabin. Altogether, the Jap made six passes—all unsuccessful—and finally had to give up when his fellow fighter planes began to depart. Fishburn lost no time sitting down on the nearest runway, yet he and his crew delivered the barrels that same day.

It was in the Southwest Pacific too, that a startled C-47 found itself doing a dive bombing job.

A combat plane had crashed in the jungle and medical corps men had been dropped by parachute to help the crew, all of whom were badly injured. While these men had been dropped only 300 yards from the scene of the accident, it took them more than half a day to cut through the underbrush. Arriving at the wreck, they signaled from the ground that the flyers were in such bad shape that plasma and surgical supplies were needed urgently.

The C-47 pilot returned to base, obtained the necessary items and flew back. It was plain that if the bundle were dropped by chute it might land some distance from the men and either be lost or cause delay while being retrieved. He saw a small open space where the crashed plane had cut through six-foot-high grass. Circling once, the pilot flew back toward the wreck, throttled both engines, opened the flaps and let down the landing wheels to create all possible drag, and then put his 47 into a dive from 1,000 feet. He pulled out at 20 feet and the bundle landed within arm's length of the medical corps men.



India. Supplies must be dropped at a precise moment. C-47 supply team watches pilot for signal, then shoves cargo out side door.

The C-47 won its European theatre ribbon the very first day of the invasion of North Africa. In the longest mass troop carrier flight ever made, 44 Skytrains flew 1,500 miles from Britain with British paratroops and, without the failure of either an engine or an airplane during the entire trip, dropped the men on an airfield 35 miles southwest of Tunis.

From that minute on, 47s were in the thick of it in Africa, Sicily and Italy, moving supplies quickly to places where the tide of battle depended on them. On one occasion in Tunisia, C-47s picked up some miniature bulldozers and steam rollers and landed them in a cow pasture right at the front. Then minutes afterward aviation engineers had gone to work on a runway, and 24 hours later bombers were operating from the new base.

It was in Africa, more than anywhere else, that the C-47 proved itself a good mudder. Frequently pilots had to take off with heavy loads from what were virtually quagmires.

There is the story of the pilot who took off in mud so deep that he had his brakes locked and didn't discover his error until he had left the ground.

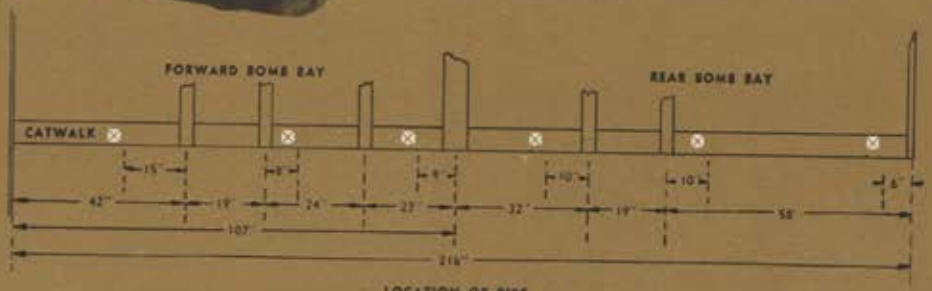
An army contract pilot was dispatched with twice the normal load of cargo and on his return reported that his plane was "a bit sluggish on take-off." Still another, flying a ship loaded only with airplane tires, discovered when in the air that the plane acted badly and seemed heavy. He couldn't figure it out until, arriving at a forward base, he found that every tire had been stuffed with canned goods.

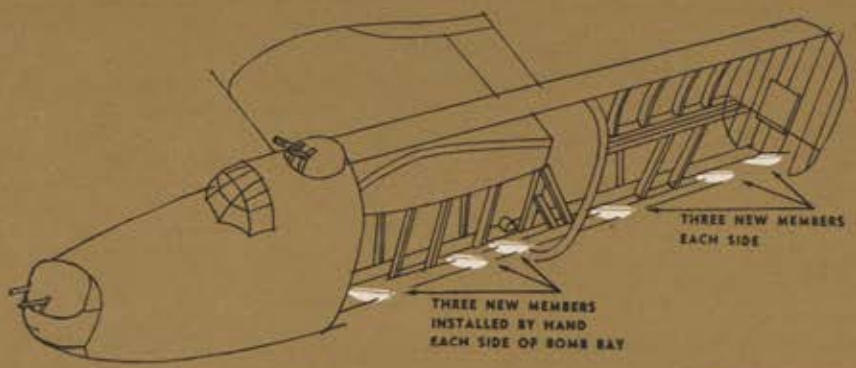
The invasions of Sicily and Italy were both carried out with big troop carrier operations. During the Sicilian campaign, one transport had the unique and unnerving experience of having to fly down the main street of a city to avoid ack-ack. The plane hit the guy wire of a telephone pole and nearly crashed. With the wire wrapped around one of the engines, the plane staggered along, however, always on the verge of stalling out, until the pilot found his drop zone and dropped his troops. He then pulled over a hill, only to smash into several high tension cables. Men at his base said the ship returned "looking like a cat that had been playing with a ball of yarn."

While the C-47 outfits suffered many casualties during these intense campaigns, there were times when they escaped with miraculously little damage. When, on September 13th, 14th and 15th, the 5th Army was embattled on the mainland of Italy, thousands of paratroopers were dropped from C-47s which cut across from Sicily at Messina and followed the coastline. This was accomplished without a crew or troop casualty, and a week later these same C-47s were busy putting troops down on the Salerno beaches and evacuating the wounded.

The part played by Army transport planes in the invasion of Normandy is too well known to be gone into here. The 9th Troop Carrier Command flew two entire airborne divisions to the scene of battle on D-day, and then kept them and other units supplied with food, medical supplies and countless other items. Many of these planes were those known as the "urgent 400"—the extra planes which General Arnold requested the Douglas Company to produce over their full schedule specifically for invasion needs; and which were given a top manufacturing priority above all other production models, including even heavy bombers.

Everywhere, since its induction into the AAF, the C-47 has performed with a reliability hardly to be exceeded by any other plane. It has licked every kind of weather in the world and has carried loads which even the designers would have thought impossible three years ago. Little wonder, then, that in its bulging 201 File the C-47 has a fine letter of commendation from the Truman Committee and that some people say that without the jeep and the C-47 we couldn't run this war. ☆



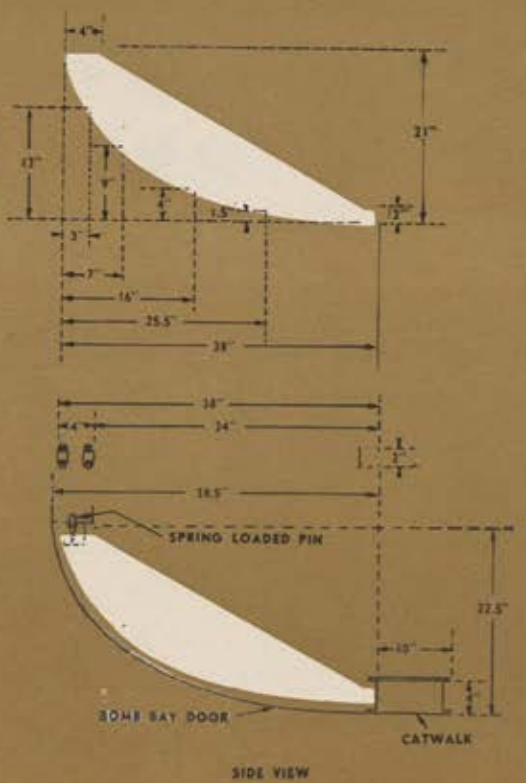


Emergency Reinforcement for Bomb Bay Doors

THE B-24 is known to be a difficult plane to land on the sea because the bomb bay doors receive a terrific slap rendered on contact with the water. Consequently, the crew may be in danger of being injured by interior breakage and the plane is apt to sink before Johnnie-come-lately can get out. To give Liberator crews a better chance of survival, a support system to double the strength of the doors has been designed under the direction of Col. Carl F. Greene, Materiel Command liaison officer with the NACA. Capt. William P. Carl, Jr., of that office developed the project.

Supports may be constructed of aluminum alloy or of white pine. The wood support is strong enough and will be easier to make—especially in the field. To build the pine supports you need twelve pieces of two-inch lumber, 39 inches long and 23 inches wide, or, if you have a two-inch plank you can cut several supports from it by making a pattern. The accompanying drawings give you all of the specifications for the support and their positions in the bomb bay. It is best to make them a quarter of an inch too long and then file them down to a tight fit when you get in the bomb bays. You need twelve supports in all—three for each side of the forward bomb bay and three for each side of the rear.

These reinforcement ribs are to be stored in the plane. When it becomes apparent that a ditching is necessary they can be fitted into place in a few minutes by any member of the crew. They rest on the curved bomb bay doors, fitting



between the catwalk and the first horizontal support along the longitudinal channel. A spring with a loaded pin built into the top of the support will help to keep it in place but is not necessary if the support fits tightly.

Although no shearing factors have been tested, static tests indicate that this support system will make a B-24 much more seaworthy. There is only one real test—an actual emergency. When we get a report of a ditching where these braces have been used, we will tell you of the results. Meanwhile, we do not advise anyone to ditch his B-24 just to see if it will float.

Plastic Adhesives and Aircraft Construction

Revolutionary changes in structural design of airplanes already are beyond the blueprint stage now that metals, plastics and wood can be "welded" together with thermo-setting plastic adhesives. With a little pressure and a little heat, aircraft engineers soon may be expected to build aircraft with nothing more than "glue" as a structural assembly medium.

This new glue replaces rivets and spot welds, simplifies present production techniques, saves time and cost, eliminates internal spider-web bracing of spars, ribs, bulk-heads and stringers from airplane construction. New metal adhesives are Cycle-Weld (Chrysler and Goodyear), Metlbond (Consolidated Vultee), and others by Du Pont, Cordo Chemical, Resinous Products and B. B. Chemical Co.

Advantages of these cements include decrease of structural weight, greater strength and stiffer construction resulting from use of a continuous bond instead of spaced rivets or welds at joints, a smoother skin surface through elimination of rivets and weld overlaps, that yields advantageous low drag characteristics and higher speeds.

Increased use of plastics and wood also is made possible by the new adhesive through perfection of the sandwich type of construction. A thin sheet of metal bonded to wood or plastic provides the strength of metal while capitalizing on the rigidity of thick sections of light weight material, thereby eliminating need for solid metal or intricate stiffening mediums such as stringers, ribs, doublers and the like.

Approximately 5,500 rivets were eliminated when the new bonding method was applied to a P-40 horizontal stabilizer, and the new assembly was capable of withstanding greater loads by providing more rigidity in tests. The Z-stringers of the B-26 wing are bonded to the shear webs of the spar in production airplanes. This use of the "cement" bonding, in addition to eliminating rivets, provides a continuous bond that strengthens the joint and reduces production time on this vital structural assembly. The new bonding methods permit metal fittings to be fastened to wood on the CG-13 glider without the use of heavy bolts and bushings. The newest of our very heavy bombers have many parts glued together by adhesives. Rubber is bonded to metal on the skis of the CG-4. Secondary and non-structural parts on many planes, such as doors, fairings, escape hatches, floor sections and droppable fuel tanks, utilize the new bonding methods.

In January, 1941, the Materiel Command's engineering division first launched an investigation into the possibilities of bonding metal to metal, to wood and to plastic. Two months later, an intensive program was initiated to expedite development of structural adhesives under development. Key men in the AAF sponsorship were Brig. Gen. F. O. Carroll and Col. P. H. Kemmer, chiefs of the engineering division and the aircraft laboratory, respectively.

The leading industrial firm cooperating with the Wright Field engineers in the development of a structural plastic adhesive was the Dodge division of the Chrysler Corp.

Cycle-Weld was the first adhesive to pass all structural test requirements and was used in all of the original test assemblies.

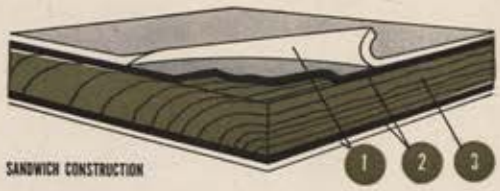
By January, 1942, eight non-structural items, bonded with the new adhesive, emerged from tests and were authorized for production models of B-26 airplanes. In June, a P-40 stabilizer representing the first primary aircraft structural part assembled by a plastic adhesive proved satisfactory in both static and dynamic test. This confirmed the fact that a plastic cement could be gainfully employed as a metal assembly medium for aircraft structures. Immediately development of redesigned structures was undertaken to determine production rate possibilities. A Cycle-Welded B-26 trim tab was approved for flight in August and several were installed on aircraft for service tests. A couple of these tabs are still logging time. To date, numerous primary structural assemblies, using an adhesive, have been approved for production—P-40 flaps, P-47 wing bay ammunition door, CG-13 and CG-16 glider fittings and others.

Approved cements have exhibited shear strength so great that the metal tears before the adhesive parts. A single riveted lap shear joint can be made only approximately sixty percent efficient. By staggering rows of rivets, efficiency of a joint can be increased to about 85 percent. However, lighter weight Cycle-Weld joints can be made 190 percent efficient —the sheet metal will fail in tension before the joint.

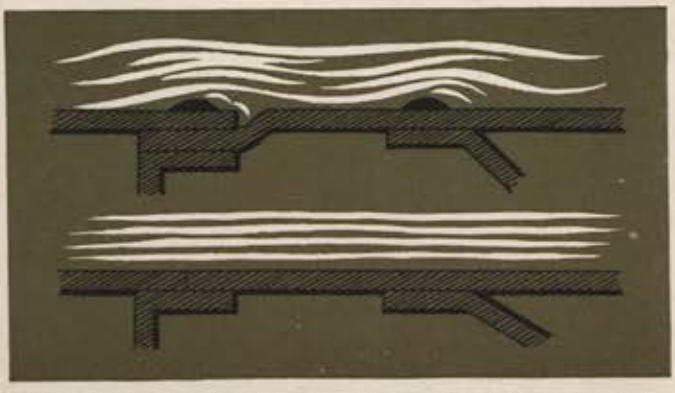
Cemented joints have excellent fatigue or vibration strength characteristics. There are no holes, no non-homogeneous alloys of low elongation, such as those existing in riveted or spot welded parts, from which cracks can develop.

Impact strength of adhesive single lap shear joints in tests was approximately four times as great at room temperature as the impact strength of riveted joints on the basis of foot-pounds per square inch of lap area.

From comparison tests of typical cemented joints and



1 Metal or laminated structural plastic
2 Plastic adhesive
3 Balsa wood or light weight plastic core material



This drawing illustrates the value aerodynamically of eliminating rivet construction in aircraft by the use of plastic adhesives. Structure assembled with plastic also is stiffer, lighter and stronger.

riveted joints, results indicate that the cemented joint is more rigid and has a higher ultimate strength—approximately 200 percent—than a riveted joint.

Weight savings of about thirty percent can be realized with proper design of wood and plastics to metal joints. This is particularly important in fabricating cargo, bomber and fighter aircraft of wood and plastic.

Another advantage is that increased rigidity and better support of the skin covering tends to reduce slight variations in airfoil profile, thereby reducing drag. Surfaces bonded by adhesives are perfectly smooth.

Tests show that a single row of rivets, placed at five percent of the chord from the leading edge of a wing, produces an increase in profile drag of approximately thirteen percent of the minimum drag of the smooth airfoil at the low speed of 120 mph. Elimination of rivets is particularly important for planes with laminar flow types of airfoils.

Immersions in water for periods up to three months as well as in oil, aviation gas or Prestone for 48 hours, have no effect on the shear or tensile strength of the joints when tested immediately after removal. Aromatic fuels tend to soften the adhesive in time but do not affect the strength enough to limit its application, except for integral fuel tanks. Weathering and exposure to salt air apparently do not cause deterioration of the cement, but do corrode the metal under the bond. This corrosion can be prevented by use of paint.

With plastic adhesives a joint can be made and sealed in the same operation; this advantage is of great importance in fabrication of pressurized cabin assemblies.

Metal cementing processes now require application of heat and pressure at the joint. Nevertheless, great strides are being made to reduce the time, temperature and pressure requirements. Originally at least 500 to 1000 pounds per square inch of pressure was necessary to make a structural metal joint. Now joints of equal or greater efficiency can be fabricated at ten pounds per square inch. So far, conversion of the plastic adhesive to the infusible thermosetting state requires approximately 300 degrees F. for fifteen minutes.

The assembly of structural metal materials with glue is very new. We have proved in static and flight tests that such assemblies are dependable as structures and offer decided advantages to aircraft. At present, only a few production assemblies are utilizing metal adhesives in comparison to the number of riveted and spot-welded assemblies. However, manufacturer's requests for AAF approval to use cemented joints on future designs are increasing each day.—*Capt. D. L. Grimes, Aircraft Laboratory, Materiel Command.*

The Mildew Problem

Source of much trouble to the AAF in the tropical and semi-tropical regions is mildew. Because this mold or fungus is extremely destructive to equipment, particularly oxygen masks, all personnel should learn methods of combatting the nuisance.

Under a microscope, mildew is revealed as a branching network of colorless threads. To the naked eye it appears to be felted, powdery patches of one of a variety of colors—white, cream, green, brown, grey or black. Nearly everyone has seen mildew on food that has been allowed to stand unsealed for a considerable period or on substances that have been exposed to dampness.

A small patch of fungus will produce millions of microscopic spores or seeds, so light that they blow away and become part of the dust in the air even at high altitudes. Not choosy about their food, the spores thrive on wood, cloth, leather, certain paints and even on finger prints.

Because mildew flourishes in warm, humid climates, where many of our bases are located, it must be fought continu-

technique TECH TALK

For some time, select crews have been flying in a specially equipped, high altitude B-17 above 40,000 feet to run tests on personnel equipment. The researchers have tried out such devices as electric heaters for oxygen masks, non-kinking mask and regulator tubing, an oxygen indicator, a walk-about oxygen cylinder with a capacity of 280 cubic inches and a portable, liquid oxygen container for use as a supplemental source . . . Tested recently were several self-sealing, pressurized turret domes for super high altitude bombers . . .

The famous Link Trainer, long used for teaching blind flying, now has an automatic pilot installation. One can "fly" for hours without touching the controls, without leaving the ground . . . Builders of the automatic pilot have also developed new equipment for controlling their "mechanical brain" during an instrument landing approach. Used with other automatic devices the new equipment makes possible completely automatic landings . . .

Automatic flap controls are being tried out for airplane engine coolant systems . . . The dangers of exhaust flames and other fire hazards in aircraft operating in cold climates have led to the development of special fire extinguishers. In use are new chemicals which have better reaction against fire where temperatures are at zero and sub-zero . . .

Droppable fuel tanks for wing attachment on one fighter plane have been moved farther toward the wing tips to make room for externally hung bombs which already have been moved over so rocket tubes can be slung under the fighter's wing. The problem is no longer how much the fighters can lift, but where to put it all . . . Tests have been in progress to put pilots in prone positions in fighter planes. Lying down, aero-medical men say, the human body can stand more acceleration. Some new designs may incorporate prone-position cockpits.

When AAF airmen are forced down at sea they have with them a kit labeled "Shark Chaser Packet" which contains shark deterrent chemicals. One chemical solution clouds up the water so the shark can't see his prey; another takes

away all odor particles that allow him to smell flesh so the shark, who can neither see nor smell his intended victim, goes looking for easier-to-find dinners . . .

(CONTINUED ON PAGE 38)

technique ... CONTINUED

ously. Considerable progress has been made in developing methods by which equipment can be mildew-proofed. Ideally, the fungus preventive should be applied in the factory where the equipment is produced. In some instances, however, it becomes necessary to apply the proofing agent in the field after equipment, already attacked by mildew, has been cleaned and deodorized.

Dirt alone can support mildew growth. Grease and sweat from the face accumulate on oxygen masks to provide ideal food for the spores. The masks, therefore, must be cleaned frequently. Recommended is the practice of vigorously scrubbing a mask with plain water and brush. It then should be dried thoroughly, but not in the sun because the solar rays hurt rubber. Use of soap is not satisfactory, for mildew will grow on remaining soap particles.

The cloth straps on masks also are vulnerable to the fungus growth. Steps have been taken by the Aero-Medical laboratory at Wright Field to find a suitable method of mildew-proofing the webbing.

Even after they've been washed, the masks frequently retain the unpleasant odor of mildew. This condition can be corrected by swabbing the mask with a deodorant and fungicide consisting of a mixture of one gram thymol and 100 cubic centimeters of 70 percent ethyl alcohol. Every crevice must be penetrated and then the masks must again be allowed to dry.

The mixture replaces the musty, foul smell of mildew with a clean antiseptic odor, which may be rather strong immediately after application but which will cause no discomfort after exposure to air for thirty minutes. One swabbing will keep the mask fresh for at least five hours—a period long enough for most missions.

To prevent formation of mildew, the following rules should be observed:

(1) Keep equipment in a dry place above the ground. Utilize platforms and wall hooks.

(2) Keep equipment well ventilated. Stored materiel must be separated by air spaces, and sheds, tents and tarpaulins must be opened at the sides.

(3) Take full advantage of sunlight. It is your greatest ally in drying, except in the case of rubber equipment which never should be exposed to the sun.

(4) Build a "hot box" for storing important equipment if electricity is available. Consisting of a packing crate with holes in the top and a lighted electric bulb inside, the "hot box" warms and dries the air.

(5) Frequently inspect all equipment for mold. If found on leather, wipe it off. If found on clothing, wash the article and rinse out every particle of soap. In either case, dry thoroughly.—*Lieut. John T. Bonner, Aero-Medical Laboratory, Materiel Command, Wright Field.*

Centrifuge Laboratory Blackouts

"Blackout," the temporary loss of perception which imperils all pilots during violent maneuvers, has been grounded for study by specialists at the Aero-Medical laboratory of the Engineering Division, AAF Materiel Command, Wright Field.

The ingenious device which enables researchers to simulate blackout on the ground is essentially a large, two-arm merry-go-round called a centrifuge. Solidly constructed of aluminum beams and steel tubing, the centrifuge has a man-carrying gondola or cab at the end of each arm.

For the experiment, the subject is always one of the volunteers from a long waiting list which includes many test pilots. He sits in one of the cabs and the observer faces him from the pivot position. The other cab is counterweighted.

The centrifuge is then turned by a 250-horsepower electric motor and the test cabs, swung outward by centrifugal force, place the subject's body parallel to the plane of the circle made by the spinning centrifuge, with his head toward the center. This action duplicates precisely the zooming force of a pull-out from a dive. To simulate the reverse, or outside loop effect, the cab position can be changed so that the subject's head points away from the circle center.

During actual tests in centrifuge, cab swings outward or inward so subject's body is parallel to floor. Cab is tilted only partially in this photo. Movie camera on frame records subject's facial changes.

Fundamentally, the common blackout in flight is caused by the stoppage of blood circulation in the brain—a stoppage resulting from the centrifugal force exerted by an inside loop. The maneuver multiples the force of gravity or "G". The weight of any body at rest is 1G. When a force several times that of normal gravity is applied, the body therefore weighs several times as much.

The inside loop adds "positive acceleration" or plus G to the normal gravity load of the body. This causes blood pressure in the brain to fall and, in the lower extremities, to rise. As a result the eyes first see "grey." Then, as load increases, total blackout occurs. The flyer does not always lose consciousness when blacking out, although he will do so if the force is high enough and lasts long enough.

Final adjustments are made on brain wave recorder cap before subject is given experimental spin in centrifuge at Wright Field.

An outside loop provides an effect opposite to that of an inside loop. "Negative acceleration" or minus G results; the blood is forced into the brain region and vision goes "red." The eyes bulge and a throbbing pain is apparent as "redding out" continues. These symptoms, in a very minor form, can be simulated by hanging upside down from a trapeze. The average flyer can take more plus G than minus. Usually blackout occurs at about plus 4G or 5G. But when the force is removed, sight returns al-

most immediately. At higher levels of G, consciousness may be lost. When the higher force is removed, a definite interval for recovery is required—usually fifteen or more seconds.

Maximum tolerance for minus G is about three. A continued negative acceleration may lead to serious eye or brain injury. Recovery from the effects of even temporarily-applied minus G force is slower and the evidence of effects may be delayed as much as several hours.

It was to study the effects of accelerated gravity that the first man-carrying centrifuge was built in Germany about 1934. The initial experiments in this country were conducted in 1936 by Col. Harry Armstrong, now an 8th Air Force flight surgeon, who used a machine less efficient than the present one.

In 1942 the present highly-efficient centrifuge at Wright Field was designed by Capt. Harry W. Jobes. Later, it was modified by Capt. William Cade. The control system was designed and built by the General Electric Company and first tests were run in March, 1943. Since that time, experiments have been continuously under the immediate direction of Capts. George L. Maison, Clarence A. Maaske and George A. Hallenbeck of the Materiel Command's Aero-Medical laboratory. Dr. E. J. Baldes of the Mayo Clinic adds considerably to the Materiel Command's centrifuge research as consultant on design and operation.

During a typical test, the centrifuge is operated automatically through the use of a pre-drawn test chart made to duplicate flight tests and simulated combat. Time necessary for arriving at a maximum test level of spinning speed, time at maximum speed and time for maximum to stop are diagrammed on the chart and it is then placed on a cylinder in the control room.

From that point the test is run by an electric eye which translates the chart diagram into control manipulation. This automatic feature of the centrifuge gives perfect mechanical control over the experiment—an advantage entirely absent at present in actual test flights, although results are often checked by actually flying a subject through similar G forces in a specially equipped A-24.

Should a subject desire to halt the experiment at any time, an instant braking arrangement is available. To prevent visual distraction, all tests are run in darkness.

A tremendous amount of physiological data valuable to all phases of medical science, has been amassed from the aggregate runs. Through special instruments such as an electrocardiograph, a brain wave recorder and a photo-electric eye for measuring blood volume in tissue and for recording pulse and respiration, much new knowledge of the human structure has been accumulated. All data is recorded electrically in the control room through an intricate system of wires from the test cab.

From centrifuge research, specialists at the Materiel Command's Aero-Medical laboratory expect a gain in information which will be invaluable in indoctrinating flyers and which may lead to positive methods of overcoming G effects.

Already the technicians know that the tricks of veteran pilots—tensing muscles or yelling at the moment of pull out—have some effect on G symptons. A tense pilot can resist blackout more easily than a relaxed one can. It also has been proved that the method of taping the body tightly and the German stunt of assuming a prone position, with feet higher than head, during dive bombing both have merit.

But first on the list of blackout preventive suggestions is the avoidance—except when necessary in combat, of course—of violent evasive flight maneuvers.

A pilot's health also is a factor. The flyer in top physical shape can stave off blackout better than the man who has let his condition slip.—*Lieut. J. F. Ryan, Materiel Command.*

technique WHAT'S NEW . . .

Tire Busters—Steel barbs for puncturing and ripping tires of enemy planes and supply vehicles have been developed by the Materiel Command and approved by the AAF Board. Two types are packed in containers which are released by bombers at an altitude of 700 feet above airfield and highways. A static line opens the container, spreading the barbs over an area of 200 yards. The "Christmas tree" type of barb has serrated, hooked projections which rip tires. The tubular type is a four-pronged article. It rests on three of the prongs and the fourth points upward at a 90 degree angle to penetrate "puncture-proof" tubes.

Gyro Attitude Indicator—The attitude of a plane throughout 360 degrees of roll and pitch is indicated by a new flight instrument, which overcomes the present gyro horizon's limitations of 70 degrees in pitch and 110 degrees in banks. This attitude gyro, adaptable to all types of aircraft, provides pilots with a visual indication of the ship's relative position to the earth at all times. They can execute loops and slow rolls with less than an hour of "under the hood" instruction. A 14-ounce electrically-operated gyroscope is the heart of the attitude indicator. A fixed reference pattern, around which the plane can be maneuvered in any attitude, is marked on a stabilized spherical surface with luminescent paint and is visible to the pilot through an opening in the front of the instrument case. The indicating sphere is divided into halves, the upper dark and the lower white. Latitude lines in contrasting colors are located on each hemisphere inscribed at ten degrees intervals and there also is a vertical reference line. By a small knob, a pilot can adjust the "target," a small circle which moves up and down to compensate for change in the trim of the airplane for level flight.

Bomb Service Truck—As a result of AAF Board recommendations and Air Service Command tests, the M-27 truck, capable of hoisting and transporting 4,000-pound bombs, will replace the M-6 which is limited to handling 2,000-pound bombs. The new vehicle is a standard 2½-ton cargo job, equipped with overhead monorail and powered hoist. During loading and unloading operations, bombs are moved to and from the truck on a dolly over narrow gauge track, provided in one curved and four straight sections.

Pneumatic Lifting Jacks—Used for raising belly-landed planes so that repairs can be made, pneumatic lifting bags are now standard equipment of most types of aircraft. The rectangular-shaped bags are collapsible and may be stowed away in nearly all planes. A small gasoline blower inflater goes with a complete set of three bags, each of which has a 12-ton lifting capacity. Only two bags are required to lift most planes. Four can raise a B-24 and eight can do the trick for a B-29. The bags are made from two-ply fabricated canvas, which is impregnated with synthetic rubber.

Life Raft Flashlight—Designed as equipment for emergency dinghies, the Type A-9 flashlight is energized by a hand-driven, alternating-current generator. A waterproof case protects the light from salt water spray and humidity.

ORGANIZATION CHART
ARMY AIR FORCES

All headquarters shown are located in Washington, D. C., unless otherwise indicated.

Aug. 10, 1944.

ADVISORY COUNCIL
Col. F. M. Dean

COMMANDING G
General H. H. A

SECRETARY TO AIR STAFF
Col. T. A. Fitzpatrick

DEPUTY COMMAND
AND CHIEF OF AI
Lt. Gen. Barney M.
Col. M. A. Libby, Ex

DEPUTY CHIEF OF AIR STAFF
Brig. Gen. Patrick W. Timberlake

DEPUTY CHIEF OF AIR STAFF
Brig. Gen. Ray L. Owens

DEPU
Br

ASSISTANT CHIEF OF AIR STAFF
MATERIEL AND SERVICES
Maj. Gen. O. P. Echols

- CONTROL OFFICE — Col. C. H. Dyson
- AIRCRAFT RESOURCES CONTROL OFFICE — Mr. T. P. Wright
- RESOURCES DIVISION — Brig. Gen. F. M. Hopkins
- MATERIEL DIVISION — Col. J. F. Phillips
- PROCUREMENT DIVISION — Brig. Gen. A. E. Jones
- MODIFICATION DIVISION — Col. C. S. Irvine
- TRAFFIC DIVISION — Col. C. F. Nielsen
- AIR SERVICES DIVISION — Col. D. W. Benner
- AIR INSTALLATIONS DIVISION — Col. George Mayo
- AIR CHEMICAL OFFICER — Brig. Gen. Edw. Montgomery
- AIR FINANCE OFFICER — Col. W. H. Kasten
- AIR ORDNANCE OFFICER — Brig. Gen. R. C. Coupland
- AIR PROVOST MARSHAL — Col. H. G. Reynolds
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Ft. Worth, Tex.
Lt. Gen. B. Yount

TROOP CARRIER COMMAND
Indianapolis, Ind.
Brig. Gen. F. Evans

FIRST AIR FORCE
Mitchel Field, N. Y.
Maj. Gen.
Frank O'D. Hunter

SECOND AIR FORCE
Colorado Springs
Colo.
Maj. Gen. U. G. En

COMBAT AIR FO

FIFTH AIR FORCE
Southwest Pacific
Maj. Gen.
Ennis C. Whitehead

SIXTH AIR FORCE
Caribbean Area
Brig. Gen.
E. P. Sorenson

SEVENTH AIR FORCE
Central Pacific
Brig. Gen.
R. W. Douglass Jr.

EIGHTH AIR FORCE
Europe
Lt. Gen.
J. H. Doolittle

NINTH AIR FORCE
Europe
Maj. Gen.
Hoyt Vandenberg

TENTH AIR FORCE
India-Burma
Maj. Gen.
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Global
Gen.
H. H. Arnold

ENERAL
rnold

SPECIAL CONSULTANT
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Maj. Gen.
St. Clair Streett

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China
Maj. Gen.
C. L. Chennault

FIFTEENTH AIR FORCE
Europe
Maj. Gen.
Nathan F. Twining

AERONAUTICAL CHART SERVICE
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Col. W. O. Senter

ARMY AIRWAYS COMMUNICATIONS SYSTEM, AAF
Asheville, N. C.
Col. Ivan L. Farman

311th PHOTOGRAPHIC WING, MAPPING AND CHARTING
Bolling Field, D. C.
Col. G. G. Northrup

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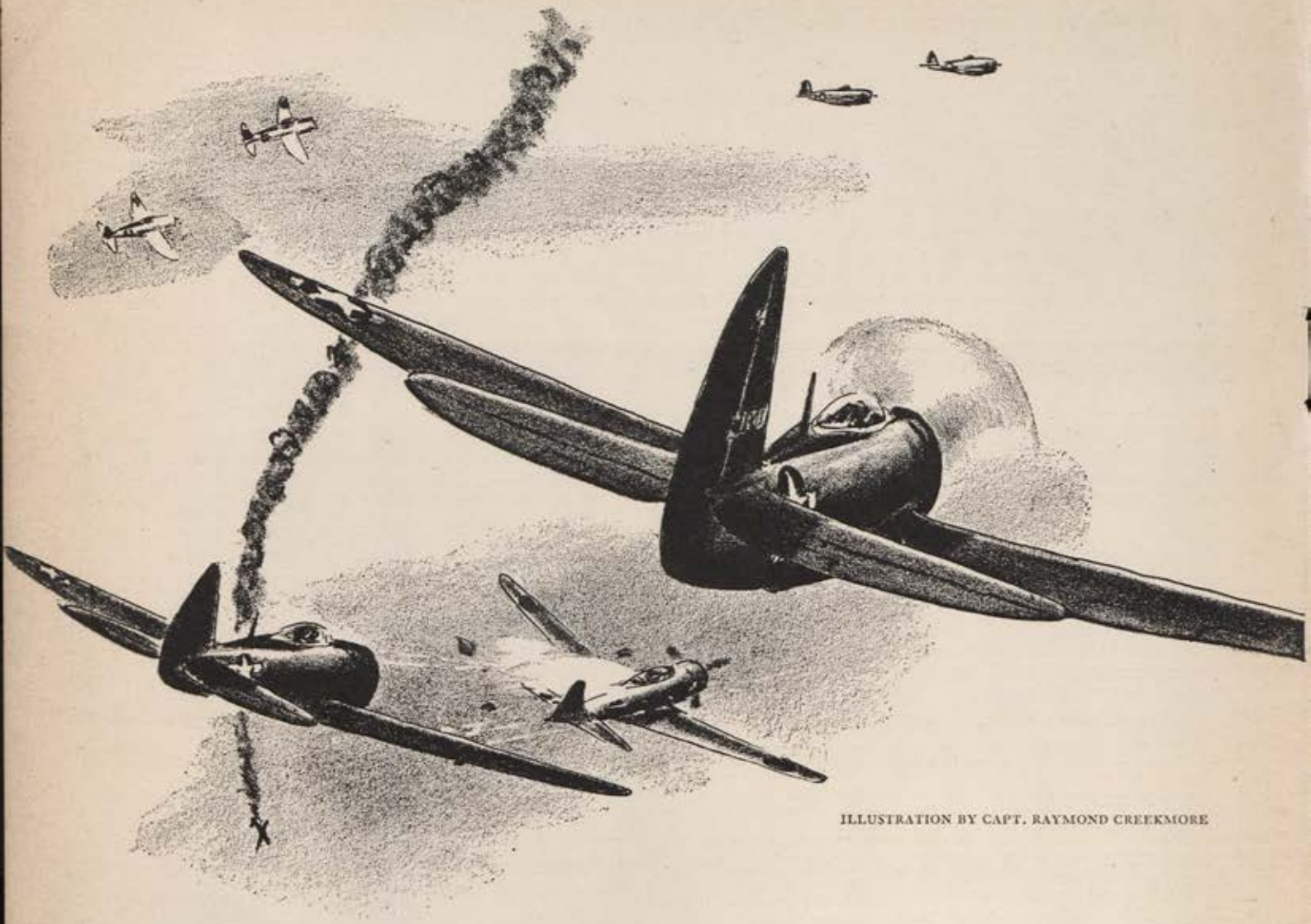


ILLUSTRATION BY CAPT. RAYMOND CREEKMORE

One combat veteran says of fighter tactics, "It's just like playing poker. The idea is never get below a pair."

The pair, of course, is leader and wingman. You hear a lot about the leaders, the boys who get the shots and the headlines, but too often the wingmen pass unnoticed.

Yet, the importance of flying the wing position is undisputed, and a good many combat-experienced pilots will tell you the wingman is the more important part of the fighter team.

This month Air Force asked a group of veteran fighter pilots, who represent the major theatres of operation, for their comments on the job of the wingman. Here's what they had to say:

Maj. Robert Westbrook (P-38s), who had 14 enemy planes confirmed in the South Pacific: "With us, no one pilot goes up on a pedestal because he shoots down a bunch of Japs. We aren't supermen. When one of us hits the jackpot, it is partly luck in being in the right spot at the right time, but mainly it's the work the wingman does in protecting your tail. In one of our dogfights, my wingman picked a Jap off my tail who could have gotten me easily. Later, I was able to follow through and pick one off his tail. That's the way it's got to be."

Capt. William Packard (P-40s), who fought in the CBI theatre, adds, "Flying wing is a lot tougher than flying leader. You are entirely responsible for protecting the flight. You have to predetermine what your leader is going to do under every circumstance and do it with him."

Maj. Walter Mahurin (P-47s), who got 21 enemy planes in the ETO, puts it this way: "The wingman should remember that he is the most important man in the squadron. I have been fortunate in always having been in a hitting position—leading a flight. But I still think that it is the wingman who counts. I couldn't shoot a thing if I were worrying about whether or not I had a wingman. Sure, I know it's a tough job to sit back and tell a man that it is clear behind him so that he can shoot the enemy. But look at it this way. Sooner or later, the man you've been following around is going to be through with his tour of duty. That will leave a vacancy. And it will be filled by the man who has been doing a perfect job flying wing. Then, he will have a chance to shoot and he probably will have profited by having followed a good shot. Then he will realize what an important job the wingman has."

Combat veterans argue that there are certain set rules to flying wing correctly, and that breaking those rules is an invitation to trouble. Obviously, the function of a wingman varies with the type of mission and often with the type of aircraft being flown but it all boils down to sticking with your leader. It's simple advice, yet men go down every day because they refuse to follow it.

"A wingman's first job," says Capt. Richard Linnell (P-38s, 39s and 40s), who piled up 144 missions in the

Here is what some of our veteran fighter pilots think of the wing position

if you're a Wingman

Southwest Pacific, "is to stay in formation. You have to be able to anticipate your leader's next move, and be there when he makes it. If you learn to stick to your leader like flypaper, the rest is comparatively easy."

"Let me give you an example of that," says Capt. Joseph O'Conner, just back from the Southwest Pacific. "Four P-40s were on patrol over Wewak at 18,000 feet. They saw fifteen Zeros about 4,000 feet below them. The flight leader made a diving pass, fired and pulled up to maintain altitude —a maneuver that had previously been agreed upon. But his wingman continued to dive through, leaving the flight leader and himself completely unprotected. The element leader, seeing the mistake, continued his dive to cover the wingman, and was shot down. The element leader's wingman stayed in formation, followed and was jumped by five Zeros. He crashed into the ocean. When the flight leader found himself alone, he was forced to break off and return to base. His wingman took a terrific beating, but managed to get home and make a crash landing.

"Under ordinary circumstances, when you have altitude on the Japs, you have a good chance of getting a couple of them. This time not a single enemy plane was chalked up. Two of our men were killed and three airplanes were lost because a wingman didn't follow his orders and do his job properly."

Capt. Richard Dow (P-39s), who flew in the African campaign, offers this advice to wingmen: "Don't be afraid to ask questions. Some leaders have their own individual flying characteristics and you'll have to learn them. Find out how your leader wants things done—and do them that way. Some men will want you to fly close the minute you take off. If you don't, you'll catch hell. Others don't give a damn how you fly just after the take-off provided you get into formation properly. Ask your leader how he wants it done before you go up. Then when you come down find out if you did it right. You'll save everybody a lot of trouble that way."

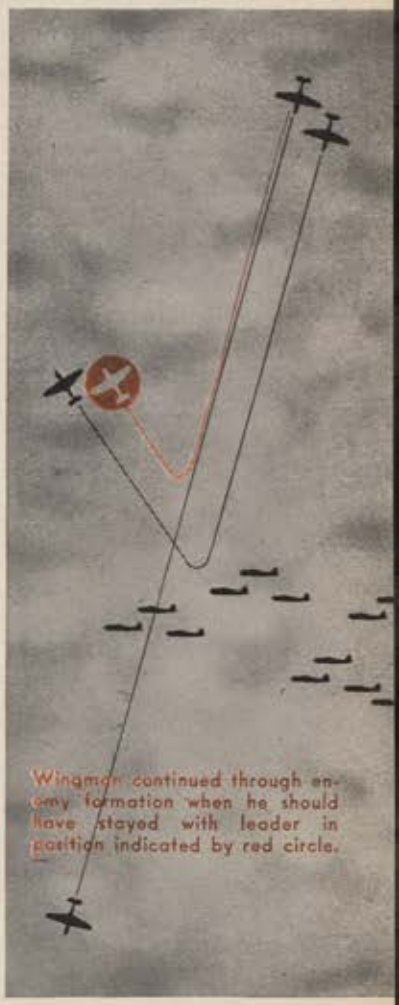
"An important thing to keep in mind," says Capt. Michael Quirk (P-47s), veteran of 82 missions in the ETO, "is the trick of cutting off properly. When your leader turns, try to keep inside of his turn rather than going out wide. If he makes a ninety-degree turn, cut inside of him instead of barreling around and circling wide. You'll find that you can save a lot of gas that way—and on long fighter missions, those extra gallons will come in mighty handy."

"After awhile," adds Captain O'Conner, "it will become second nature to anticipate your leader's moves. You'll get a good briefing before the flight that will take care of all expected maneuvers. Before you go out, your leader will tell you just how he is going to break away from the target, or what he will do if attacked. Naturally, that will vary quite a lot according to the circumstances, but it isn't as difficult as it sounds. I don't know why, but a lot of guys try to make it tough for themselves."

Lieut. Robert Duffield (P-40s), who flew 25 missions as a wingman before he became an element leader in Italy, describes the changes in a wingman's position on the different types of missions.

"In dive-bombing," he says, "a flight leader doesn't have much time to look around for enemy aircraft. He has trouble enough navigating and picking out the pin-point targets. It is up to the wingman to weave around and clear the skies for him. If anybody jumps the flight, it's the wingman's fault. He has to watch the air while the leader is looking on the ground. He is there to give his leader ease of mind and the confidence that no one will come down on his tail when he starts diving.

"On strafing missions, the work becomes a little more difficult. The wingman has to watch both the ground and the air. Again, it is the leader's prime function to pick out the target and not worry about anybody playing tag with his tail. But you also have to watch for any ground installations which may be in a position to shoot at your leader. I remember in Italy, I was going down the side of a road after some Mark IVs. My wingman opened fire on a haystack at about one o'clock ground position and he got three 20 mm anti-aircraft guns that I never saw. I was lining up the tanks, but he was watching the ground in front of me. Good thing, too, or they would have got me, sure as hell.



Wingman continued through enemy formation when he should have stayed with leader in position indicated by red circle.

"Doing escort work, your operations are simple. Just tie an imaginary rope around your leader's wing and don't let him get away from you. The enemy will try to break you up. One plane will come diving down, attempting to draw one of you away, while a couple of others sit up there waiting to jump on the unprotected planes. You just got to stay with your leader. If you get jumped, you may have to split up momentarily, but get back together right away. Otherwise, you both will be dead ducks."

A wingman's position may change slightly, depending upon the type of plane he flies. Captain Linnell says, "When you fly P-38s, you have to stay out quite a distance. Those two engines cut off a close side view. But you can't lag behind your leader, because the Lightning accelerates and decelerates very slowly. It takes too long to get up there when you have to. The idea is to be there in the first place.

"With P-40s, the best position is about three plane lengths to the right. Put your wings where your leader's tail assembly is. The Warhawk isn't the most maneuverable plane in the world and we found that you'll need plenty of room in which to move around."

"In P-47s," adds Captain Quirk, "There isn't much rear visibility. You can't see a wingman who stays behind. Our wingmen usually flew about 100 yards to the side. There's a very easy way to judge that distance. All of our planes have letters on them about two feet high designating the different squadrons and groups. Your wingman ought to be just far enough to the side to be able to distinguish those letters."

Capt. Walter Gresham (P-51s), another veteran from the ETO says, "We have the same kind of problems as the Thunderbolts—our armor plate and gas tanks cut off the view to the rear. We are practically blind in the back so our wingmen fly line abreast. In that way, we can cover each other's tail."

Perhaps the job of a wingman can best be summed up in the words of Maj. Gen. Claire Chennault, commanding general of the 14th Air Force, who says, "In combat you are part of a team. Never forget that. Teamwork is the basis of all tactics and one of the principal reasons for our low losses. Our fighter tactics are based on the fact that two planes working together are more effective than three or four planes flying as individuals. My men have fought against odds of five and ten to one with those tactics and have won consistently with small losses. They have been proved in battle." ☆

Southwest Pacific Time-Tick Service

NAVIGATORS and others whose work in the South and Southwest Pacific requires precisely correct time-of-day can set their chronometers with confidence, for accurate time-tick service is now available in those areas through the facilities of the 5th Army Airways Communications System.

Originating at Arlington, Va., the time signal is relayed by San Francisco to Honolulu, from where it is re-broadcast by the local US Navy station. Picked up by the AACS station in the same city, the time-tick is placed on the point-to-point circuit between there and Australia where, in turn, it is keyed to the five transmitters normally used to broadcast synoptic weather data.

Until recently, the signal could be obtained in the South and Southwest Pacific only through the Navy station re-broadcast. Because of atmospheric difficulties, however, the service was not dependable, and the problem was referred to the AACS.

The signal disseminated by the AACS is accurate within one-tenth of a second. This variation—negligible in its effect upon navigation computations and other mathematical reckonings—is the result of two factors. In its relay to Australia, the time-tick travels 10,000 miles at a rate of 186,312 miles per second, thus requiring about .005 of a second to complete the circuit. Add to this about .045 of a second for electrical relay lag and the error of one-tenth of a second is explainable.—*Lieut. Col. R. G. Nichols, Regional Control Officer, 5th AACS.* ☆

what is your air force I.Q.?

This month's AIR FORCE Quiz must be approached downwind. Be as honest as you are when playing Canfield, and mark up the usual five points for each correct answer. A score above 85 is excellent; 70 to 80, good; 55 to 65, fair; below 55, you're in a tailspin.

Answers on Page 61

1. B-29s that raided Japan on July 7 are attached to the
a. 14th Air Force
b. 10th Air Force
c. 20th Air Force
d. 11th Air Force

2. The .50 caliber machine gun is capable of firing how many rounds per minute?
a. 400 c. 800
b. 1,200 d. 200

3. The P-61 is a
a. Single-engine, single-tail fighter
b. Twin-engine, single-tail fighter
c. Single-engine, twin-tail fighter
d. Twin-engine, twin-tail fighter

4. Lashio is located in
a. Southern India
b. Northern Burma
c. Coastal China
d. Eastern Thailand

5. The gap in a spark plug is set according to
a. The compression ratio of the engine
b. The type of magneto used
c. The horsepower of the engine
d. The volumetric efficiency of the engine

6. The distance in statute miles from Chungking to Tokyo is approximately
a. 2,000 c. 3,500
b. 900 d. 1,400

7. Comairforward is the name applied to an air command in the Central Pacific.
a. True b. False

8. Under the terms of the "GI Bill of Rights" you will receive how much in mustering out pay if you have served sixty days or more outside the continental limits of the United States?
a. $50 c. $200
b. $300 d. $100

9. When ditching a B-25, the dinghy generally is released by the
a. Co-pilot
b. Tail gunner
c. Navigator
d. Radio operator

10. The Japanese aircraft popularly referred to as the Nick is a
a. Single-engine fighter
b. Twin-engine fighter
c. Twin-engine medium bomber
d. Four-engine bomber

11. Goodfellow Field is located nearest
a. Baton Rouge, La.
b. San Angelo, Texas
c. Madison, Wis.,
d. Tacoma, Wash.

12. The yearly base pay of a flight officer is
a. $2,100 c. $1,500
b. $1,800 d. $2,500

13. Halmahera is located
a. Northeast of the Solomons
b. Between the Philippines and Indo-China
c. Off the northwestern tip of New Guinea
d. Between the Philippines and Guam

14. What is a parademo?

15. You are eligible to wear an overseas stripe after how many months of service outside the continental limits of the United States?
a. Nine c. Six
b. Three d. Twelve

16. Which of these general officers is a graduate of the United States Naval Academy?
a. Carl Spaatz b. Ira C. Eaker
c. James H. Doolittle
d. Lewis H. Brereton

17. Which of the following men would most likely be identified with G-5.
a. A control tower operator
b. A mechanic
c. A weather observer
d. A clerk assigned to the Allied Military Government

18. Membership in the Army Air Forces Aid Society is restricted to officers.
a. True b. False

19. The capital of Thailand is
a. Rangoon c. Imphal
b. Bangkok d. Singapore

20. Identify aircraft below. One incorrect, both incorrect.

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.

Mission of Air Inspection

Jottings from the notebook of an officer attending the revised Air Inspector's Course at AAFSAT, Orlando, Fla.:

"Inspectors must help keep the AAF on the beam—to Tokyo and Berlin. This means following through . . . well trained individuals . . . proper assignments . . . teamwork . . . equipment that gets there . . . equipment that works when it gets there.

"The AAF is made up of just ordinary Americans . . . We all make mistakes and we must all help guard against them . . . Self management within the AAF is Air Inspection.

"Everybody wants to cross the goal line standing up, but doesn't always know the rules. As inspectors, we can assist AAF personnel by helping them learn the rules as well as seeing that they are kept . . . Rules are necessary. Somebody has to check.

"We must see that the job is done—for our own commanders, for our people, and for ourselves. That is the mission of Air Inspection."

GI Shoes

The importance of all crew members being equipped with GI shoes for combat missions is stressed in inspection reports from overseas. If it becomes necessary to bail out, the GIs are more inclined to stay on than low-cuts, and, if the terrain is rough, the GIs are better for the hike to safety. They are insurance against thorns, sharp coral, insects, snakes, etc. In the case of Tailgunner Sgt. Raymond G. Giwojna in the European theatre, his kickers stopped some flak, but that was "over and above the line of duty" —even for GI shoes.

CARTOONS BY PVT. SIDNEY CHAPLAN

Good Conduct Medal

Care in the awarding of the Good Conduct Medal is necessary to maintain the prestige associated with it. The medal is not an "automatic award." It may be awarded for exemplary behavior, efficiency and fidelity to each enlisted man of the Army of the United States who fulfills certain qualifications (see AR 600-68, 4 May 1943). A recommendation for the award of the medal ordinarily will originate with the company (or similar unit) commander. In each case, due consideration should be given by commanders in awarding the medal. A character and efficiency rating of less than "excellent," given an enlisted man or woman while on temporary duty or detached service, will not of itself bar the award (see AR 600-68, Ch. 1, 26 May 1944), providing the ratings given the individual while on permanent assignment meet the requirements as set forth in AR 600-68.

Oil Hose Connections

Faulty maintenance and installation of oil hose connections are major contributing factors to forced landings. Proper maintenance and installation plus frequent and thorough inspection of oil line hose connections, are "musts."

Dangerous Packages

Directives forbidding the mailing of explosives and firearms capable of being concealed on the person are contained in Sec. II, WD Cir. 243, 1943, and it is desired that the provisions of this circular be brought to the attention of all AAF personnel. (AAF Ltr 80-12, 26 May 1944, Subject: "Mailing of Prohibited Matter.")

The Driver Speaks

"Yes, sir, you can eat a meal on that engine," beamed Pfc. Daniel Hill as the inspector admired the spotless engine of a staff car driven by Hill at the Orlando (Fla.) Army Air Base.

The inspector glanced at the mileage—49,615.

"Has the motor required any major overhauls?"

"No, sir. And it doesn't use any oil. I started driving this car over a year ago when it had gone only 300 miles, and I've treated it like a baby. You see, sir, I don't want that car to quit on the road. I'm the guy who would have to get out and fix it if it did. And who knows? I might be driving General Arnold, and would I be embarrassed!"

Maintenance Inspections

Units maintaining airplanes should keep up to date the maintenance inspection forms and guides on all aircraft. Inspection entries should be made regardless of the fact that maintenance was not required, so there won't be any doubt as to whether the aircraft is in flying shape.

Safety First in Ammunition

In inspecting ammunition, the inspector's thought should always be, "Is it safe?" Two prime requisites must be considered when determining a safe practice: safety for personnel, safety for ammunition. The inspector should be constantly on the alert to forestall any practice which might cause injury or death to any worker, and should see that ammunition is handled, stored and shipped in such manner that no deterioration, damage or distribution may result. (Sec. I, Chap. 2, TM 9-1904, Ammunition Inspection Guide, 2 March 1944)

Containers

The use of unmarked empty containers and the storage of materials in improperly marked containers has resulted in mixing fluids and chemicals which develop a corrosive action and cause failure of various systems in the airplane. More precaution should be exercised to insure that containers are properly marked as to contents and to discourage the use of empty containers whose former contents are unknown.

Warning to Maintenance Men

Sending men into the air in a plane with compliance pending on the TOs marked in red is like sending men to sea in a leaking boat. It has been directed that particular emphasis be placed on compliance with red cross and red diagonal TOs (AAF Ltr. 65-18, 29 May 1944), and that commanders impress upon engineering officers and inspectors their responsibility in raising to the maximum degree the standards of base maintenance.

Firing for New Men

When new men join units, are immediate checks made to see that they have completed the requirements for individual weapon firing? If they have not, are arrangements made for firing at the earliest practicable date?

Personal Letters

A good hint for the wife or girl friend is that gifts of stationery will be appreciated. Use of official stationery and envelopes for personal correspondence is taboo. (AAF Ltr 80-13, 26 May 1944, Subject: "Use of Official Envelopes for Personal Correspondence.")

Electrical Circuits

Incorrect wiring of electrical circuits by maintenance personnel is causing forced landings. The Technical Order on pertinent aircraft should be consulted for correct procedure when wiring electrical circuits. A ground test should be conducted to insure proper operation before flight.

HERE ARE THE ANSWERS

TIMELY ADVICE FROM THE AIR INSPECTOR

Q. Are personnel encouraged to submit suggestions for improvements in the AAF?

A. Yes, in AAF Reg. 37-3, 20 May 1944. It is the policy of the AAF to encourage the submission of beneficial suggestions by civilians and military personnel on duty with the AAF. Recognition for suggestions by military personnel may consist of a recommendation for a Legion of Merit, consideration for promotion, or a letter of commendation placed in the individual's 201 file by the commanding officer. Cash awards will be paid to civilian employees when such suggestions are authorized or adopted.

Q. What types of war trophies may be brought back to the United States?

A. Military personnel returning to the United States from theatres of operations may be permitted to bring back small items of enemy equipment, except name plates removed from captured equipment, items which contain explosives and such other items useful in the service or needed for training purposes in the theatres of the United States, items of value as critical scrap materiel as determined in the theatre. No articles removed from enemy dead, except items of enemy military equipment, can be sent or brought into the United States.

Q. Is a reduction in grade of a noncommissioned officer or private, first class, an authorized punishment by a court martial?

A. Yes. Authorized punishments for enlisted men, subject to any limitations applicable in a particular case, include reduction to the seventh grade from the sixth or any higher grade. (AR 615-5, Ch. 2, 10 May 1944)

Q. Is it still necessary for officers and enlisted men to have attached to their pay vouchers Standard Forms 1051 or 1051A (Flight Certificate and Schedule) when claiming flying pay?

A. No. Officers will execute the certificate as shown in Par. 2b (2) (b), AR 35-1360, 11 April 1944. In the case of enlisted men, certificates prepared by the responsible officer as shown in Par. 5h, AR 345-155, Ch. 10, 5 May 1944, will be entered on the pay rolls.

Q. May leaves or furloughs be obtained after arrival at a port of embarkation?

A. Only in cases of emergency. (Par. 6, WD Pamphlet 29-2, POR, 15 May 1944)

Q. Does flying pay continue for captured or interned AAF personnel?

A. Section 2, Act of 7 March 1942 (par 1c (2), provides that any person in active service who is officially reported as missing, missing in action, interned in a neutral country, or captured by the enemy shall be entitled to receive or have credited to his account the same pay and allowances to which such person was entitled at the beginning of his absence. If any person receiving extra pay for flight duty is reported absent for one of the causes mentioned in the statute, he is entitled to receive or have credited to his account such additional pay during the period absent. (Par. 8a, AR 35-1320, 24 May 1944)

Q. Who may be awarded the glider badge?

A. Any officer, warrant officer or enlisted man who is assigned or attached as a member of a glider or airborne unit, and who fulfills the requirements outlined in Sec IV, WD Cir. 220, 1944. Individuals authorized to wear both the parachute badge and the glider badge may wear but one badge at a time. In such cases, the choice of which badge shall be worn is a matter of individual choice. ☆

READ THIS COPY • PASS IT ON • READ THIS COPY • PASS IT ON • READ THIS COPY • PASS IT ON

TECH TALK (CONTINUED FROM PAGE 29)

In their search for the best in wearing apparel for our aircrews, personal equipment experts have recently conducted tests to find a more comfortable parachute harness for our women with wings. Smaller sizing and different strap arrangement are included in some of the redesigning . . . The WASPs will also get smaller B-4 bags . . . And those AAFers who have stood in line at overseas PXs to get foreign-made South American or Australian-type cowboy boots may get their own in the future—GI. A boot of this design is under development by our clothing experts . . .

Lightning pilots who sit in front of their engines and therefore lose the benefit of engine heat have been complaining about the cold. Some have actually suffered minor cases of frost bite. An electrically heated glove and spat assembly has been adopted for P-38 pilots. The heat comes on automatically when the cabin temperature hits 40 degrees F. . . . Lightweight flak suits made of plastic cloth are being tested. They are more comfortable than the present heavy suits, but how effective they are remains to be seen . . .

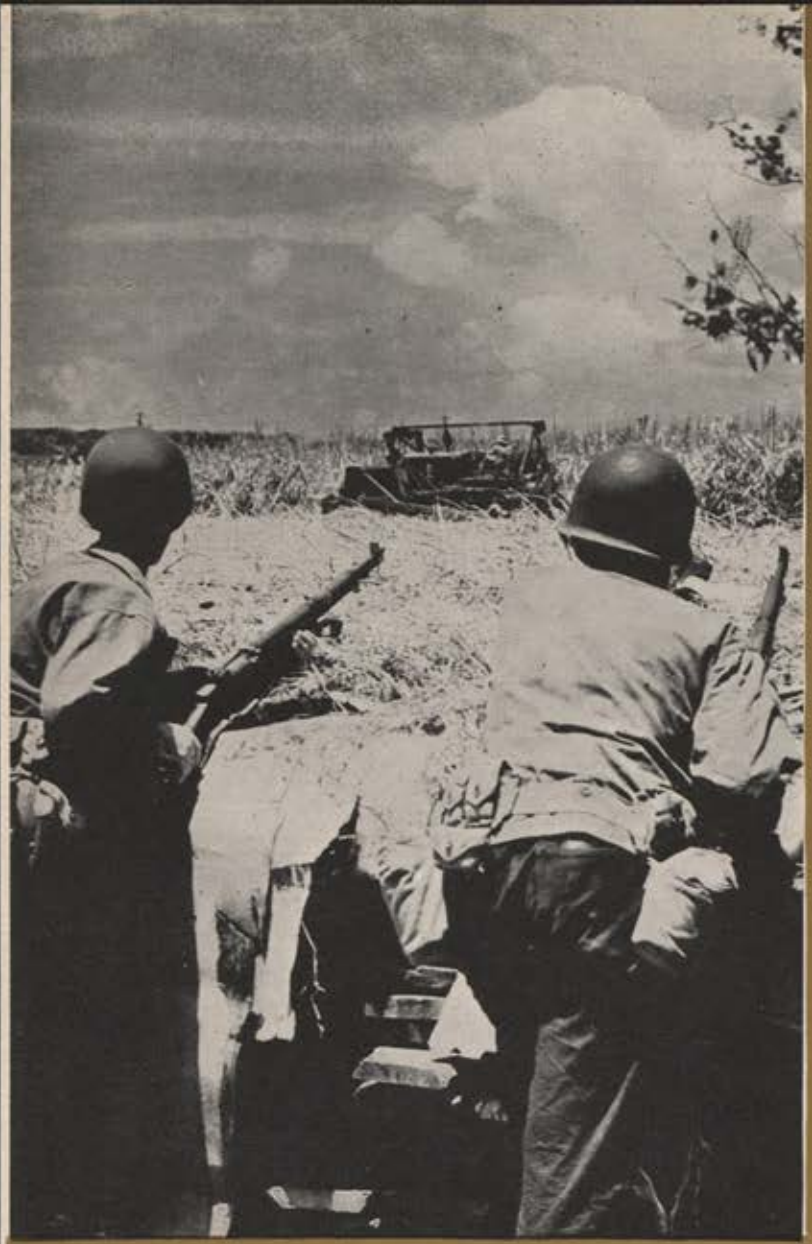
Portable-by-air milk emulsifiers, known as "mechanical cows," have been under test at Wright Field. The machines are used to produce milk or cream containing natural elements, by the emulsion of powdered milk, butterfat and water. Already tried out by ATC's Alaskan Wing, the flyable milk cans may go to AAF installations wherever powdered milk is on the menu . . . Emergency portable-by-air cooking kits have been provided for aerial delivery to mobile repair units, crash camps, rescue stations and weather outposts. Small and compact, they include stove, fuel, oven, grill, pots and pans . . .

Extreme lack of litters for ground or air evacuation in the CBI theatre resulted in the development of a bamboo pole litter which can be made easily and quickly by the natives. It is designed to AAF specifications to fit metal litter supports stowed under the center metal floor plate in most cargo airplanes. Further modification permits installation in all types of evacuation planes . . .

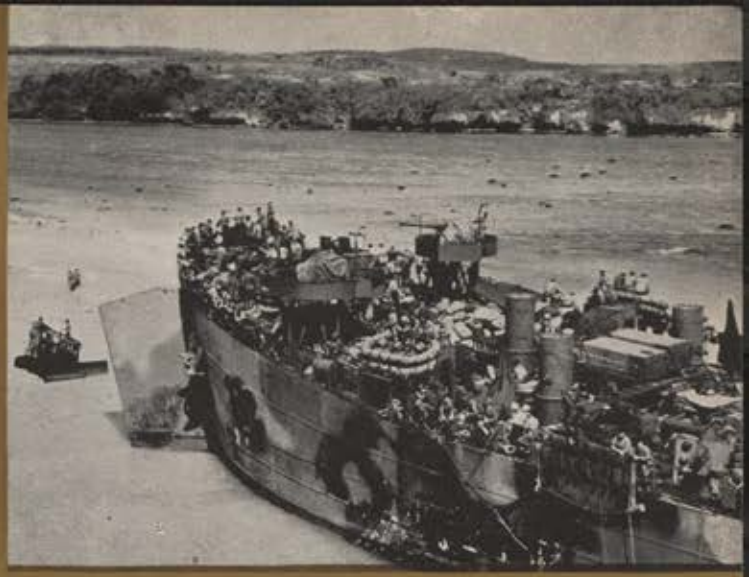
A billboard manufacturer has applied his company's experience to making pasteboard, framework tow-targets which have the profiles of big German tanks. Pulled behind a jeep the targets are used for air-to-ground fire to help test new rocket gun fighters . . .

Some C-47 transports have had installed a roller conveyor system that simplifies dropping of cargo. The ships have an extra cargo door and the conveyors run to the opening on each side of the fuselage, which permits shoving cargo overboard at double previous speeds. The roller conveyor is similar to those used on ramp platforms for loading trucks . . .

Called the "Sky Hook" because it seems to hang in the sky, a new container for dropping supplies without a parachute has been under consideration. It is shaped like a large maple seed and gyrates to earth, landing without much impact . . . For cargo nets, human parachutes, life rafts and other vital accessories, the AAF already has used 139,380,230 yards of multiple-strand woven nylon cordage. ☆



Jap sniper has been spotted in a cane field needed for an airstrip by the engineers. A bulldozer slogs through the cane to flush the Jap for the armed engineers waiting expectantly in the foreground.



Reinforcements for 7th Engineers already on Saipan crowd the bow of their LST to get their first view of beachhead positions established by U. S. forces during the initial assault.

SAIPAN LANDING

with 7th Air Force Engineers

In the island-by-island invasion sweep of the U. S. forces in the Pacific, aviation engineers have played an important part by landing just behind the initial assault troops and hacking airfields out of jungle growth or laying flight strips on soft, muddy terrain. In the thick of the fighting for Saipan Island, engineers of the 7th Air Force came ashore, fought off Jap snipers and established a base for AAF planes. ☆

Construction crews of the 7th had to push through debris and wrecked Jap equipment to establish new airbase communications. These engineers are seen inspecting a disabled Jap artillery piece.

High tide raft from ship to shore is constructed at the Saipan beachhead to speed up the landing of engineer personnel, critical airfield materials and heavy construction equipment.

PIs FIGHT BESIDE GIs

On the Italian front recently a non-com on patrol inched forward, glanced once more at the aerial photograph in his hand, heaved a grenade, then charged forward to take possession of a machine-gun nest. He had neutralized it without ever having seen it. Later, highly delighted, he sat down and wrote a letter of thanks to the pilot of the photo-recon plane who took the picture that made such a surprise attack possible. The letter went up through ground force channels, received an enthusiastic indorsement from the theatre commander, and down through air force channels to the pilot himself.

Such a letter was more than deserved, but if the infantryman had known a little more about the intricacies of photo-reconnaissance he would not have failed to write another letter giving credit to one of the most important and under-publicized links in the whole chain—the photo-interpreter.

There is a tendency, even among those who should know better, to think of the PI as a rather studious individual, sitting far behind the front lines peering owlishly through stereoscopes at the pictures brought back by daredevil flyers who risk their lives in unarmed recon planes. This may be true in some cases, but not all. In the Mediterranean theatre there are some PIs as battle tested and hardened to shell fire as any Commando.

Take the case of Lieut. Charles Metcalf of Dallas who held down the uncomfortable job of interpreting aerial photographs for the ground troops on the Anzio beachhead. In the beachhead nothing could move on the roads by day without drawing enemy fire, but every morning, flying low across the water, an air courier sneaked in. On that courier were air photographs taken by pilots of a photo-reconnaissance wing only a few hours before. Preliminary interpretation of them had already been made, showing location of enemy batteries and major installations. Metcalf would check these, since no good PI really believes in any other PI's interpretation until he has confirmed it himself, then pick up a field telephone, call the artillery observer whose set of air mosaics and maps matched his own, and give him certain coordinates. The artillery observer marked a duplicate air photograph and gave it to the pilot or observer of a Piper Cub who went aloft to spot the position and direct the subsequent fire. If the PI was right, in a matter of minutes the enemy battery might be destroyed, or at least forced to withdraw. And the PI had to be right since there was no ammunition to waste on the Anzio beachhead.

During the rest of the day Metcalf studied his pictures for the faint but unmistakable signs of changes in the enemy's minor defenses. If the pictures were good —and the PI blesses the recon-pilot who goes beyond the call of duty and risks his neck by shooting pictures from 20,000 feet or lower, instead of the standard 25,000—the information derived from them may have saved a good many lives before the next sunrise. After dark Metcalf moved forward to the sand-bagged dugouts in the front lines which are so reminiscent of World War I. There, while the shells screamed over (the American ones make a hissing noise; the German ones, as some wit remarked, sound "like God gargling") he reported his findings to regimental S-2s. They in turn passed the intelligence along, with photographs whenever possible, down to platoon or even patrol leaders. The result may well have accounted for episodes like the one described in the first paragraph.

With Metcalf when he waded in with the Anzio troops was Capt. Bernard Thomas of Fairmont, W. Va. Thomas stayed until March 24 when he was pulled out and ordered to England to give the benefit of his experience to the invasion armies. This tall captain, a veteran of Salerno, had a lively time in the beachhead from the start. The landing itself was unopposed, as indeed photo-intelligence had indicated it would be. But an hour or two later, when six FW-190s dove out of the sun, Thomas hurled himself into the nearest shelter, which turned out to be an ex-German latrine. He saved his life but lost all his friends temporarily—at least until he found some clean clothes.

Hard to sell at first on the value of air photographs, ground commanders who have used them in combat now scream for pictures so loudly that often it is impossible to satisfy their demands. One enthusiastic paratroop commander even put in an urgent request for pictures to show his men how certain terrain looked "at night forty minutes after the moon is down." When appalling weather grounded the regular photo-recon planes during the Volturno offensive, the whole Fifth Army, massed for the battle, waited for several days. Finally, unable to wait any longer, yet unwilling to advance without photo-recon, Maj. Gen. Lucian Truscott sent up a G-2 artillery-spotting Cub. It flew straight up the valley, snapping pictures as it went, and on the basis of those pictures the assault began.

These PIs assigned to army interpretation lose most of their air corps identity. They are attached to G-2, and for all practical purposes become ground troops, dodging bullets and living in fox-holes. They have to earn the respect of the infantrymen. They do earn that respect and Thomas reports that underneath

the doughboy's apparent hostility lurks a warm affection for the men who fly. The appearance over the beachhead of waves of bombers always gave a great boost to morale. The infantrymen used to look up and wince as the bombers ploughed through the flak, never once deviating from formation. More than once, when they saw a plane disintegrate in midair after a direct hit they were loud in praise of the airmen's courage. And one day, when a shot-up B-26 made a brilliant one-wheel landing in the beachhead, one could see the soldiers hunching their shoulders and gritting their teeth as they willed the pilot into a safe landing. When he made it, they jumped up on oil drums and cheered as if they'd been at a football game. So the interservice rivalry does not go very deep.

In planning an invasion, where ground reconnaissance is impossible, air photographs furnish an estimated ninety percent of the required information. And once an invasion has begun, the camera continues to prove far more reliable than maps which may be dated or inaccurate and which fail to show changes in enemy dispositions from day-to-day or hour-to-hour. One reason for the brilliant work of American artillery in the Italian campaign has been the intelligence supplied by PIs assigned to Army cooperation. As one captured German medical officer said bitterly, "where we use blood, you use ammunition."

And an important part of that ammunition is the interpretation of aerial photographs. ☆

PACING THE ATTACK

(Continued from Page 3)

about 250 enemy fighters, 66 of which were claimed destroyed. On July 25, bombing the Hermann Goering tank works at Linz, Austria, they again encountered stiff opposition and shot down 65, losing 19 bombers and two fighters. On both days, British-based heavies were employed on tactical targets, allowing Jerry to concentrate his full strength, such as it was, on the invaders from Italy.

There was considerable discussion in the American press as to the wisdom of pulling the big bombers off strategic targets, even occasionally, to give close support to ground troops. To an observer recently returned from the ETO, in fact, the agility displayed by some of the air experts at jumping to instantaneous conclusions was quite amazing. But the question was beginning to seem academic. The truth was that the Allied air forces could now dispose sufficient strength to meet all tactical requirements and maintain strategic bombing too.

This was the happy state of affairs that prevailed as the second anniversary of American participation in the European air war drew near. In August, 1942, twelve Fortresses had made the first stab at the Nazis, bombing the marshalling yards at Rouen. In August, 1944, after two years of bitter fighting and heartbreaking effort, the U. S. Air Forces and their British allies were dominating the skies and were pacing the ground assault upon crumbling Fortress Europe. ☆

Snow, Sand and Sarongs

Deserts aren't necessarily hot spots the whole year round. In winter, the Gobi (Mongolian for "desert") goes arctic, sometimes turning on a temperature of fifty below. Yet the Gobi is at about the same latitude as the Crimea, Romania, northern Italy and northern Spain. One reason for the discrepancy is that the Gobi is inland while the other areas are near bodies of water.

☆

Standard exchange items among many of our souvenir hunters in the New Guinea area are props from downed Vals and Bettys, two-toed Jap sneakers and enemy "monee"—occupation shillings and gulden.

☆

New Zealand isn't away on the other side of the world as some people think. Actually it's directly south of the outer Aleutians, near the 180th meridan.

☆

Did you know that both Normandy and Newfoundland are equally far north? Also on or about the 50th parallel, reading from west to east, are Prague, Kiev, Kharkov, the split between Japanese and Soviet Sakhalin, Paramushiru, Amchitka (in the Aleutians) and Seattle.

☆

Among Ifugao tribesmen in the Philippines, men involved in an adultery case settle their differences by dueling—not with swords or pistols but with eggs. Our information does not state the required number of paces nor limits on the age of the weapons.

☆

Some South American tribes mix the sap of the sandbox tree with sand or earth, toss the mixture into a pool of fish and wait for death to strike their quarry. Sandbox sap irritates man's skin and eyes and takes careful handling. But the poisoned fish are safe to eat.

☆

On the Jap-mandated island of Ponape in the Carolines, there are three main levels of speech: one for the commoners, another for the upper crust and a third for the most high. "Nose" is tomwe, kaununi or ajijapwi, in rising order. Perhaps an appropriate translation would run schnozzle, beak and proboscis.

☆

It's true that at high altitudes, where it's colder than we like to imagine, electrical commutators are affected by the heat. The air is so thin it can't conduct heat away from the apparatus. That's bad for the brushes, and you get arc-over.

☆

Eskimos, Indians and whites of Aklavik, 125 miles north of the Arctic Circle, chipped in the price of a blood donor truck. The Red Cross will use the truck to drum up trade in northern Alberta. Plasma from the arctic may end up saving lives in the steaming tropics.

☆

In South America some rivers start less than 200 miles from the west coast, but travel 3,000 miles to reach the South Atlantic. The Andes get in the way.

☆

A thousand years ago the "torrid zone" and the "frigid zone" were considered uninhabitable by man or beast. It was a case of either too hot or too cold.

☆

Fewer than half of living Eskimos have ever seen an igloo or snow house, and fewer than a quarter use them, then usually as only temporary shelters in traveling.

ARCTIC, DESERT AND TROPIC INFORMATION CENTER

AAF WOMEN'S ACTIVITIES:

FOR THE SMALL FRY

Keeping the Kids. Newest addition to the Orange Villa military housing project at Orlando, Fla., is a day nursery built by the AAF Tactical Center for children of working mothers.

Servicemen's wives engaged in defense jobs or volunteer work can now leave their youngsters in this modern fireproof Community House, secure in the knowledge they will be cared for by trained supervisors.

A variety of children's play facilities abounds in the Community House where boys and girls between two and six spend their recreation hours. Meals and rest periods are taken in two nearby housing units, each consisting of two separate three-room apartments.

Trained nurses, dieticians and kindergarten teachers under the supervision of the Orange County Board of Public Instruction are on duty from 0730 to 1730 daily. Federal funds provide equipment, maintenance and staff salaries, and the $2.50 weekly charge per child covers cost of food.

AAFTAC officers' wives and enlisted wives' clubs furnish volunteer workers from their membership to assist in the nursery.

Toys for Bomb Victims. Six hundred toys made from scraps of leftover cloth by AAF wives in Asheville, N. C., have been shipped to children blinded and maimed by Axis bombings in Britain.

The idea began when Mrs. S. N. Lapsley, one of the AAF Women's Club members and who is a nationally known doll collector, saw possibilities of making use of bits of material left over from clothing renovations at war relief workrooms. Officers' wives enlisted the help of the city's Girl Reserves, wives of enlisted personnel on the post, and children as young as six years old to assist them in the toy-making project.

Reports say that British children have gone into raptures over cuddly white lambs with bells on their necks, dolls with braided hair and hand-painted faces, elephants, bean bags—produced by the youngest of the workers—and even a purple velvet zebra complete with internal music box which plays "Brahms Lullaby" when you pick him up. Toys are shipped overseas by Bundles for Britain to two hospitals for children in the UK and to other places where there is need for them.

For the Record: Hi, Pop! Women volunteers at Fort George Wright, Wash., don't miss any tricks where the AAF's junior division is concerned. Almost as soon as baby's first howl announces his debut into the AAF fraternity, women have wheeled a recording machine into the hospital's maternity ward. Junior's screeches—sounding like no other baby's cries, of course—are faithfully recorded on the "waxes" and shipped post-haste to the proud father overseas.

"I'm four—but mother's working and daddy's on duty and couldn't come—" explains young Susan. Nevertheless the Hendricks Field, Fla., nursery saw that she had a party.

Couvert. Speaking of children, the Red Cross volunteers of Spokane Air Service Command have solved the ever-present problem of what to do with babies too young to feed and dress themselves while mothers roll bandages at the club. Lois Winston, one of the volunteers, acts as chief nurse, and has several nursemaids to assist her. "Cover" charge is 25 cents. ☆

TRAINING AIDS

Weather Textbook

A new textbook has been compiled for weather instruction of aircrew trainees. Designated AAF Manual No. 6—"Weather for Aircrew Trainees," it supersedes TM 1-232 —"Basic Weather for Aircrew Trainees," 22 April 1943.

Use of the new book is supplemented by lectures, daily meteorological observations, map reading, teletype operation and quizzes. The manual contains many functional illustrations and a set of questions follows most sections.

Basic weather, a knowledge of which is required of every aircrew member, is covered in the first ten sections of the book. The next three are concerned with the hazards of cloud formations and the concluding section is an introduction to climate on a global scale.

Training Films Released

Bombing, gunnery, ditching and loading techniques are the subjects of six training films released since publication of the most recent catalog:

Bombing Computers (TF 1-3333) explains the characteristics, similarities and differences of the E-6B and ABC computers, and demonstrates the proper operation of each in high-level precision bombing. Released 1-18-44. Running time—25 minutes.

Combat Bombing Procedures (TF 1-3334) details high-level precision bombing methods in terms of preliminary preparations, preflight inspections, take-off adjustments, flight adjustments and calculations and target-area action. Released 1-18-44. Running time—22 minutes.

Position Firing (TF 1-3366), also an animated-drawing strip, shows a fighter plane's curve of pursuit and the motion imparted to a bullet by forward movement of a bomber. Application of the rules of position firing is presented in diagrams. Lead requirements against all attacking planes also are graphically described. Released 3-10-44. Running time—14 minutes.

Ditching Without Hedging (TF 1-3634) explains the proper procedure for setting down land planes on water in emergencies. By use of aircraft models, animated diagrams and action shots, the film covers the subjects of sea recognition, wind velocity and proper trim, speed and approach with single-engine and multi-engine planes. Released 12-29-43. Running time—22 minutes.

Ditching: Before and After (AF-112) demonstrates the approved method of crash-landing a C-46 on water and details the duties of a crew in such an emergency. The strip also explains how to launch and enter a Type A-3 five-man life raft, describes the location and use of the raft's special equipment and portrays proper regulation of life aboard a raft. Released 1-31-44. Running time—35 minutes.

Loading (TF 1-3348) depicts, through animated drawings, the effects of unbalanced cargo in a B-26, and demonstrates, by use of models, procedures in maintaining weight and balance control in the plane. Considered are basic weight of the plane, center of gravity, datum line, arm and moment, load adjuster slide rule, weight and balance check list and the pilot's diary. Released 1-28-44. Running time—18 minutes.

Pilotage Navigation Trainer

A device has been perfected for ground training of students in the principles of map reading and dead reckoning navigation.

Known as the Pilotage Navigation Trainer, it is used with a projection screen, in the center of which is a small silhouette of an airplane with nose pointed upward.

A positive plate in black and white, showing a portion of the earth's surface as viewed from an airplane, is flashed on the screen and moved to create the impression that the silhouetted plane is moving across the terrain. Indicators on the sides of the screen show the speed and heading of the plane.

Each student is supplied with a map of the area, of which the screened section is a part. By referring to the individual maps and the screen, the students are required to determine the exact geographical location of the plane. Thus valuable training in map reading is received.

Knowing the point of departure and the heading, speed and location of the plane, the students then are required to ascertain the wind speed and direction by employing principles of dead reckoning navigation.

The design for the Pilotage Navigation Trainer was originated at San Marcos, Texas, by Capts. Willard D. Tullock and John P. Paup and W/O Richard Koopman. ☆

Get the most out of film strips by following these simple points:

Be familiar with the content of the training film before you show it to an audience. Know the subject matter covered and how the information is arranged for presentation in pictures and text.

Prepare your audience for viewing the strip before screening it. Explain the purpose of the film and its relationship to the training program, and outline the salient points which must be digested.

No special lecture is required while the film is being shown. The strip is so arranged that its pictures and text unfold the information in logical order. Read the text aloud and call particular attention to all the important points.

As pilotage navigation trainer projects aerial view of terrain on screen, the silhouetted plane appears to be in flight.

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.

B-29 (Continued from Page 8)

from the Air Staff in analysis of bombardment operations and evaluation of bomb-damage assessment.

Our men were enthusiastic in their training, eager to learn their tasks, itching to be on their way to combat. They liked their planes. They liked their organizations. Each and every one of our GIs and officers had contributed to the building of our first tactical B-29 unit. As training progressed, excitement about our combat assignment increased.

A conference was held in General Arnold's office on December 21. After outlining our progress to the General, who was to be in command of the 20th Air Force, I was started on my way when he said: "You had better get over there yourself. Think you can make it by Sunday?"

After my arrival in India, the entire staff back in Kansas was officially apprised of our theatre of operations and our mission for the first time. We would operate from rear bases in India, forward bases in China, and our targets would include the islands of Japan and some areas in Manchuria.

During the next few weeks, our maintenance squadrons and the depot group for our rear echelon bases were shipped out of the States. Supplies were 98 percent at the embarkation port by the middle of January, when a letter reached me from our A-4 advising: "You have coming to the theatre enough supplies to cover about 150 acres piled 100 feet high . . ." And this represented only our initial requirements.

Working with Maj. Gen. George E. Stratemeyer, commanding the AAF in the India-Burma sector, Maj. Gen. Howard C. Davidson, commanding the 10th Air Force, and Maj. Gen. Claire L. Chennault, commanding the 14th Air Force, we devoted our attention to constructing new airbases in India and China, solving logistical problems, stocking up our depots and acclimating personnel.

To expedite delivery of needed supplies from India to China, a number of C-87s were assigned by ATC as cargo carriers for the B-29s. C-46s later supplemented this force. However, the supply requirements of the advance China bases were so great that, after their arrival in April, B-29s flew thousands of tons of gasoline, bombs and supplies over the "Hump" for their own use. These flights did not interfere with regular ATC commitments to the 14th Air Force because the B-29s flew directly from their India base to their China bases without landing on any of the crowded fields of the India-China wing of ATC.

In February a depot group, assigned to the B-29s for third and fourth echelon work at our rear bases, arrived in India. Maintenance squadrons docked during the following two months and prepared for the arrival of our air echelon at bases being rushed to completion by engineers and Indians.

Back at Salina, late in March, the last of our quota of planes was delivered to the crews. As rapidly as planes could be loaded with engines and spare parts, they began sifting out of the country, each with a complete combat crew.

First plane to reach India was that of Colonel Harman, who settled the big plane down on the runway of our dry and dusty base on April 2. As others arrived on succeeding days, we again resumed our training program.

Keeping our planes in commission was a major problem. During the day they were peppered with hot, dry, dusty winds, and at night they were drenched by the humid atmosphere. Air crews joined ground crews in their constant maintenance and repair work for all were eager to put in more flying time before the big show started.

Whenever possible during the next two months, we would load up the Superfortresses with bombs and gasoline and fly non-stop to our bases in China, building up a reserve of supplies for our first missions. This flying—a distance of more than 1,000 miles at an altitude above 22,000 feet—provided crews with excellent operational flying experience in the theatre long before our first mission was scheduled.

Only once did Jap fighters attempt interception. Five of them made passes at a B-29 over the Hump but they inflicted no damage. When under fire, one of the enemy planes fell out of control and in flames into the clouds below. The B-29 was credited with a probable.

By the first of June, just one year after our B-29 unit was activated, we were ready to fly our first tactical mission. Bangkok, Thailand, the rail and shipping funnel for Jap military supplies to Burma, was selected as our target on the shakedown mission. This was the dress rehearsal, the critical mission that would give us the final information on the capabilities and limitations of our crews and planes.

Early on the morning of June 5, scores of B-29s roared down the runways, soared into the hot, humid air of a monsoon daybreak over India. Weather was bad, making formation flying virtually impossible. Navigators and pilots and flight engineers sweated out one of the toughest flights they had ever made. Over the target, they found 7/10 cloud cover. They dropped their bombs and fought off a small attacking force of nine Jap fighters between 20,000 and 25,000 feet, scoring one probable and two damaged. Flak was heavy but only one B-29 received a minor hit, in the tail.

The mission was an operational success. We were ready to launch our attacks on Japan.

On June 15, as summer twilight settled down, our B-29s lifted their wheels off the runways of our Chinese bases with bombs for Japan. Many of our crews personally were avenging the Jap attacks of December 7, but strategically we were doing even more—we were ending forever the immunity of the Jap homeland from destruction by our bombs.

Many hours later, our radio operator at the home base waved his arms and shouted, "Betty! Betty! Betty!"—the code word we all were waiting to hear.

Our B-29s were over the target. It was bombs away on Japan. ☆

Prodded along by native drivers, oxen teams haul freshly cut logs in two-wheeled wagons across a partially completed runway in India.

THE LAW CAN HELP YOU

By Brig. Gen. L. H. Hedrick

The Air Judge Advocate

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

CHANCES are that somewhere in the great assortment of federal and state laws relating to servicemen and their dependents, there is an answer to your particular financial or legal problem, whether it be a current problem or one likely to arise after your discharge.

These statutes cover all manner of difficulties confronting or likely to confront service personnel and veterans — leases, installment purchases, court proceedings, interest, insurance, taxes, education, loans, employment, unemployment compensation and mustering-out pay.

The purpose of this article is to explain, briefly, what these statutes mean to you. Obviously, the field cannot be covered in so short a space, but we can indicate at least the extent of these efforts on behalf of service personnel, giving some details of the more important provisions.

Many statutes benefit servicemen and their dependents. Your legal assistance officer will tell you whether they answer your particular problem.

If, after reading this article, you think there might be help for you in these laws, you may get additional information by consulting the legal assistance officer at your station. He will be glad to study your case and advise you. On the other hand, if there isn't a legal assistance officer where you are stationed, you may write direct, stating your problem fully, to The Air Judge Advocate, Legal Assistance Division, Washington 25, D. C.

☆

Primarily, the Soldiers and Sailors Civil Relief Act is intended for the individual whose income has been reduced substantially by reason of his entering military service. If a soldier finds that because he is in service he no longer is able to meet obligations incurred when he was a civilian, this law is important to him. It should be understood that no obligations are actually written off. In many cases, it does permit postponement of obligations.

Court Proceedings. This legislation gives the courts, both federal and state, an unusual degree of latitude in relieving hard-pressed service men and women from the normal penalties for non-payment of debts or non-fulfilment of contractual obligations. Specifically, if a soldier is made defendant in a court action and is unable to appear in court, the court will appoint an attorney to represent him and protect his interests. If judgment is rendered against the soldier, he will have an opportunity to reopen the case and present his defense, if meritorious, within ninety days after his discharge from active service.

Courts throughout the country, both federal and state, are given the authority to postpone proceedings to which a soldier is a party and in which he is unable to participate by reason of being in military service. Execution of judgments, attachments and garnishments may likewise be postponed. The maximum period for such postponements is the period of military service plus three months.

Rent. If a serviceman's dependents occupy a house renting for $80 a month or less, the landlord may not evict them without court authority. And even then, provided it is shown that military service is responsible for the tenant's inability to pay, the court may delay the eviction proceedings as long as three months. By giving written notice to the landlord, a soldier may terminate a lease he entered into prior to induction on a dwelling, business establishment or farm.

Installment Purchases. Court action is necessary before a merchant is permitted to repossess an article of personal property sold to a soldier prior to his induction, provided a deposit or installment payment has been made. And if repossession is authorized, the court may require the seller to refund all the soldier has paid or to delay actual repossession until three months after the soldier is discharged.

Interest. A ceiling of six percent per year is placed upon the interest on obligations incurred prior to military service, provided again the soldier's ability to pay has been reduced considerably by entering the service.

Insurance. Provision is made for the government to guarantee premium payments on commercial life insurance up to $10,000 held by a soldier prior to military service. It should be emphasized that this is only a guarantee. That is, upon application by the policy holder, the government will agree to pay the premium if the insured person is unable to pay it. If, under such an arrangement, the government pays the premiums, the policy holder will owe to the government the amount advanced for him. An application blank for this guarantee may be obtained by writing to the Veterans Administration, Washington, D. C. A separate application should be submitted for each policy.

Taxes. If a soldier, because of reduced income, finds himself unable to pay his state or federal income tax, he may postpone payment until six months after his discharge. This relief may be had upon application to the appropriate U. S. Collector of Internal Revenue or to the state tax collector.

The personal property of a soldier or his home, business or farm may not be sold to enforce collection of taxes on such property without court action, and the court has authority to stay the proceedings until six months after the delinquent taxpayer is discharged from the service.

As a further protection, it is provided that, for tax pur-

poses, a serviceman does not become a resident of a state other than his home state merely by being stationed there.

(A more detailed explanation of the tax laws as applied to military personnel will be given in a later article.—Ed.)

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A soldier is entitled to National Service Life Insurance of $1,000 to $10,000 without a physical examination if he applies for it within 120 days after entering the service. Thereafter, any person on active duty is eligible if his application is accompanied by evidence of good health. Monthly payments may be paid in cash or by allotment of pay. This insurance is against death only. It may be converted to ordinary life, 20-payment life or 30-payment life by application to the Veteran's Administration without medical examination after the policy has been in effect for a year. This insurance may be made payable only to a widow or widower, a child, a parent, brother or sister. The insured may change the beneficiary at any time. While policies are not issued during the war, an insurance certificate is mailed to the address designated by the applicant.

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The GI Bill of Rights, officially known as the Servicemen's Readjustment Act of 1944, is an effort to mitigate the difficulties that men and women will encounter in readjusting themselves to civil life after they are discharged. It provides for education, employment, unemployment compensation, and loans to help a returning soldier stock a farm, build a home or establish a business. Generally, the benefits of this act are limited to those who are discharged from active service under conditions other than dishonorable.

Education. A soldier whose education was interrupted when he entered the service is eligible after discharge to resume his education at the expense of the government. Refresher or retraining courses also will be available at government expense. These benefits are limited to those who have served as much as ninety days or who have been discharged earlier by reason of service-incurred physical disability. A veteran may resume his education at any time within two years after his discharge or within two years after the war ends, whichever is the later date. In some cases, veterans of this war will be entitled to four years of training at government expense. The veteran may choose his school, subject to approval by the Administrator of Veterans' Affairs.

The student will receive a government subsistence allowance of $50 a month, $75 if he has dependents. Up to $500 a year, the government will bear the full amount of the tuition, plus the cost of books and supplies. The expense of board and lodging comes out of the subsistence allowance.

Extensive preparations are being made for the vocational rehabilitation of men and women who receive injuries which prevent them from returning to their normal occupations.

Guarantee of Loans. If a returning soldier obtains a loan to buy or build a home, to buy a farm or to establish a business, the government will guarantee fifty percent of the amount of it up to a maximum guarantee of $2,000. The same provision is made for loans to pay off delinquent indebtedness, taxes or special assessments on residential property already owned by the discharged soldier or to repair or improve such property. This guarantee is limited to loans on which the interest rate is four percent a year or less.

Employment. Local U. S. employment offices will register veterans and help them get jobs. It will be the function of a veterans' employment representative assigned to the U. S. Employment Service in each state to maintain current information on job opportunities by constant contact with employers, to encourage the employment of veterans and to assist in improving the working conditions of veterans.

Unemployment Compensation. A "readjustment allowance" will be payable to unemployed veterans who have as much as ninety days of active service or have been discharged earlier for physical disability. To be eligible, a veteran must be registered with and report regularly to a public employment office. He becomes ineligible if he gives up a suitable job or is discharged for misconduct, if he declines suitable work when it is offered to him, or if he fails to attend an available free training course.

If the veteran is totally unemployed, the allowance is $20 a week, payable for a maximum of one year. However, if he earns wages of more than $3 per week, the unemployment allowance is reduced by the amount of the wage.

The number of weeks for which the veteran is eligible for allowances is dependent upon his length of service. For ninety days' active service, he is entitled to 24 weeks of compensation, and for each additional month of active service he is eligible for four additional weeks of allowances. Thus, a man who served four months in the Army is qualified for 28 weeks of allowances, one who served five months is qualified for 32 weeks of allowances, and so on up to ten months of service for 52 weeks of allowances.

The readjustment allowance is payable not only to those who seek employment, but also to those who have businesses of their own which net them less than $100 a month. If a veteran is his own employer, he must show that he devotes full time to his private business. His allowance will be $100 a month minus his net earnings for the previous month.

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To assist the returning veteran further during the period between his discharge and the time he gets established in a civilian occupation, Congress has enacted a measure known as the Mustering-Out Payment Act of 1944. A serviceman or woman who has served sixty days or more and has been stationed outside the continental United States will receive $300 at the time of discharge. Those who have not served overseas but have more than sixty days' active service will get $200. Those who have served less than sixty days, overseas or not, will be paid $100. These benefits are limited to those whose Army base pay at the time of discharge is $2,400 a year or less. That means, generally speaking, captains and under.

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Many AAF officers will be entitled to bonuses of $500 for each year of active duty. This is provided by the Aviation Cadet Act of 1936 as amended. Each claim must be decided on its own merits at the time of separation from the service. One who receives this bonus is disqualified for mustering-out pay.

☆

We have touched only the high points of the federal assistance laws for men and women in uniform. We have examined just enough to indicate the breadth of the subject. Add to all this the great volume of state legislation relating to military personnel and their dependents, and you have a whole new field of law.

To apply these statutes to your particular problem, you will need more detailed information. Take your problem to your legal assistance officer. ☆

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.

Flight Information Panel

Operations procedures at Mather Field, Calif., are simplified through use of a flight information panel. A pilot needs only to press a button and he is supplied with most of the essential information required for a flight.

A desk push-button panel includes the names of 32 fields most frequented by Mather pilots and transients. When the pilot presses the button representing his destination, a ground-glass screen overhead flashes the numbers of regional and sectional

maps needed, magnetic course direct, mileage direct, mileage airways and the tower frequency at the intended landing field.

Weathermen control a system of switches behind the panel which indicates whether the flight must be made on instruments or contact. If the message is flashed on the screen in green the pilot knows weather is contact. A red message indicates instrument conditions.

The indicator panel is divided into 32 sections housing a red and green light. A stencil bearing the flight information is placed in front of each station. When the circuit is completed the information is projected on the ground glass in red or green, depending on how the weatherman has placed the two-position switch.

The device, developed by Mather Field's training aids laboratory, can be constructed to provide information for flights to as many fields as local operations require.

Parachute Training

Parachute landing injuries will be held to a minimum if the Training Command has anything to say about it. A new landing technique course has been launched for aircrew trainees and permanently-assigned aircrews at selected stations in the command.

The course is taught during regular physical training periods. Thus aircrews receive valuable instruction without an already crowded schedule being increased and considerable interest is added to PT class.

Based on methods devised by the Materiel Command's parachute section, the Office of Flying Safety and the Infantry's Parachute School, the course includes landing techniques proved best by experience. Approximately 18 hours is devoted to the basic and refresher sections of the course.

Crash Protection

While making an emergency landing in a blazing P-47, the pilot received first and second degree burns of the face and hands. Before landing he had removed his gloves and goggles but replaced his mask to use the radio. Since the mask kept the flames from his face only the upper part was burned.

Medical safety officers point to this case as an example of protection available to pilots in burning planes. If the body is covered, the severity of burns will be lessened. Gloves, goggles, helmet and oxygen mask should be used as protective covering whether or not they are needed for their normal use.

Safer Taxiing

Careless taxiing with resultant accidents and excessive brake wear presents a major maintenance problem. To correct this, the 1st Fighter Command has prescribed a taxiing course to be completed by all P-47 pilots before their initial checkout. New pilots are taught proper methods of negotiating fast and slow turns, sudden stops without lifting the tail and 180 degree turns without locking the inside wheel. Constant "essing" is stressed throughout the course.

Students involved in taxiing accidents are required to take a brake-steering course in dual-controlled planes before returning to flight duties.

Weather Indicator

Regional safety officers at the B-24 school, Chatham Field, Ga., reported a unique method for keeping operations and the control tower informed when the field is contact, on instruments or closed. Three colored lights—green for contact, amber for instruments and red for closed—are mounted in the operations office and in the tower. Weathermen control the switches for the lights which flash an immediate warning when conditions change.

Proper-Size Chocks

Forms 14 show that many minor, though expensive, accidents are caused by planes jumping chocks during engine checks and run-ups. The situation is especially bad where faulty brakes or careless operators are involved.

Regional safety officers point out that the hazard can be removed by using proper-size chocks for the particular type of plane being checked. Handy small chocks may be used for light, low-powered planes, while much larger chocks are required for powerful fighters and multi-engined planes.

Performance Award

To encourage safer operations and better maintenance, the engineering section at Reno AAB, Nev., conducts a picnic and fishing outing for the hangar crew whose safety and inspection record is judged the best each month.

Judges consider the available flying time on each hangar's planes, accident prevention efforts and general appearance, using the merit and demerit system of grading.

An honor flag flies over the current prize-winning hangar.

'Your Safety Harness'

An AAF motion picture, now being released by the Training Aids Division, shows the proper use of safety shoulder harness.

A product of the combined efforts of the Office of Flying Safety, the Training Aids Division and the First Motion Picture Unit, the film explains the purpose of the harness and shows exactly how it should be used.

Procurement number for "Your Safety Harness" is TF 1-3391 and it may be obtained by requisitioning the Training Aids Division, 1 Park Avenue, New York, N. Y.

Mechs at Greenville Field, Miss., have been ordered by their commanding officer to pull chocks for a take-off only after the pilot shows he is wearing safety shoulder harness.

Strap Readjustment

Regional safety officers report they found many aircrewmen were wearing loose parachute harnesses. Fitted last winter over bulky flying suits, the straps had not been readjusted since the men changed to summer clothing. Jumpers may suffer serious injuries from the chute's opening impact if the harness is not fitted properly.

School for Survival

The pilot school at Chico Field, Calif., is making sure its graduates will know how to use emergency equipment if they are forced to bail out over water. Every trainee receives at least four hours of instruction in techniques for survival and rescue at sea.

The base swimming pool serves as the classroom. Simulated parachute jumps are made from the diving platform with the trainee wearing a Mae West and carrying a one-man life raft.

Students are taught correct procedures for extrication from a parachute harness, inflation of a life vest and life raft, use of emergency rations, treatment of minor ailments and escaping detection by the enemy. They also learn the different rescue methods employed in the several theatres of operations.

A similar course has been conducted by the water safety department of Boca Raton Field, Fla., for many months. Operations there, however, are on a larger and more elaborate scale. ☆

P. & I. SAYS:

(The Prevention and Investigation Division, OFS, is composed of veteran flyers. These reports include comments by these veterans on recent accidents. Read and heed.)

DAGGET, CALIF.—While flying CFR to Las Vegas an A-20 pilot without an instrument rating encountered instrument weather. He continued his flight into the overcast, crashed and was killed.

P & I COMMENT: Clearance regulations published by the AAF exist for the sole purpose of saving lives and airplanes. Pilots must obey them. When a pilot is cleared CFR he must fly contact. A 180 degree turn was the answer for this pilot. However, a pilot qualified to fly instruments may request a change of flight plan by radio and continue IFR when approval is granted.

STOUT FIELD, IND.—A pilot blew out both main tires in landing his P-39 when shortness of the runway necessitated his locking the brakes.

P & I COMMENT: The pilot should have used better judgment and landed at one of the more suitable fields nearby after he had observed that the only runway available at Stout Field was short and had to be approached over a high obstruction.

If fields along a flight route are unfamiliar to a pilot, he should check their landing facilities before he takes off. Such precaution is particularly essential when a high-performance plane is flown.

SAN FRANCISCO—Preparing for take-off the pilot of a P-39 noticed his landing-gear switch was in the "down" position and he flipped it toward neutral. When he started taxiing, the landing gear collapsed.

P & I COMMENT: It is clear that this accident was the result of the pilot's failure to school himself in the cockpit check practice. The switch was found to be in the "up" position, instead of neutral. Self-discipline would have resulted in correct cockpit procedure and prevented the accident.

DAYTON, OHIO—A ferry pilot flying a P-39 from Dayton to Nashville, Tenn., became hopelessly lost. Faced with a fuel shortage, he made a safe landing on a highway, refueled with automobile gasoline and took off. Ten minutes earlier, however, he had passed over a suitable airfield.

P & I COMMENT: Although the pilot displayed skill in landing and taking off from a highway, his flying-sense rating is practically zero. He elected not to land at the available airfield because the runways appeared shorter than those he was accustomed to using. His second choice, a narrow highway, was at best a very poor substitute. Furthermore, servicing a P-39 with automobile gasoline is risky business. Absence of accident in this case doesn't vindicate the pilot's judgment.

SALINE, MICH.—Vapor locks caused both engines of an A-20J to fail, necessitating a forced landing in which the pilot was injured.

P & I COMMENT: Investigators learned that the pilot had waited until the fuel in both auxiliary tanks had been exhausted and the engines had conked before he switched to the main tanks. They also found that he did not know the correct procedure for restarting the engines. There is no excuse for running tanks completely dry before switching. What besides air can the pilot expect to be sucked into the fuel lines?

TULSA, OKLA.—During the night, high winds over the airfield caused a C-47 to swing around and crash into a nearby A-20. Both planes were damaged extensively.

P & I COMMENT: It isn't always the pilot who makes the errors. If the C-47 had been properly secured, these planes would not have been damaged. Valuable man-hours, training time and air cargo space was lost because line crewmen goofed off. Pilots can help a lot by inspecting their planes carefully before leaving them for the night.

MINDEN, NEV.—A C-46 instructor-pilot decided to land quickly because of turbulent air. With a slight tail wind behind it, the plane came in high and its wheels didn't touch the ground until more than half the runway had been overshot. The plane wound up in a ditch past the end of the runway.

P & I COMMENT: This C-46 is now Class 26 because of a series of errors. First, the pilot should have pulled up and gone around. Second, too much pressure on the brakes at high speed burned them out immediately. Third, his attempt to ground-loop was foiled because the tailwheel was still locked.

LOUISVILLE, KY.—Coming in for a landing, a C-47 bounced 40 feet in the air twice, climbed steeply to approximately 400 feet, went into a spin and then crashed in a Cub parking area. Three men were killed, one was injured, the C-47 and five Cubs were burned and two L-2s were damaged.

P & I COMMENT: The surviving engineer said that the baggage had been shifted to a correct nose-heavy condition and that he and the radio operator had moved to the rear of the plane for the landing. It was found that one elevator control was still locked when the plane crashed. Thus, when the pilot tried to go around he could not correct the tail-heavy ship. A control check and a proper line check before take-off would have revealed the presence of the lock.

TULSA, OKLA.—A pilot landing a P-51 was unable to hold the plane straight on the runway despite the use of brakes. The plane swerved off the runway, damaging the fuselage and washing out the tail gear.

P & I COMMENT: Responsibility for the accident was charged to the ground crew which had checked the oleos. One oleo had been pumped too high. Relieved of the weight of the plane after take-off, the oleo was extended to its limit by internal pressure, with the result that the plane landed with one wing far above the other. After its oleos have been pumped up, a plane should be taxied and re-inspected before take-off. This is particularly essential in checking fighters.

ROLL OF HONOR

A MONTHLY RECORD OF DECORATIONS AWARDED TO PERSONNEL OF THE ARMY AIR FORCES

MEDAL OF HONOR

Howard, James H., Lt. Col.

DISTINGUISHED SERVICE CROSS

Harriet Harold T., Lt.
Heisberg, Wilfred G., Lt.

LEGION OF MERIT

Agan, Arthur C., Col.
Andrews, Edwin A., Capt.
Arnold, William H., Lt. Col.
Auld, Harry C., W/O
Bisselberg, Harley A., S/Sgt.
Ellis, Melvin R., S/Sgt.
Hallock, Judson, Capt.
Hills, Philip K., Maj.
Kessler, Frank H., T/Sgt.
Montgomery, Samuel E., S/Sgt.
McMillian, Harold F., T/Sgt.
Neal, Philip A., Capt.
Oglesby, James H., T/Sgt.
*Pabst, John, Maj.
Pieper, John A., Capt.
Smith, Charles W., M/Sgt.
Stovall, William H., Col.
Theis, Frank J., T/Sgt.
Tiemann, Cordes F., Col.
Weitzenfeld, Richard W., Lt. Col.

SILVER STAR

Alito, Joseph F., S/Sgt.
Allbright, Lloyd V., S/Sgt.
Armor, John L., Capt.
Avant, Leslie W., S/Sgt.
Baker, Herbert W., S/Sgt.
Bell, Robert J., T/Sgt.
Bitner, John E., S/Sgt.
Brandeberry, Earl K., S/Sgt.
Brown, Burl L., S/Sgt.
*Brown, James L., S/Sgt.
Burgess, Walter D., S/Sgt.
Card, Warren G., S/Sgt.
Cartmill, Reece D., T/Sgt.
*Carves, John M., Lt.
Cecil, Floyd M., Capt.
Cerone, Aldo, Lt.
*Clark, Thomas P., Lt.
Cook, Orrin V., Lt.
*Cosper, Clyde W., Lt.
Cottam, Clifford C., Lt.
Craddock, Reynold C., Capt.
Davis, Emmett S., Lt. Col.
Davitt, William J., Lt. Col.
Dean, Zach W., Lt.
De Haven, Robert M., Lt.
Dennaud, John S., Lt.
Elkins, Lawrence M., Lt.
Fay, Edward A., Jr., Lt.
Fincher, Carl J., T/Sgt.
Foley, Bernard L., Lt.
Fox, Robert K., Lt.
Franklin, Thomas W., Lt.
Garvin, James F., Lt.
Gibson, Lem, T/Sgt.
Gilmore, William F., Maj.
Ginn, C. L., Lt.
Greene, George R., Capt.
Greenhalgh, Richard, Lt.
Hallett, Robert H., Capt.
Hamner, Melvin L., S/Sgt.
Hargensheimer, Frederic G., Capt.
Harnage, William R., S/Sgt.
*Harris, Frederick A., Capt.
*Harrison, Stewart F., Sgt.
Hatcher, Joseph H., T/Sgt.
Hawkes, Alfred J., T/Sgt.
Hensley, John P., Lt. Col.
Hungerpiller, James A., Jr., Lt.
James, Carlos E., S/Sgt.
Jewell, Kenneth G., Lt.
Johnson, Stanley W., Lt.
Jones, Emmett, T/Sgt.
Kemp, Harold J., S/Sgt.
Keyes, Woody H., Jr., Lt.
Kinsinger, Harold L., Lt.
Knight, Dewitt T., Jr., Lt.
Kuhlmann, Lawrence E., Lt.
Little, Homer F., Lt.
MacDonald, Charles H., Lt. Col.
McClure, Kenneth D., Lt.
*McMann, Jack D., T/Sgt.
Machey, William C., Lt.
Maitland, Herbert I., Lt.
Manuel, Gordon A., Lt.
Maurer, Edward J., Jr., Capt.
Miller, Jesse C., T/Sgt.
*Miller, Robert H., Lt.
Miner, Leland E., Lt.
Moore, James W., Jr., S/Sgt.
Moore, Warren E., S/Sgt.

*Mueller, Wayne L., Lt.
Margado, Raymond, T/Sgt.
Nichols, James D., S/Sgt.
Oakley, Hilbert M., S/Sgt.
O'Brien, John T., Lt.
Odhner, Sanfrid E., Lt.
Ostler, Howard L., S/Sgt.
Parker, Robert, Lt.
Pavel, Elmer L., Lt.
*Pearson, William T., Lt.
Pugh, Joseph G., T/Sgt.
Renar, Milan, S/Sgt.
*Rensink, Henry C., S/Sgt.
Rice, Everett A., Lt.
Rosengard, Harry A., Lt.
Rouscolp, Philip J., Lt.
Savage, Robert T., Lt.
Shattuck, Lonnie C., Jr., Lt.
Sherman, Earl G., Lt.
Shoop, Jay I., Lt.
Smith, Billy H., Jr., S/Sgt.
Smith, Richard E., S/Sgt.
Stalone, Thomas G., T/Sgt.
*Tenczs, Fred J., S/Sgt.
Tidwell, Jesse A., S/Sgt.
*Toth, Stephen P., Lt.
Warner, James A., Lt.
Wenige, Arthur E., Lt.
Wilbrecht, Erwin L., S/Sgt.

2ND OAK LEAF CLUSTER TO SILVER STAR

Bullis, Harry J., Maj.

OAK LEAF CLUSTER TO SILVER STAR

Carroll, Joseph A., S/Sgt.

DISTINGUISHED FLYING CROSS

Adams, Allen D., Capt.
Adams, John C., Lt.
Ahl, William M., Jr., Lt.
Ahlgren, Russell R., T/Sgt.
Ahlquist, Gerald R., Lt.
Ahmann, Everett L., S/Sgt.
Aitken, John, Jr., Lt.
Akey, J. C., S/Sgt.
Alber, George D., Lt.
Arnold, Milton W., Col.
Aubrey, Eldred L., S/Sgt.
Baier, Raymond W., Lt.
Barger, Thomas J., Lt.
Barnett, Earl R., T/Sgt.
Barnett, Thomas J., Sgt.
Barney, Charles H., Sgt. (& 2 OLC)
Barnhart, Albert B., Sgt.
Barnhill, George D., Lt.
Barnum, Eugene E., Jr., Lt.
Barne, Ernest F., S/Sgt.
Baroe, Frank, S/Sgt.
Barr, Edward M., Lt.
Barr, Sam L., Capt.
Barraclough, Edmund L., Lt.
Barrall, Robert W., Lt.
Barret, Maxwell P., Lt.
Barrow, Leonard J., Jr., Maj.
Barry, John J., S/Sgt.
Barry, Robert H., T/Sgt.
Barry, William H., S/Sgt.
Barstow, Ronald S., Lt.
Baughman, Roy D., T/Sgt.
Beckham, Walter C., Capt.
Belongia, Blair G., Capt. (& OLC)
Bennett, B. L., S/Sgt.
Bennett, Robert H., Lt.
Benoit, Gerand C., S/Sgt. (& OLC)
Bensel, Robert P., Lt.
Benson, Frank T., Lt.
Benson, Harry L., S/Sgt.
Benson, Harry O., Lt.
Benson, Roland, S/Sgt.
Bentley, Clark M., S/Sgt.
Berbaw, Joseph J., Capt.
Berkowitz, Jack M., Lt. (& OLC)
Berletis, Leland G., Lt.
Bernard, Robert J., Lt.
Bernard, Roger J., Lt.
Bernick, Robert L., T/Sgt.
Berring, Louis P., S/Sgt.
Best, Ezra, Maj.
Bickett, Kenneth R., Lt.
Boothe, Harry J., Lt.
Borden, Edward F., Lt.
Bordes, Robert E., T/Sgt.
Boren, Thomas L., Jr., Lt.
Boring, Wallace D., Capt. (& OLC)
Borlik, Edwin J., T/Sgt.
Boulware, Thomas M., Lt.
Bourdon, Louis P., S/Sgt.
Bower, William M., Lt.
Bowles, Charles W., Col.
Bowman, Chester E., Lt.
Bowman, Otto R., Lt.
Bowman, Patrick, Lt.
Bowman, Vergil E., S/Sgt.
Bowyer, Robert K., Lt.
Box, Paul L., Sgt.
Boyd, Alton G., Lt.
Boyd, Benjamin M., S/Sgt. (& 2 OLC)
Boyd, Billie B., Jr., S/Sgt.
Boyd, Raymond W., S/Sgt.
Boyd, Richard G., Lt. (& 2 OLC)
Boyd, William H., Cpl.
Boyd, William N., Sgt. (& OLC)
Boydston, J. C., S/Sgt.
Boydston, Robert S., Lt.
Boyer, Arthur M., S/Sgt.
Boyer, Clarence W., S/Sgt.
Boyle, Fred E, T/Sgt.
Boynton, Robert A., T/Sgt.
Bozman, William A., T/Sgt.
Bracey, Richard M., Lt.
Brackman, Edgar W., T/Sgt.
Bradbury, Joe E., Lt. (& OLC)
Braddock, Edward I., Lt.
Braden, Merle S., Lt.
Braden, Ralph W., Sgt.
Bradford, Nathan T., Jr., Lt. (& OLC)
Bradford, Wallace W., Sgt.
Bradley, James L., Jr., Lt.
Bradley, James M., Lt.
Bradley, James N., Lt.
Bradley, James O., Lt.
Bradley, John H., F/O
Bradley, Kenneth L., S/Sgt.
Brannan, Anthony N., Jr., Lt.
Brinski, Frank J., T/Sgt.
Brinton, George A., Lt.
Briscoe, Carroll D., Lt. (& OLC)
Briscoe, Tommy A., Lt.
Bristow, Sebron D., S/Sgt.
Brittain, James A., S/Sgt.
Brittain, William D., S/Sgt.
Brittenbach, Robert G., Lt.
Brittin, George F., Lt.
Britton, Hubert L., S/Sgt.
Brooch, William G., Lt.
Brooke, Raymond W., Lt.
Brown, Edward W., Lt.
Brown, Ellis L., Capt.
Brown, Eugene B., Lt.
Brown, Galen A., S/Sgt.
Brown, Gerald M., T/Sgt.
Brown, Paul, T/Sgt.
Brown, Quince L., Lt.
Brown, Ralph O., Capt.
Brown, Rex N., T/Sgt.
Brown, Robert E., Lt.
Brown, Robert N., Lt.
Brown, Robert O., Lt.
Brown, Virgil E., S/Sgt.
Brown, Walter C., T/Sgt.
Brown, Willard W., Lt.
Brown, William, Lt.
Brown, William T., Lt. (& OLC)
Browning, Archie B., Lt.
Browning, George D., S/Sgt. (& OLC)
Browning, James L., F/O
Browning, Orville T., S/Sgt.
Broyles, Clayton, S/Sgt.
Bruce, Forrest D., S/Sgt. (& 2 OLC)
Bruce, Robert D., Jr., Capt.
Carroll, Virgil M., Lt.
Carroll, William T., Jr., Lt.
Carrozzo, Nick R., S/Sgt.
Carse, John E., S/Sgt.
Carson, Robert L., F/O
Carter, Cyrus F., Jr., F/O
Carter, Dean A., Lt.
Carter, James A., Lt.
Carter, James O., Jr., S/Sgt.
Carter, James R., Lt.
Carter, Levi H., T/Sgt.
Carter, Richard T., Lt.
Chenoweth, Harry M., S/Sgt.
Cherzelski, Michel, F/O
Christensen, Harold R., Lt.
Cox, Tom L., Jr., Lt.
Curren, Arthur T., Lt.
Day, William C., Jr., Lt. (& OLC)
Dougherty, Kenneth E., Lt.
Entrikin, William R., Sgt.
Egg, Ernest H., M/Sgt. (& OLC)
Erb, Theodore H., Maj.
Erdman, Elmer E., S/Sgt.
Erdman, Orville L., Lt.
Erhardt, John H., Sgt.
Erickson, Bertil C., S/Sgt.
Erickson, Clifford T., T/Sgt.
Erickson, Gordon J., T/Sgt.
Erickson, Melville A., Lt.
Ericson, Jack A. A., Lt.
Erwer, Roland R., S/Sgt.
Erskine, Evans, Lt.
Erwin, Elmer J., Lt.
Eshois, Jerry, S/Sgt.
Esquivo, Charles, Lt.
Essex, Herbert L., Sgt.
Estelle, Earl W., Maj.
Estes, Chandler B., Lt.
Estes, James A., Lt.
Estes, James T., Lt.
Estes, Jesse, S/Sgt.
Estes, Thomas Jefferson, Lt.
Etheridge, James E., S/Sgt. (& OLC)
Ewer, Walter C., Lt.
Evanoff, Alexander G., Maj.
Evans, Alfred D., Lt.
Evans, Anthony, Lt.
Evans, Charles M., S/Sgt.
Evans, Delbert T., S/Sgt. (& OLC)
Evans, Edward H., Jr., T/Sgt.
Evans, Emmett H., T/Sgt.
Evans, Floyd A., Capt.
Evans, Francis A., Lt.
Evans, Francis D., S/Sgt.
Evans, Frank B., Lt.
Evans, Harry W., Lt.
Evans, Henry W., Lt. (& OLC)
Evans, Paul G., Sgt.
Evans, Roy W., Capt. (& OLC)
Evans, Thomas, Jr., S/Sgt.
Evans, Vincent B., Lt.
Evans, William F., Lt.
Evanson, Ernest F., F/O
Everett, Harold J., S/Sgt.
Everett, Leroy B., Jr., Capt.
Evertsbusch, Fred S., Capt.
Evonuk, Eugene, Sgt. (& OLC)
Ewadinger, Vincent J., S/Sgt.
Ewbank, John N., Jr., Maj.
Ewen, Henry T., Sgt.
Ewers, Benjamin J., Lt.
Ewick, Harlan, Sgt. (& OLC)
Ewing, George W., Jr., Lt.
Ewing, John D., Capt.
Ewing, Richard E., Lt.
Eynaud, Emile A., M/Sgt.
Faahs, Alfred W., Lt.
Faber, Theodore A., Jr., Lt.
Fabiano, Peter R., Sgt.
Facteau, Leo G., Lt.
Fahrenhold, William W., S/Sgt.
Fair, Albert L., Jr., Lt.
Fair, Frederick E., Maj.
Fairbairn, Desmond N., Lt.
Fairchild, Rufus H., Lt.
Fairey, John P., S/Sgt. (& 3 OLC)
Fairman, Gordon P., Lt.
Falkowski, Stanley E., Lt.
Fall, James L., Jr., T/Sgt.
Falls, Paul S., Sgt.
Fallwell, John, Jr., Lt.
Falvo, Patsy J., S/Sgt.
Fannin, Richard L., Lt.
Fanning, Grover E., Lt. (& 3 OLC)
Fanning, Thorley L., Sgt.
Farabee, Harry J., Lt.
Farber, Paul Edward
Fargo, Marvin E., T/Sgt.
Farietta, Frank N., Lt.
Faringer, Leroy, Lt.
Farish, Floyd C., Jr., Lt.
Farias, Jack P., S/Sgt.
Farkas, William J., Lt.
Farley, Stanley B., Jr., F/O
Farley, Thomas J., Lt.
Farley, William E., T/Sgt.
Farmer, Joseph E., T/Sgt.
Farmer, Peryl L., Jr., S/Sgt.
Farness, Victor B., Lt.
Farnell, Leland B., Capt.
Farnworth, Stanley L., S/Sgt.
Farquharson, Albert B., Lt.
Farrar, James B., S/Sgt.
Farrar, John H., Lt.
Farrell, John R., S/Sgt.
Farrell, Lawrence C., Lt.
Farrell, Martin T., Lt.
Farrell, Roger J., Lt.
Farris, Charles G., Lt.
Farris, Ross W., S/Sgt.
Fasano, Joseph J., Sgt.
Fassign, Bertram L., S/Sgt.
Fassman, Leroy J., Lt.
Faurot, Henry, III, S/Sgt.
Fawkes, John E., Jr., Lt.
Fazio, John E., S/Sgt.
Fee, Andrew D., Capt.
Feenau, Lloyd J., S/Sgt.
Federie, Fred G., Lt.
Feders, Harold J., T/Sgt.
Fedyk, Andrew F., Lt.
Feeley, Edward C., Capt.
Feeney, Francis R., Maj.
Fehr, Charles F., T/Sgt.
Feilbach, Raymond F., Lt.
Feiler, William J., Capt.
Feille, Edward A., Jr., Lt. (& OLC)
Feldman, David, T/Sgt.
Feldman, Harvey C., S/Sgt.
Feldman, Joseph D., Lt.
Feldman, Leon, Lt.
Feldstein, Alex A., Lt.
Fell, Albert W., Lt.
Felton, George G., Lt.
Felton, George S., Capt.
Feltz, Albert L., T/Sgt.
Fenwick, Frank P., Lt.
Fershee, Thomas W., Capt.
Ferguson, Clay V., Capt.
Ferguson, Eugene R., Pvt.
Ferguson, Omar N., S/Sgt.
Ferguson, Robert M., Lt.
Ferguson, Roger W., Sgt.
Fernandez, Joseph P., Lt.
Fernstaedt, Robert H., S/Sgt.
Ferrare, Frank T., Sgt.
Ferree, Ralph J., Lt.
Ferrel, Frank C., T/Sgt.
Ferrell, Joseph C., S/Sgt.
Ferris, Dean C., Lt.
Ferris, William R., Lt.
Fetkiw, Paul, S/Sgt.
Fetrow, Richard V., S/Sgt.
Fetzer, William H., Cpl. (& 2 OLC)
Fey, Ernest O., T/Sgt.
Fey, Marvin W., Lt.
Fiala, Victor E., Lt.
Fibranz, John R., T/Sgt.
Fichthorn, Andrew R., Sgt. (& 2 OLC)
Ficken, Louis P., S/Sgt.
Fickler, Lloyd J., F/O
Fielder, Neal F., T/Sgt.
Fielder, William R., Sgt.
Fields, Leon, Lt.
Fields, Lloyd F., Capt.
Fields, Virgil C., Jr., Maj.
Fienup, Victor E., Lt.
Fierre, Trinidad, Pfc.
Fillp, John A., S/Sgt. (& OLC)
Finan, George K., Lt.
Finberg, Floyd, Capt.
Fincher, Floyd H., Lt.
Fincher, Gilbert G., F/O
Finesbriber, Kenyon A., Sgt. (& OLC)
Fink, Frank M., Lt.
Fink, Harold F., S/Sgt.
Finkiestein, Samuel, S/Sgt.
Finley, Austin, Lt.
Finney, George R., S/Sgt.
Finney, Robert, S/Sgt.
Fischang, William E., Sgt.
Fischette, Charles R., Lt.
Fish, Charles E., T/Sgt.
Fishbaugh, Fred C., Cpl. (& OLC)
Fishencord, Harold C., S/Sgt.
Fisher, Albert E., S/Sgt.
Fisher, Byron W., Lt.
Fisher, Dwight A., Lt.
Fisher, George P., S/Sgt.
Fisher, James A., T/Sgt.
Fisher, Kensel S., T/Sgt.
Fisher, Layton L., Lt.
Fisher, Melville W., Lt.
Fisher, Rodney W., Lt.
Fisher, Verl D., F/O
Fisk, Jack A., Lt.
Fissell, James R., S/Sgt.
Fitch, Frank C., Lt.
Fitzgerald, Edward P., Lt.
Fitzgerald, Harold, T/Sgt. (& OLC)
Fitzgerald, Wayne R., Lt.
Fitzgerald, William R., Lt.
Fitzgibbons, Maurice J., T/Sgt.
Fitzpatrick, Frederick J., T/Sgt.
Fitzpatrick, James D., T/Sgt.
Fitzpatrick, Robert L., Cpl.
Fitzpatrick, William A., S/Sgt. (& OLC)
Fitzwater, John L., Pfc. (& OLC)
Flack, Louis B., Sgt.
Flank, Nelson D., Jr., Lt.
Flack, Rudolph E., Maj.
Flagg, Walter Edwin, Capt.
Flaherty, Thomas A., Lt.
Flanagan, George E., T/Sgt.
Flax, Irving V., S/Sgt.
Fleck, Charles S., Lt.
Fleming, Edward F., Lt.
Fleming, Thomas G., Capt.
Fleming, Thomas J., Sgt.
Fleming, William W., S/Sgt.
Flesher, Robert Eugene, Maj.
Fletcher, David J., Lt.
Fletcher, Edward C., Capt.
Fletcher, Hugh R., Lt.
Fletcher, Lewis T., S/Sgt.
Fletcher, Moss K., Lt.
Fletcher, Ralph, T/Sgt. (& OLC)
Fletcher, Richard E., Lt.
Fletcher, Robert L., S/Sgt.
Flick, Carb L., Lt.
Fliener, Gilbert A., Sgt.
Flint, Knute W., Lt.
Flint, Luther E., S/Sgt.
Flockhart, John K., S/Sgt.
Flood, Edward C., Lt. (& OLC)
Flood, Emil F., Sgt.

(CONTINUED ON PAGE 51)

* Posthumous

CRASH FIRES

Fire chief, in charge of both fire fighting and rescue operations, orders firemen to open a path with fog sprays for the rescue members.

In crash fire fighting the right thing must be done in the shortest possible time; ignorance or indecision will be paid off in human life.

PRESENT methods of fighting airplane crash fires have evolved from hard and bitter experience, and the lessons learned should be known at every AAF base.

Currently working on standardizing fire fighting procedures are the Office of Flying Safety, Headquarters AAF; the Equipment Laboratory, Engineering Division, Wright Field, and the Corps of Engineers.

Key to the thinking of all these groups is "speed," for seconds count if men are to be saved from a burning plane. Improper location or use of the equipment, slow communications or ignorance of terrain around a base can cause these seconds to tick away irrevocably.

A widespread belief in the AAF is that foam—a heavy soapy, sudsy substance—is the principal agent used in crash fire fighting. Actually, foam plays a secondary role once fire has broken out. It is used mainly as a fire prevention measure for crash-landed planes or for smothering spill fires on ground surfaces.

The two principal agencies are fog, created by water under high pressure, and CO_2 gas, discharged from low pressure refrigerated tank trucks such as the Class 150 or so-called Cardox truck. Fog is more commonly used because of the comparative scarcity of Class 150 equipment.

The fog spray is developed by Class 155 trucks and Class 125 trucks, under pressures up to 750 pounds per square inch. The Class 135 truck also develops fog. Its maximum pressure is about 450 pounds, which does not furnish the extreme range or effectiveness of the other trucks.

While water fog is not as spectacular as the powerful straight streams usually associated with fire fighting, it is infinitely more effective in subduing an airplane fire. The myriad of tiny droplets presents an immense surface for absorbing heat and the transformation into steam limits the oxygen feeding the flames. Furthermore, the velocity of the

how to fight them

spray tends to wash away a portion of the inflammable fluid (the main function of the straight stream).

Extensive experiments show that the best method of reaching a burning plane is to drive a wedge forward with two hosemen stationed about eight feet apart holding the hose nozzles near the ground.

Streams from a second truck, another Class 125 or a Class 135 truck, supplement the two primary lines. These hosemen are stationed slightly to the rear and outside to provide protection for the forward men.

Once a path has been cut and held, the hosemen work out with a sweeping motion extending the extinguished area.

The Class 155 truck is the daddy of this type equipment. It carries 1,000 gallons of water, about three times as much as the smaller fog trucks, has two turret nozzles and a separate engine for operating the pump.

The separate engine allows water pressure to be built up enroute to a crash for instantaneous operation upon arrival. Pumps on other trucks are not engaged until the vehicle has been brought to a stop, a procedure which consumes a precious eight or ten seconds.

The turret nozzles on the Class 155 truck, throwing a heavy stream of water, blast burning oil and gas from the path to the plane. Other water trucks use hand lines only.

As the turret nozzles have a discharge rate of more than 300 gallons a minute, they must be turned off as soon as possible, with fog handlines taking over cleanup operations.

Foam is employed to blanket extinguished areas and to prevent back flashes from residual fuel. It is provided by a fireman's hip pack attached to a handline, or by inducing the foam solution into the main water tank or pump suction of the crash fire trucks.

Great care must be exercised to lay foam gently to maintain a continuous surface and to prevent water streams from breaking it up. A fragmentary surface is disintegrated by fire or dissolved by water.

Experiments have been conducted with a premix solution combining fog and foam, but they haven't panned out very well. The mixture lacks some of the cooling effect of straight fog and the foam obstructs the vision of rescuers. Heaviness of the mixture also tends to reduce range.

The Class 150 truck is a very impressive piece of equipment. It barges right into a fire, belching CO_2 gas, and can discharge its load in less than a minute if all nozzles are in operation.

The direct attack and dramatic envelopment of the fire in billowing clouds of gas create the impression that the truck can subdue any fire single handed. This is not true.

When conditions are right, the Class 150 truck gives a wonderful performance. But the equipment's effectiveness is often limited by the wind velocity, the area of burning spillage and the distribution of debris.

At Wright Field recently, a single CO_2 truck extinguished a 300-gallon gasoline fire in forty seconds. The wind was twelve mph and there was a minimum of debris.

Later in the day, when the wind had risen to thirty mph, four Class 150 trucks fought 450 gallons of burning gas, spread over a wider area and mixed with a great amount of debris, for four minutes, fifteen seconds without complete extinction. Nine tons of gas were used in successive operation.

The answer is that *all* available equipment must be dispatched to every crash, regardless of whether the prime

Rescue knife, shown in top photo, is made with curved blade and cutting edge inside to prevent injury to men being freed from straps.

Class 150 truck, above, is shown in action against a simulated crash fire. It can release a full load of CO_2 gas in less than one minute.

Regular bunker type clothing, the traditional garb of firemen, is worn by rescuemen, right. Tests prove it is cooler than asbestos suits.

Operated like an outsize canopener, this tool slices through the fuselage of an airplane to free crewmen. Shearing action reduces sparks.

fighter is a carbon dioxide truck, a fog truck or anything else.

Foam trucks work well with CO_2 equipment to hold ground gained by the gas and to prevent back flashes.

Regular bunker type clothing, the fireman's traditional costume, has been found the best protection for rescuers. The heavy coat and trousers are supplemented with an asbestos hood and heavy gloves.

This garb is not as cumbersome as an asbestos suit, and experience shows it keeps the rescuer cooler. In any case, hosemen must keep a constant fog stream on the rescuemen.

Upon reaching a plane, rescuers faced with cutting an emergency entry must know how to avoid being balked by such things as fuel and oxygen lines and permanently installed equipment. This knowledge comes only from study of the planes commonly used at the base.

A number of tools have been developed to effect a quick entrance to a plane. One of the best is an old-fashioned axe with a serrated blade. This tool can be fabricated locally by grinding down an axe to the shape shown in the photograph.

Some bases have experimented with a portable, power-driven saw which will chew right into an airplane.

When an entrance is being cut into an airplane that is not on fire, obviously spark-creating tools should not be employed. Various effective cutting tools, such as the can-opener type shown in the photograph, are useful in such circumstances. The shearing effect of the canopener gives it an advantage over tools that depend on impact by minimizing sparks.

A new knife has been developed to cut men from straps and entangling gear. A curved blade with rounded head and blunt back protects the flyer. It is to be included in a new crash kit now being developed.

As a further precaution against outbreak of fire, rescuers should sever the negative lead to the battery and see that the main switch, booster pump switch and fuel selector valve are in the "off" position.

The fire chief is always in charge of operations. Rescue and fire fighting are so closely associated that the fire chief directs both. Injured men are removed from the plane by fire fighter rescuemen and carried outside where flight surgeons take over.

When a crashed airplane has not caught fire, the flight surgeon directs the removal of injured men but the fire chief remains in overall control. He is responsible for prevention of fire, forcible entries and any rescue assistance required.

Crash equipment logically should be located as near the flight line as obstruction rules permit, with auxiliary trucks parked on hard-to-reach runways. An ambulance also should be at the ready on the line.

The best communications is afforded by a two-way radio in the truck, with two men maintaining a listening watch on the tower frequency. Crash alarm phone systems, squawk boxes or inter-com sets sometimes result in a delay.

By use of radio, the trucks and ambulance can be on their way the instant the tower clears the runway for a crash landing. At some fields, where airplanes are constantly taking off and landing, the fire department maintains its own tower observation post as an additional safeguard.

When a crash away from the field is reported, crash trucks should be notified first by operations or whoever gets the message. The trucks and ambulance must roll as soon as humanly possible.

Base operations and fire fighters should have large grid maps covering all territory within ten miles of the field to facilitate in locating a crash. Firemen must know all roads, obstructions and terrain features in the region.

In crash fire fighting, any ignorance, indecision or carelessness will be paid for in human life.

* * * * *

Until the new crash kit development is completed, drawings setting forth the size and dimensions of the knife, serrated axe head and canopener mentioned in this article will be supplied bases deciding to produce the articles locally. Write Headquarters AAF, Office of Flying Safety, Prevention and Investigation Division, Winston-Salem 1, N.C.

Rescuemen walk through a path cut into the flame by hosemen with fog lines. Firemen carefully hold streams low to prevent back-flashes.

ROLL OF HONOR

(CONTINUED FROM PAGE 49)

Florence, Leonard K., Sgt.
Floro, Charles E., Capt.
Fluery, Paul A., Capt.
Fluty, Joseph M., Lt.
Flynn, Louis A., Cpl.
Flynn, Raymond P., S/Sgt.
Flynt, Charles N., S/Sgt.
Fogleman, Coin C., Jr., Sgt.
Foiles, Forrest L., Lt.
Foley, John E., S/Sgt.
Foley, John W., Pfc.
Follmer, William C., Lt.
Fonorow, Milton S., Lt.
Fontaine, Robert Y., Lt.
Fontenrose, John R., Lt.
Ford, Ernest C., S/Sgt. (& 5 OLC)
Ford, James L., S/Sgt.
Ford, James R., Cpl.
Ford, John C., S/Sgt.
Ford, John T., Capt.
Ford, Joseph C., III, Maj.
Ford, Le Roy R., T/Sgt.
Ford, Ray D., S/Sgt.
Ford, Robert M., T/Sgt.
Ford, Robert V., Capt.
*Fordyce, John R., Lt. Col.
Forget, Leo J., T/Sgt.
Forkner, Hamden L., Lt.
Formichelli, Arthur, Lt.
Fornasero, James B., Capt. (& OLC)
Forrest, Harold E., T/Sgt.
Forsberg, Matthew T., Lt.
Forsta, Eric J., T/Sgt.
Forster, Thomas W., S/Sgt. (& OLC)
Forsyth, Allen P., Maj.
Forsyth, Wilfred G., Lt.
Forti, Joseph J., S/Sgt.
Fortino, Michael J., T/Sgt. (& OLC)
Fortunak, Richard C., T/Sgt.
Foster, Duane J., S/Sgt.
Foster, Frank J., Sgt.
Foster, Gene L., Sgt.
Foster, George M., Capt.
Foster, Irwin, Lt.
Foster, John G., Capt. (& OLC)
Foster, Justus D., Lt.
Foster, Leo J., Jr., Maj.
Foster, Leonard R., Lt.
Foster, James B., Capt.
Fountain, Willard A., Capt.
Fournier, Francis J., Cpl.
Fouts, John E., Jr., Capt.
Foutz, Merrill Y., F/O
Fowler, Harold K., S/Sgt.
Fowler, Thomas R., Capt.
Fowler, William H., Lt.
Fox, Robert, Sgt.
Fox, Thomas H., T/Sgt.
Foyle, Darrell H., S/Sgt.
Fraga, George G., S/Sgt.
Fraleigh, David P., Lt.
France, Victor H., Lt.
Francine, Jacques L., Maj.
Francis, Everett R., Capt.
Francis, John W., Lt.
Francis, Joseph S., S/Sgt.
Francis, Robert W., Lt.
Francis, Russell A., Lt. (& OLC)
Franck, Lewis S., Lt.
France, Victor H., Lt.
Frank, Donald H., Capt.
Frank, Irving H., Lt.
Frank, Robert A., Lt.
Franke, Arthur C., Lt.
Franklin, Reedas G., Sgt.
*Frantz, Clement, S/Sgt.
Frantz, Robert H., S/Sgt.
Franz, Hugo R., Jr., Lt.
Franz, Jacob H., Lt. (& OLC)
Franz, William J., T/Sgt.
Fravega, Thomas P., Lt.
Fraychak, Michael, S/Sgt. (& OLC)
Frazee, John F., S/Sgt.
Frazier, James L., Jr., S/Sgt.
Frederick, Gayle R., Cpl.
Fredericks, Jacob W., Maj.
Frederickson, John C., Lt.
Freeman, James E., Capt.
Freeman, Harrison J., Lt. (& OLC)
Freemeyers, Russell L., Lt.
Freese, Howard W., Capt.
Fregeau, Emile L., Cpl.
French, Francis, Lt.
Freville, Joseph W., Pvt.
Freyer, George F., Lt.
Fricks, Robert O., Capt.
Friedman, Edward T., S/Sgt.
Friedman, Frank, Lt.
Friend, Leo E., S/Sgt.
Friermood, Max J., Lt.
Fries, Robert A., Sgt.
Friess, John, T/Sgt.
Frisby, Robert J., Lt.
Frischolz, Joseph V., Lt.
Fritz, John E., T/Sgt. (& OLC)
Fritzholz, John T., T/Sgt.
Froehling, Stuart C., Lt.
Froning, Alfred C., Lt.
Frost, Charles E., S/Sgt.
Frost, Otha H., T/Sgt.
Frost, Verl, S/Sgt.
Fruda, Ronald J., Lt.
Fry, Charles E. H., S/Sgt.
Fry, Edward W., T/Sgt.
Fry, George, S/Sgt.
Fryer, Lyle Vermont, Lt.
Fryer, Robert R., Capt.
Frymoyer, Carl E., S/Sgt.
Fuchs, Ray G., Lt.
Fuchsmann, Harold L., Lt.
Fuhre, Albert B., T/Sgt.
Fulanovich, Charles J., S/Sgt.
Fuller, Felix T., Lt.
Fuller, Robert H., Lt.
Fuller, Robert J., Lt.
Fullin, Angelo, T/Sgt.
Fultz, Lalous M., S/Sgt. (& OLC)
Funk, Clarence W., S/Sgt.
Furbush, Richard D., Lt.
Furness, Warren E., S/Sgt.
Furniss, Henry L., T/Sgt.
Furr, Grover C., Jr., Capt.
Fulterer, Arnold T., Sgt.
Fuzear, Dan W., S/Sgt.
Gable, Chester L., S/Sgt.
Gable, Daniel E., S/Sgt.
Gabler, Gustav W., Capt.
Gabreski, Francis S., Maj. (& OLC)
Gabriel, George J., S/Sgt.
Gaede, David L., Capt. (& 2 OLC)
Gage, Carl C., Lt.
Gage, Nelson W., Jr., Cpl.
Gailey, Robert K., S/Sgt.
Gain, Edward J., S/Sgt.
Galanti, Ralph J., Cpl.
Galimi, Michael A., S/Sgt.
Galindo, Paul, T/Sgt.
Gallagher, Edward M., S/Sgt.
Gallagher, Elmer G., T/Sgt.
Gallagher, John, T/Sgt.
Gallagher, Raymond K., Maj.
Galley, Jack, Lt.
Gallmeier, Charles F., Lt.
Galloway, Gerald W., S/Sgt.
Galloway, Paul A., T/Sgt.
Galloway, Rolland A., S/Sgt.
Gallup, Charles S., Capt. (& OLC)
Gamble, Jim L., S/Sgt.
Gamble, Robert H., Jr., Lt. (& OLC)
Gamble, Robert V., S/Sgt.
Gammans, George W., Lt.
Gandin, David, Lt.
Gangwer, Roland D., S/Sgt.
Gant, George T., S/Sgt.
Gant, James H., Lt.
Garcia, Henry, S/Sgt.
Garcia, Jose A., Lt.
Garcia, William V., Sgt.
Gardner, Charles H., S/Sgt.
Gardner, Henry J., S/Sgt.
Gardner, Howard D., Lt.
Gardner, Marvin G., Lt.
Gardner, Robert E., Lt.
Gardner, Robert W., Lt.
Garey, Wayne, Cpl.
Garman, Dexter N., Jr., Lt.
Garman, Ralph S., Col.
Garofalo, James P., S/Sgt.
Garofalo, Leonard S., S/Sgt. (& 2 OLC)
Garrard, Robert L., Lt.
Garrett, Edward M., Capt.
Garrett, Frank O., S/Sgt.
Garrett, Leslie F., Lt.
Garris, James J., S/Sgt.
Garrison, Donald B., S/Sgt.
Garrison, Nelson M., S/Sgt.
Garrow, Richard D., S/Sgt.
Gartman, Wilmer F., Lt.
Garvey, John L., Lt.
Garvin, Norman C., Lt.
Gary, Willis J., Capt.
Gash, Frank T., Maj.
Gaskell, Robert C., Lt.
Gasser, Walter, S/Sgt.
Gaston, Allen B., Lt.
Gatchell, Donald E., S/Sgt.
Gately, Richard J., Capt.
Gates, Frank A., T/Sgt.
Gates, James F., T/Sgt. (& OLC)
Gault, James A., III, Capt.
Gault, James R., Jr., T/Sgt.
Gaunt, Frank L., Capt.
Gaunt, Ivan K., Sgt.
Gauntz, Paul E., S/Sgt.
Gavin, Edward F., Lt.
Gavlak, Emil S., Lt.
Gay, Jasper D., T/Sgt.
Gaylor, Don G., Lt. (& 3 OLC)
Gaylord, Donald A., Lt.
Gearhart, Fred Z., Lt.
Geary, John R., Pfc. (& OLC)
Gecan, Frane C., Lt.
Geddes, John K., Lt.
Gehay, John C., T/Sgt.
Geier, Leonard R., Capt.
Geiger, Jerome H., Lt.
Geitzer, Paul H., T/Sgt.
Geisleichter, Robert L., S/Sgt.
Gemmill, Zane A., S/Sgt.
Genone, Joseph E., Jr., Lt.
Gentile, Don S., Lt. (& 3 OLC)
Gentry, Herbert H., S/Sgt.
Gentry, V. L., T/Sgt.
Gentry, William B., Capt.
Georgi, William F., Lt.
Gerald, Robert S., Lt.
Gerhart, Harmon, Lt.
Gerhart, Quinter P., Capt.
Gerken, Walter Bland, Lt.
Germain, David P., Lt.
German, Jerome C., Lt.
German, Michael J., S/Sgt.
Geror, Donald L., Lt. (& OLC)
Gerow, Francis, T/Sgt.
Gessner, Harlan W., Lt.
Geyer, Beverly C., S/Sgt.
Geyser, William E., Lt.
Ghoery, Jacob N., Lt.
Ghram, Elmer F., Lt.
Ghramm, George W., Lt.
Gianatsis, James A., Capt.
Giannini, Raymond W., Lt.
Giassullo, Criscienzo N., S/Sgt.
Giauque, Charles R., Capt.
Gibbey, Gola G., S/Sgt.
Gibbons, Jay W., T/Sgt.
Gibbs, Harry E., T/Sgt.
Gibbs, Jerrold A., S/Sgt.
Gibbs, John L., Lt.
Gibson, Balfour C., Lt. (& OLC)
Gibson, Bruce A., Jr., Capt.
Gibson, Charles E., Capt.
Gibson, George M., S/Sgt.
Gibson, Homer L., Lt.
Gibson, Junior C., Cpl. (& OLC)
Gibson, Lester A., Lt.
Gibson, Robert E., S/Sgt.
Gibson, Robert E., Lt.
Gibson, Roy H., S/Sgt.
Gibson, Steve M., Lt.
Giddings, Charles H., Capt.
Griffin, Morgan A., Maj.
Gifford, Earnest E., S/Sgt.
Giguere, Varis, S/Sgt.
Gilbert, Bruce, Lt.
Gilbert, Donald L., Maj.
Gilbert, Fred R., Lt.
Gilbert, William E., T/Sgt.
Gilbert, William M., Lt.
Gilkey, Norman, S/Sgt.
Gill, Robert L., Capt. (& OLC)
Gill, William H., Lt.
Gillespie, Andrew J., S/Sgt.
Gillespie, Clyde G., Maj.
Gillespie, James O., T/Sgt.
Gillespie, James V., Capt.
Gillette, George, S/Sgt. (& 2 OLC)
Gillham, Keith H., S/Sgt.
Gilliam, Howard A., Lt.
Gilliam, Russell, T/Sgt.
Gilliland, Don J., Lt.
Gillis, Joseph F., S/Sgt.
Gilluly, Edwin W., F/O
Gilman, Richard W., Lt.
Gilmer, Henry W., Jr., Lt.
Gilmore, Jean D., Capt.
Gilmore, Joe E., Jr., S/Sgt.
Gilmour, Frederick T., Jr., S/Sgt.
Gilzinger, William H., Lt.
Ginn, Charles L., Lt.
Ginther, Everett A., Cpl.
Gionet, Leonard A., T/Sgt.
Girman, Edward J., S/Sgt.
Gish, William R., Lt.
Giugno, John F., Cpl.
Giusti, Elton J., Capt.
Givens, Richard E., Lt.
Glaros, John A., Sgt.
Glaser, Joseph G., Jr., Lt.
Glaspell, Thomas D., S/Sgt.
Glass, Norman, T/Sgt.
Glass, Orville L., T/Sgt.
Glasser, Russell, Lt.
Glatz, John J., Sgt.
Gleason, Joseph W., Lt.
Glenn, Jack O., Pfc. (& OLC)
Glenn, Joseph A., Jr., Maj.
Glick, George A., S/Sgt.
Glick, Herman G., Lt.
Glick, Howard L., Capt.
Glick, Lloyd H., S/Sgt.
Glogowski, Sylvester John, Cpl.
Glotzbach, Gene Raymond, Lt. (& 3 OLC)
Glover, Douglas C., T/Sgt.
Glyer, John R., Lt.
Glynn, William A., Jr., S/Sgt.
Goad, Harold W., Lt.
Godley, Lawrence E., Lt.
Godwin, Harold E., S/Sgt.
Godwin, Jasper L., Lt.
Goede, Milton N., Lt.
Goerke, Delton C., Lt.
Goff, James P., S/Sgt.
Goff, Percy M., Lt.
Golcher, Wesley V., S/Sgt.
Goldberg, Martin A., S/Sgt.
Goldblum, Theodore, T/Sgt. (& OLC)
Goldcamp, Robert J., Lt.
Golden, Walker B., S/Sgt.
Goldstein, Fred H., Sgt.
Goldstein, Frederick T., Lt.
Goldstein, George G., Lt.
Goldstein, Norman S., T/Sgt.
Gomeringer, Russell K., Cpl.
Gondelman, Abe, Sgt.
Gononsky, Philip, S/Sgt.
Gonsalves, John D., S/Sgt.
Gonyo, William J., S/Sgt.
Gonzales, Horace G., S/Sgt.
Gonzales, Roberto, S/Sgt.
Good, Donald E., Capt.
Good, James K., T/Sgt.
Goodfleisch, Don M., Capt.
Goodman, John T., Cpl.
Goodness, Burnell F., S/Sgt.
Goodrich, George B., Jr., Sgt.
Goodrich, Herbert T., Lt.
Goodrich, Judson J., Pfc.
Goodson, James A., Lt. (& OLC)
Goodwin, Oscar, Sgt.
Goodwin, Robert E., Lt. (& OLC)
Goolsby, George S., Lt. (& OLC)
Gordon, Benjamin, T/Sgt.
Gordon, Bobby H., S/Sgt.
Gordon, Carl Franklin, Lt.
Gordon, Gilbert H., Lt.
Gordon, Leroy V., Lt.
Gordon, Mathew M., Jr., Lt.
Gordon, Merrill K., Capt.
Gordon, Michael J., Maj.
Gormly, Samuel J., Jr., Col.
Goris, William B., Lt.
Gorman, Joseph E., Lt.
Gormez, John H., S/Sgt.
Gorsuch, Kenneth W., S/Sgt.
Gory, John R., Lt.
Gosick, Leon W., S/Sgt.
Goss, Edmund R., Maj.
Goss, Marvin H., S/Sgt.
Gossard, Albert A., Lt.
Gosseaux, Joseph A., Cpl.
Gossick, Lee V., Capt.
Gostage, Russell D., T/Sgt.
Gottfried, Mario H., Capt.
Gottke, Paul W., Lt. (& OLC)
Gottschalk, William A., S/Sgt.
Gottshall, Walter L., S/Sgt.
Gouaze, Roland J., S/Sgt.
Gough, Ernest E., T/Sgt. (& OLC)
Goulait, Bert J., Lt.
Gould, Harry K., T/Sgt.
Gourley, Jack, Lt.
Gover, Leroy, Capt.
Gowdy, James E., Lt.
Gowdy, William R., Lt.
Gower, Lorenzo R., S/Sgt. (& OLC)
Grabner, Carl A., T/Sgt. (& OLC)
Grabowski, Barney J., S/Sgt.
Grabowski, Edward M., Lt.
Grabowski, Frank W., S/Sgt.
Grace, Hal I., Lt.
Grace, Lealon F., T/Sgt.
Grady, Martin T., Sgt.
Grady, Thomas L., S/Sgt.
Grago, Albert J., S/Sgt.
Graham, Edward W., S/Sgt.
Graham, Harry M., Lt.
Graham, Oscar H., Lt.
Graham, Robert H., Lt.
Grams, Claire L., F/O (& OLC)
Grammas, George T., Lt.
Grandjean, John H., Lt.
Grant, Charles G., Lt.
Grant, Charles S., Lt.
Grant, Marvin E., Lt.
Grant, Roger A., Jr., Lt.
Grant, Richard A., Lt.
Grantham, Charles W., T/Sgt.
Grassi, Amerigo, T/Sgt. (& 2 OLC)
Grauer, Eugene A., Lt.
Graves, John M., T/Sgt.
Gray, Billy N., Lt.
Gray, Charles T., S/Sgt.
Gray, Francis D., S/Sgt. (& 2 OLC)
Gray, George K., Pfc.
Gray, George W., T/Sgt.
Gray, Gerald K., Sgt.
Gray, Joe H., Lt.
Gray, Leon W., Maj.
Gray, Robert W., Lt.
Gray, Thomas W., F/O
Gray, Walter J., S/Sgt.
Gray, Wayne J., S/Sgt.
Gray, William C., T/Sgt.
Grayson, William H., S/Sgt.
Green, Charles E., T/Sgt.
Green, Charles M., S/Sgt.
Green, Frederick J., T/Sgt.
Green, John R., S/Sgt.
Green, Louis S., Lt.
Green, Milton A., Lt.
Green, Minor F., T/Sgt.
Green, Oscar R., S/Sgt.
Green, Verlie U., Lt.
Greenawalt, Wilbur D., Lt.
Greenburg, Samuel H., Jr., Lt.
Greene, Harold C., T/Sgt.
Greene, Harry M., S/Sgt.
Greene, Harry T., Lt.
Greene, Howard R., Lt.
Greene, Robert C., Lt.
Greene, Robert H., Lt.
Greene, Theodore S., Capt.
Greene, Victor P., S/Sgt.
Greenfield, Robert I., T/Sgt. (& OLC)
Greening, Glenn F., M/Sgt.
Greenlaw, Frank D., S/Sgt.
Greenlee, Louis, T/Sgt.
Greenlee, Samuel W., S/Sgt.
Greeno, Harrison M., S/Sgt.
Greenslade, Rush V., Lt.
Greenstein, Max J., Lt.
Greenway, Harry L., Lt.
Greer, Walter H., Capt.
Greer, William S., Lt.
Greeson, John B., T/Sgt.
Gregg, Arthur L., Lt.
Gregg, John C., Sgt. (& 2 OLC)
Gregg, William C., Lt.
Gregoor, William E., Lt.
Gregory, Charles E., T/Sgt.
Gregory, Chase E., Lt.
Gregory, Clyde C., Lt.
Gregory, Paul N., Capt.
Gregory, William C., Sgt. (& OLC)
Greiling, William R., Cpl. (& OLC)
Greive, Lloyd W., S/Sgt.
Grennan, Robert W., Lt.
Grenoble, John W., T/Sgt.
Greve, Max C., Lt.
Grice, Charles A., Lt.
Griebel, Robert E., S/Sgt.
Grierson, Robert E., Lt.
Griffin, Chester D., Lt.
Griffin, Edmund D., Lt.
Griffin, Edward W., S/Sgt.
Griffin, James B., Lt.
Griffin, Joseph F., S/Sgt.
Griffin, Joseph H., Lt.
Griffin, Kirby E., S/Sgt.
Griffin, Loyd D., Capt.
Griffin, Robert A., S/Sgt.
Griffith, Frank J., Capt.
Griffith, James C., Lt.
Griffith, John H., Lt.
Griffith, John M., Lt.
Griffith, Roy W., T/Sgt.
Griffith, William M., Capt.
Griggs, Douglas A. W., T/Sgt.
Grikstas, Bonipart B., S/Sgt. (& OLC)
Grimes, Le Voyde, S/Sgt.
Grimm, Jack A., Lt. (& OLC)
Grine, George A., Cpl.
Grinstade, Robert A., T/Sgt.
Grisamer, William H., Capt.
Grisbeck, Wilbur J., Lt.
Grise, Philip J., T/Sgt.
Grisham, Rascoe S., S/Sgt.
Griswell, Charles H., Sgt.
Grodi, Wilmont C., Lt.
Grogan, Charles E., Lt. Col.
Groh, Joel B., Sgt.
Grondahl, Reino R., Capt.
Groe, William L., T/Sgt.
Grosenburg, William A., Lt. (& OLC)
Gross, Carl S., Lt.
Gross, Gale H., S/Sgt.
Gross, Harry W., S/Sgt.
Grosvener, William, Jr., Capt.
Grosvener, William D., Lt.
Grothouse, Kenneth J., S/Sgt.
Greve, Robert W., S/Sgt.
Grover, Roy L., Lt.
Grow, Wesley R., S/Sgt. (& 2 OLC)
Grube, Willis W., Jr., Capt.
Grund, William F., Capt.
Gruver, William C., Lt.
Gualtiere, Victor E., Capt.
Guariglia, Patsy L., Sgt.
Gudenschwager, Lester L., S/Sgt.
Gudmundsen, Mark, T/Sgt.
Guerard, Jack D., S/Sgt.
Guerin, Horace R., Lt.
Guerrieri, Angelo, Cpl.
Guerry, Alexander, Jr., Lt. (& 2 OLC)
Guffin, Rolland D., T/Sgt.
Guggenheim, Clifford R., Lt.
Gugino, Carmelo G., Lt. (& OLC)
Guill, Curtis E., S/Sgt. (& OLC)
Gullekson, Warren A., T/Sgt.
Gumbleton, John J., Lt.
Guminey, John L., T/Sgt.
Gunn, James A., Jr., Lt.
Gunnier, Robert, S/Sgt.
Gunther, Edward A., Lt.
Gurbindo, Julian J., T/Sgt.
Gust, Darrell D., Lt.
Gustafson, Everett W., Sgt.
Guthridge, Charles B., Capt.
Gutknecht, Wilbur S., T/Sgt.
Gutmann, Leonard J., S/Sgt.
Guttel, John, Lt.
Guyer, Norman E., S/Sgt.
Gygi, Arthur R., S/Sgt.
Haag, Francis E., Jr., Lt.
Haag, Herman, S., S/Sgt.
Haas, Louis G., Sgt.
Hackward, Thomas L., Lt.
Hackwith, Oliver J., S/Sgt.
Hadcock, Lawrence, Lt.
Haddock, Ralph M., Lt.
Hadley, Allen D., S/Sgt.
Hadley, Robert B., Lt.
Hadnot, James W., Lt.
Haedtler, Martin C., Lt.
Haftman, Charles E., S/Sgt.
Hagan, Clark D., T/Sgt.
Hagan, John J., S/Sgt.
Hagenback, James J., Lt.
Hagenbuch, Glenn E., Maj.
Hager, J. W., Cpt.
Haperich, Roy R., T/Sgt.
Haperstrom, James P., Lt.
Hagman, Eugene G., Lt.
Hahn, Clifford B., Lt.
Hahn, Harold L., Sgt. (& OLC)
Hahn, Howard G., Capt.
Haigler, Lee C., Lt.
Hairr, Elwood F., S/Sgt.
Haldy, Henry R., Lt.
Hale, Charles F., Lt.
Hale, Jimmie W., Lt.
Hale, Roland E., T/Sgt.
Halgren, David A., Lt.
Hall, Alfred C., T/Sgt.
Hall, Bond M., Lt.
Hall, Cecil M., Lt.
Hall, Charles E., S/Sgt.
Hall, Dean P., T/Sgt.
Hall, Donald P., Lt. Col.
Hall, Earl O., Capt.
Hall, Elbert W., Pfc.
Hall, Emory L., Lt.
Hall, Eugene G., S/Sgt.
Hall, George F., Lt.
Hall, Harvey P., Capt.
Hall, James Goodwin, Col.
Hall, Jarvis E., T/Sgt.
Hall, Lowell C., T/Sgt.
Hall, Robert K., Jr., T/Sgt.
Hall, Stanley E., Lt.
Hall, William E., S/Sgt.
Hall, William P., Lt.
Hallam, John E., T/Sgt.
Hallam, Philip G., Capt. (& OLC)
Halley, Robert E., Capt.
Halley, Robert W., Sgt. (& 3 OLC)
Halliday, Robert W., Lt.
Hallman, John P., T/Sgt.
Hallock, Edward C., Lt.
Halloran, Francis A., M/Sgt. (& OLC)
Hallowell, Dan, Lt.
Halsey, Gilbert O., Capt.
Halstead, Alva E., Pfc. (& 2 OLC)
Haltom, Louis L., Capt.
Ham, Patrick L., Lt.
Hambelton, Harold F., S/Sgt.
Hamill, Robert S., Lt.
Hamilton, Arthur, S/Sgt.
Hamilton, Darwin R., F/O
Hamilton, Jack G., Capt.
Hamilton, James M., Lt.
Hamilton, Joseph L., Lt.
Hamilton, Loren E., Pfc.
Hamilton, Louis A., T/Sgt.
Hamilton, Merle C., Capt.
Hamilton, Oliver A., T/Sgt.
Hamilton, Robert M., Capt.
Hamilton, Warren H., Lt.
Hamilton, William M., Sgt.
Hamlin, Kittredge, Lt.
Hammack, Charles E., S/Sgt.
Hammer, Arthur J., Lt.
Hammer, Loyd L., S/Sgt.
Hammett, Robert A., Lt.
Hammond, Earl L., Lt.
Hammond, George R., T/Sgt.
*Hampshire, John F., Capt. (& OLC)
Hamric, Alex K., Lt.
Hamsik, Frank J., Lt.
Hanas, Nicholas, Sgt.
Hanchett, Thomas F., Lt.
Hancock, John W., S/Sgt.
Hancock, Paul C., Lt.
Hand, Draper H., Lt.
Hand, Edward J., Jr., Lt. (& OLC)
Hand, Stanley I., Maj.
Handel, Donald J., T/Sgt.

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TO ROME AND BEYOND

RUNNING interference for the Allied advance up the boot of Italy into Rome and beyond, fighters and mediums of the Mediterranean Allied Air Forces have left a trail of pulverized German equipment and installations. Nazi trucks, half-trucks, tanks, motorcycles and ammunition carriers, lying twisted and battered along the sides of Italian highways lend graphic emphasis to what Maj. Gen. John K. Cannon of the 12th Air Force calls "operational strangle." With their supply columns, mobile weapons, and vital rail bridges and centers under ceaseless pounding, German forces are having a tough time of it in the south.

Havocs and Warhawks flew 2,925 sorties from May 3 to May 6, destroyed 1,260 motor transports, damaged 980 on road between Guilianello and Cori (shown at left).

Twisted, unrecognizable mess, below, is the handiwork of an A-20 which accomplished this result by scoring a direct hit on a Nazi truck loaded with battle equipment.

At Rome's doorstep fighters discovered the row of German multiple 20 mm antiaircraft guns and trucks shown above. The fighters flew down the line to put the guns out of commission. At right, above, the sagging remains of the Littoria airport tell the story of another deadly bombardment. The demolished Carsoli rail bridge, below, indicates the type of treatment given supply routes.

Iron works at Elba, off the Italian coast, were battered as the "operational strangle" campaign swept north. Elba was later captured.

Blown out of the water by the tremendous impact of MAAF bombs, these Nazi ships were caught in San Stefano harbor.

Parts of this German truck were scattered over the road when it was smashed by low-flying fighters. Two of the Nazi passengers lie dead in the wreckage. Such sights were not uncommon to Allied ground troops as they pressed the offensive to Rome and beyond.

ON THE LINE

A MAINTENANCE ROUNDUP PREPARED IN COLLABORATION WITH AIR SERVICE COMMAND AND TECHNICAL INSPECTION DIVISION, AIR INSPECTOR'S OFFICE

COME IN ON SAFETY WHEREVER YOU ARE: Ground safety is not kid stuff for military personnel handling supply and maintenance who are governed by AAF Reg. 38-1, Ground Safety Program, dated 11 December 1943. Safety practices, borrowed from those which have proven effective in private industry, do not differ essentially for military and civilian personnel engaged in supply and maintenance procedures.

"Accidents will happen" is an old adage that amounts to just so much prop wash. Factual statistics spotlighting accident situations frequently get the old brushoff. GIs forget that many accidents result from some absurd set-up, which is paralleled by the fact that correct maintenance is usually the easiest and gets the best results.

A big stumbling block to greater safety is horseplay. Crew chiefs groan and gripe over mechanics' antics around hangars, cooked up for laughs and based on a misplaced sense of humor which leads to accidents and costs lost man hours and wasted material.

A master sergeant tells of one such prank in a hangar. A mech was standing on a ladder putting fairing on a wing leading edge. Along comes a GI joker and grabs him by the ankle. Being ticklish, the mechanic lost his balance and when he tried to steady himself, the ladder gave way and he crashed to the floor. An injured arm and broken wrist was the result. Funny? Not at all.

NEED FOR GOOD LIFT: Of 396 accidents in a supply division reported in a one-month period, 169 occurred in handling boxes, crates, barrels, lumber, metal stocks and miscellaneous objects. The greatest number was caused by lifting or carrying excessive weights and improper methods of lifting. It seems that workers simply won't learn to bend knees and use leg muscles. Bending at the waist puts undue strain on back muscles, causes back strain and hernia, and it often means that the object being lifted drops on the lifter's feet. Inadequate gripping is a frequent accompanying cause. Of another group of 137 box-handling accidents, 94 were attributed to poor gripping.

Aircraft workers and carpenters chalk up a large number of accidents in operating joiners and circular saws. Kickback devices not on saws, guards out of place, pusher sticks not being used, operators attempting to pick slivers from moving saw blades and reaching over moving saws or getting sawdust in their eyes are leading reasons. Joiner accidents are traced to broken guards, not using guards and kickbacks, poor lighting and inattention.

WHEN AN AIRPLANE runs up a string of missions without a turnback for mechanical reasons, it's time for the ground crew to take a bow. Here is the crew of the B-17 "Pride o' the Yanks," which has flown 29 consecutive bombing attacks without turning back for mechanical reasons. Twenty-five of these missions were packed into a two-month period, six of them over Berlin's factories, airfields and railroad yards. In the photo (left to right) is the ground crew, Sgt. John J. Schmidt, assistant crew chief, Philadelphia; Sgt. Marvin J. Swart, Amsterdam, N. Y.; Cpl. G. E. Brooks, Holyoke, Mass.; Sgt. R. E. Burr, crew chief, Eastport, Maine, and Pfc. C. L. Duryea, Chicago.

BACKING UP THE FIGHTER PILOT are his chew chief and armorer. From England comes this photograph which illustrates how teamwork gets things done. The plane is a P-51 which served as bomber escort, dive bomber, skip bomber and strafer during the invasion activity. The pilot and crew (left to right) are Cpl. Oda D. Stanford, armorer, Raymond, Wash.; First Lieut. William S. Davis, pilot, Camilla, Ga., and Staff Sgt. Carl K. Wood, crew chief, Richmond, Va. In the background is the transportation jeep and driver, Pfc. Robert L. Rowe, Alvaton, Ga., representing more members of the team: the service unit which tended to service and administrative tasks.

AERONAUTICAL EQUIPMENT — CLEAN CAUTIOUSLY: Every mech knows the toxic qualities of cleaning agents used on aircraft parts present hazards through inhalation or absorption through the skin. Highly toxic carbon tet, benzene, acetone, ethylene dichloride and toluene should be used *only* when petroleum solvents such as kerosene, naphtha, white gasoline and solvent dry cleaning fail to do a satisfactory job.

Volatile cleaning fluids should be used only where aqueous cleaners are unsuitable.

Avoid breathing vapors. Do not apply carbon tet solutions to heated parts; this may produce poisonous phosgene gas.

Keep all solvent containers tightly covered and when not in use to prevent evaporation and reduce concentration of vapor.

Don't place bare hands in solutions: use tongs, holders, or suspend parts by wire or hooks for brushing. On parts that have been immersed in cleaning solutions, rinse with water before handling with bare hands.

A supply angle that proves to be an accident preventer is painting wood corner markers with conspicuous diagonal stripes in order to prevent damage to stacked corrugated containers as well as cautioning personnel against jolts. Placing dunnage strips between boxes when piled enables insertion of the fork without damage, delay or danger.

WISE WELDER WEARS HELMET AND GOGGLES: Flash from the arc causes eye injury in welding according to TO 23-1-5. Respiratory hazards also come from poisonous substances volatilized by heat, such as lead or zinc oxide from galvanized metal.

When a welder throws up his helmet, he may be struck in the eye while chipping or receive a flash from the arc of a fellow worker. It is reasonable, then, to wear spectacle type goggles under the helmet. Goggles must be fitted properly, otherwise chips can enter the eye.

Further protective equipment is authorized by ASC Reg. 40-5 and AAF Reg. 70-3 which includes gloves, shields and respirators. Goggles, respirators, shields and rubber gloves must be washed with soap and water every day and disinfected before re-issue.

Respirators, made of critical materials, require special care and maintenance. Scrub daily after use, especially the face piece, with lukewarm water and soap both as a hygienic practice and to prolong the life of the rubber. Otherwise dirt, oil and perspiration will cause rapid deterioration. Disinfect respirator if worn by a different person; use manufacturer's advice on the disinfecting agent to use in order to avoid damage to parts. If local exhaust systems are in-

stalled, work should be done as close to hood as possible. Gas masks and metal fume respirators must be worn in enclosed areas and in case exhaust systems are not provided.

ISOLATION ADVISABLE FOR GRINDERS: A number of grinder accidents are traced to passers-by being injured from grinding operations. Isolating grinders is an important safety measure. Since the glass shield is insufficient protection, goggles must also be worn during grinding operations. Magnesium fire cannot be extinguished by water, carbon dioxide gas, or dry chemical foam-type extinguishers; these extinguishers accelerate the burning and may lead to an explosion. Full details are contained in TO 23-25-1.

PAINT, DOPE, SPRAY WITHOUT DISMAY: Stick to your booth when spraying or drying. Necessary ventilation must be provided. All electric devices must be vapor proof and the equipment grounded to prevent static discharges in accordance with AAF Reg. 85-6. Check for adequate provision in removal of fumes and prevention of fire when using volatile material. These *musts* are contained in TO 07-1-4 which gives full directions.

Inflammable paint removers unless used outdoors require adequate ventilation with particular care to avoid exposed flames and sparks. Supervision by men trained in the application of highly inflammable materials is required. In using chlorinated solvents (trichloroethylene or carbon tet) exercise *extreme care to avoid inhalation of poisonous vapors.* Complete details will be found in TO 01-1A-1.

When using spray paints and dopes in specially constructed buildings with adequate ventilation, you do not need to use a respirator. Operations invariably require use of protective cream, Spec. 18,000-C, which can be used on any part of the body; it prevents injury and permits ready removal of paint. See full explanation in TO 07-1-4.

A new non-inflammable solution that is safe to handle cleans oil coolers better than solutions used formerly. Instructions for use are contained in TOs 03-15-9, 13-15-14 and 13-15-1.

Color developer used in processing Kodacolor reversal film contains aromatic amine which may cause irritation if contacting the skin or injury if the dust is breathed. See precautions outlined in TO 10-5-15.

A glance at TO 23-25-1 will warn never to place magnesium or magnesium alloys in hot salt bath as an explosion may occur.

BATTERIES, BOMB BAYS AND VALVES: Inhaling a cigarette is certainly preferable to inhaling battery fumes which are highly toxic. Battery electrolyte is no beauty balm on hands and body; spillage may cause painful burns. Remove storage batteries from airplanes before cleaning.

Never attempt to mutilate sodium filled valves; metallic sodium, when brought into contact with moisture gives off hydrogen gas which is highly inflammable. And don't pack off those valves with other parts or materials turned over to salvage officers for disposal as scrap. Always dispose of sodium filled valves in accordance with TO 02-1-67.

No MP will check on you, but beware of being caught or struck by bomb bay doors when airplane is on the ground; hydraulically operated doors may open or close with considerable force because of stored energy in the hydraulic accumulator, even though the airplane has been standing for some time. Apply warning stencil to bomb bay in accordance with TO 01-1-36. Also, when the airplane is on the ground, make certain that all personnel and obstructions are clear of bomb bay doors before the control handle is operated.

RESERVE FIRE FOR THE ENEMY: The first consideration in common preventives for fire is readiness of fire extinguishers. Proper tags should show last date of inspection, test, cleaning and refilling, as prescribed by instructions issued by the Chief of Engineers.

Directions for inspecting fire extinguishers can be checked in TO 03-45C-1, Section V, and TO 16-20-2, Par. 7, c., 1. Watch safety wire on quick release valve of CO_2 fire extinguisher in accordance with TO 01-1-63.

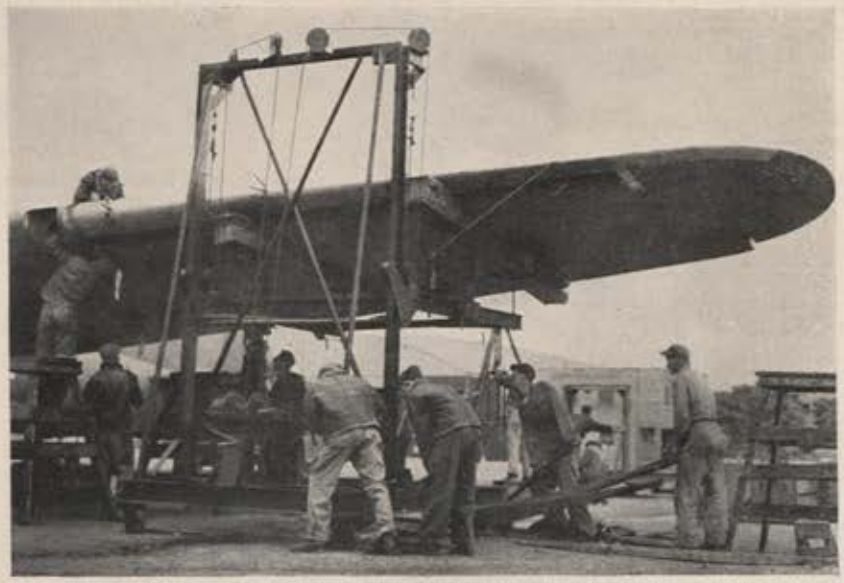
While not advisable to use Kerrick cleaners inside hangars, it is possible to clean airplanes in hangars by stringing hose. Do not use gasoline as a fuel for Kerrick cleaners. Store alcohol in closed glass or earthenware containers. All this, and more, come from TO 01-1-1.

Danger of ignition from contact of grease with oxygen requires steady caution. Keep the oxygen system clean and free of oil and grease. Be sure hands and clothes are free of oil to prevent combustion. Best bet is to know how through TOs 03-50-1 and 03-50A-1.

SAVE YOUR SKIN: Occupational dermatitis or skin inflammation, of which the most common type is folliculitis (boils), can be caused by the use of cutting oils. When hair follicles become plugged with oil, grease, dirt or metal, use of unapproved cleansers such as kerosene, naphtha, and carbon tet to remove dirt causes drying or cracking of the skin. Skin inflammation results. Keep clean; wash in hot water with mild soap such as Lan-o-Kleen, wear clean work clothes whenever possible and use protective hand cream before contact with cutting oils. On all parts of the body which contact oil, grease and dirt use a hand protective cream recommended by the post surgeon.

New cutting oils and those kept clean are usually harmless. Lard base oils that become rancid and oxidized in use cause skin irritations. Oil cleaned with an absorption agent, such as Fuller's earth-blotter paper filter, is more highly refined than when originally taken from the manufacturer's container, and skin-irritating elements are completely removed.

Hydrofluoric acid is poisonous and produces severe skin burns which are slow to heal. Keep in the clear by wearing rubber gloves and goggles, as instructed in TO 01-1A-1.



INGENUITY OF ASC TECHNICIANS IN THEATRES where highly technical equipment cannot always be available for AAF combat planes has become one of the most voluminous and important factors in the air war. Here, at a service command base in North Africa, is another of many examples that are becoming legion around the globe. This huge wing-hoist, a tremendous time and labor saver, was created and constructed by Sgt. Joseph R. Ortolani of Rochester, N. Y., and his outfit. It was built entirely of scrap iron and is capable of lifting a complete wing section of any plane. In the photo the wing of a B-17 is being moved back into place after the bomber underwent a sheet metal repair job. This is the second and larger of two such hoists built at this base by Sergeant Ortolani. Hats off to these mechs of the AAF!

If you take a quick look at the September ON THE LINE picture and get the impression that it's too much like a comic strip, you would change your mind quickly enough if you would walk down the line and see these boners actually duplicated, day after day, and not as a comedy act either. These mechs are violating even the basic safety practices, which quite often turn out to be not so funny.

It could be your neck one of these days when you slip as a result of somebody's sloppy habits. The men who posed with the P-39 in the interest of better ground safety practices this month are (left to right) Pvt. Joseph Bucola, Pfc. George Knach, Pvt. Lester A. Norton and Pfc. Charles T. Ash, all attached to 4100th AAF Base Unit, Patterson Field, Ohio. These men can point out eight boners in the photograph, which are listed below. Do you spot any extra ones?

TURN THIS PAGE UPSIDE-DOWN FOR THE ANSWERS

1. Weight lifting and other forms of PT do not belong ON THE LINE. The private lifting that 75-pound battery in this manner is aiming at a back strain. The correct and safe method is to bend at the knees, thus getting the proper human leverage as well as the best lifting efficiency.

2. Alley oop! The mech on the wing is about to leap before he looks—and minus the flying trapeze. Jumping off wings (unless via parachute) is risky business. This man doesn't see the debris on the ground, and it is quite likely that when he lands on the unseen clutter, a twisted or broken ankle will be the pay off.

3. Yes, that stuff on the ground is the kind of poor housekeeping that exposes the safety officer to Section Eight. A long story could be written about dangers of sloppy housekeeping; it's enough to say that it is a sure accident trap.

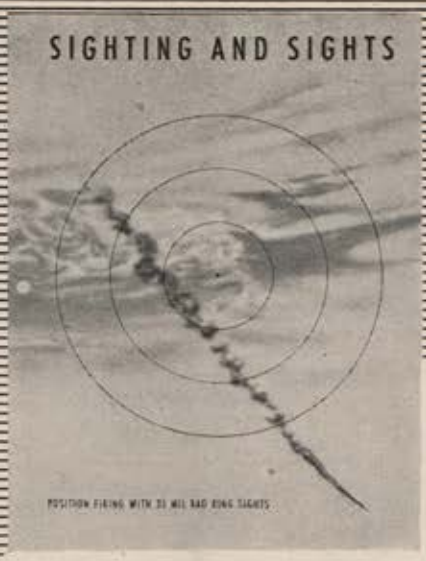
4. We know a house painter who brags about his prowess on a ladder, especially when it's not good and steady. He gets a kick out of taking a chance. Experts label him a chump and the same goes for the mechanic removing screws from the fuselage. He's standing on a hazardously tipping ladder, creating an unsafe condition through an unsafe practice. That's how accidents are born. You're right, one of the braces on the ladder is not hooked.

5. A honk is common when working around airplanes, as shown by the GI who reaches in his toolbox for a pair of pliers, raises his head without looking and bangs it against the prop. There is no TO to warn him against this boner; common sense is the basic formula for all safety. A frequent accident around airplanes is caused by personnel working beneath a plane, emerging, then raising their heads suddenly.

6. An old boner, perhaps, but it's still being done. Yes, we mean that bucket of gasoline. What's it there for, bud? If it's to clean parts or clean the airplane, pardon while we check the TO index for some fifty odd handbooks that say "No!" And since that bucket of gasoline is there—despite the fact that it shouldn't be—there also should be a fire extinguisher on hand.

7. Someone has left a flashlight on the wing, where it can get knocked off.

8. That pitot head should be protected by a canvas sack with a streamer. Authority? TO 05-50-1.



A NEW BOOK FOR GUNNERS

The science and practice of aerial gunnery, from stripping a machine gun to aiming with the newest type of automatic computing sight, have been described and compiled in a single volume, the Gunner's *Information File*.

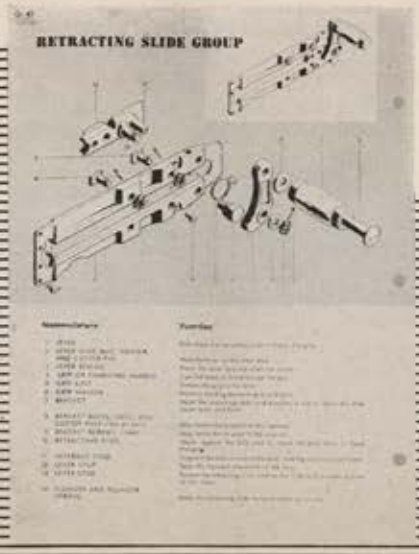
Designed for both training and reference purposes, the GIF provides a single source for information which formerly has been scattered through countless TOs, TMs, mimeographed lesson sheets, check lists and various special publications of the combat air forces.

Throughout the book, photographs and illustrations have been used wherever possible to explain difficult technical points and to increase readability. The volume, 8¼ by 11 inches in size, is printed in three colors and bound in a looseleaf binder to permit revisions and additions. Designated AAF Manual No. 20, it was prepared by the Publications Division of the AAF Central School for Flexible Gunnery.

The first section in GIF gives complete detail on the caliber .50 machine gun. Section Two covers Position Firing and the use of all types of flexible gun sights. Section Three contains instructions for operating all types of AAF turrets, and Section Four includes a full set of aircraft recognition photographs and silhouettes.

The GIF is to be distributed to all basic gunnery schools in the Training Command and to all stations concerned with the gunnery training program in the four training air forces. A small distribution will be made to operational air forces for reference purposes. Distribution of the GIF is the responsibility of the Commanding Officer, AAF Central School for Flexible Gunnery, Laredo AAF, Laredo, Texas, Att: Liaison Division.

REPRODUCED HERE ARE SELECTED PAGES FROM THE GUNNER'S INFORMATION FILE



ROLL OF HONOR

(CONTINUED FROM PAGE 53)

Hanes, Eugene G., Lt.
Hanes, William E., Capt.
Haney, William F., Maj.
Hanlon, John H., Lt.
Hanly, Thomas J., Jr., S/Sgt.
Hanna, Harry T., Lt.
*Hanna, Joe Kermit, Lt.
Hannah, George L., Lt.
Hanney, Thomas K., Lt.
Hannigan, William J., Jr., T/Sgt.
Hannley, Vincent P., Lt.
Hanover, Don C., Jr., Lt. (& OLC)
Hansell, Haywood S., Brig. Gen.
*Hansen, Elmer R., T/Sgt.
Hansen, Ernest E., S/Sgt.
Hansen, Henry C., Lt.
Hansen, John G., S/Sgt.
Hansen, John H., M/Sgt. (& OLC)
Hansen, Milton T., Pfc.
Hansen, Orville W., Sgt.
Hansen, Philip W., S/Sgt.
Hansen, Robin, Lt.
Hansen, Theodore A., Jr., Cpl.
Hansen, Walter R., S/Sgt.
Hanson, Archie T., Lt.
Hanson, John D., Lt.
Hanson, Owen R., T/Sgt.
Hanson, Robert P., Lt.
Hanson, William C., Sgt.
Hanst, Harry M., S/Sgt.
Hanton, John T., Lt.
Hanzel, Thomas C., Lt.
Hape, Herbert M., T/Sgt.
Happel, James, Lt.
Happold, Donald D., S/Sgt.
Harber, Walt H., T/Sgt.
Harbour, David F., Capt.
Hardaway, Sidney T., T/Sgt.
Hardee, Norman T., Lt. (& 2 OLC)
Harden, James D., Lt.
Harnden, Lionel I., Cpl.
Hardin, John T., Capt.
Hardin, Ross G., S/Sgt.
Hardy, Bruce A., Sgt.
Hardy, Fred P., Lt. (& OLC)
Hare, Richard L., T/Sgt.
Hare, Warren J., Lt.
Hargesheimer, Frederic G., Lt.
Hargrove, James O., Lt.
Harkavey, George I., Lt.
Harker, Vernon D., Jr., Capt. (& OLC)
Harkey, Ralph E., Lt. (& OLC)
Harkness, Harold J., S/Sgt.
Harland, Delmar C., T/Sgt.
Harlin, Charles J., Lt.
Harling, Tom J., S/Sgt.
Harlow, Harrington, Lt.
Harlow, Logan S., Jr., T/Sgt.
Harmon, Adney J., S/Sgt.
Harmon, Crockett L., T/Sgt.
Harmon, Edward Z., S/Sgt.
Harmon, George W., Lt.
Harmon, Hubert R., Maj. Gen.
Harms, Norman L., Lt.
Harms, Ralph F., S/Sgt.
Harms, Robert H., T/Sgt.
Harniman, Kenneth F., Capt.
Harper, Harold T., Lt.
Harper, James F., Cpl.
Harper, William B., Lt.
Harper, William J., Lt.
Harpool, Charles J., F/O
Harrelson, Woodrow A., F/O
Harrington, Elmer E., S/Sgt. (& 3 OLC)
Harrington, Regis J., Lt.
Harris, Charles L., S/Sgt.
Harris, Chester L., Capt.
Harris, Claude S., Capt.
Harris, Ernest A., Lt. (& 3 OLC)
*Harris, Frederick A., Lt. (& OLC)
Harris, George T., Jr., Lt.
Harris, Jack C., Lt.
Harris, James J., S/Sgt.
Harris, James P., Lt.
Harris, James W., III, Lt. (& OLC)
Harris, Lewis S., Lt.
Harris, Maurice L., S/Sgt.
Harris, Reginald G., S/Sgt.
Harris, Thomas H., T/Sgt.
Harris, Tommie T., T/Sgt. (& OLC)
Harris, William B., Lt. (& OLC)
Harrison, Bobby T., Lt.
Harrison, Charles R., Lt.
Harrison, Edward, Sgt.
Harrison, James A., S/Sgt.
Harrison, James T., Lt.
Harrison, Lee H., Capt. (& OLC)
Harrison, Lynn R., F/O
Harrison, Robert D., Sgt.
Harsh, Forrest R., Maj.
Harsh, John W., Capt.
Harshbarger, William M., Lt. (& 2 OLC)
Hart, Allen G., Capt. (& OLC)
Hart, Clifford M., S/Sgt.
Hart, John M., Lt. (& OLC)
Hart, Joseph H., Sgt.
Hart, Richard I., Lt.
Hartge, William E., S/Sgt.
Hartley, Lester J., Lt.
Hartman, Ernest D., Lt.
Hartman, George T., Lt.
Hartman, William D., Capt.
Hartvig, Douglas M., Lt.
Hartwig, Ralph, T/Sgt.
Hartzog, James W., Lt.
Harvey, Clyde L., Jr., Lt.
Harvey, Eugene M., Lt. (& OLC)
Harvey, Norman S., Capt.
Harvey, William A., T/Sgt.
Harvie, Warren L., T/Sgt.
Hasel, Gaynord A., Lt.
Hasbrouch, Richard M., S/Sgt.
Haseiby, Johnnie V., Lt.
Haseiden, Joseph L., Lt.
Haseltine, Richard S., T/Sgt.
Haskell, Harris M., T/Sgt.
Haslip, George A., S/Sgt.
Hassler, Kenneth C., T/Sgt.
Hassemer, David W., Maj.
Hassinger, Walter J., T/Sgt.
Hastings, Alvin L., S/Sgt.
Hastings, Edgar A., S/Sgt.
Hastings, Harold T., Maj.
Hastings, Lyle R., T/Sgt.
Hatala, John J., S/Sgt.
*Hatch, Robert R., Lt. (& OLC)
Hatcher, Joseph H., T/Sgt.
Hathaway, Gerald L., S/Sgt.
Hatleberg, Maynard M., T/Sgt.
Hatley, Sherman R., T/Sgt.
Hatt, Kermit R., Capt.
Hatten, Audis W., Lt.
Hattendorf, Wilbur S., Lt.
Hauer, Eddy G., Jr., Lt.
Haugen, Marshall B., T/Sgt.
Hauguy, Robert F., Lt.
Haupt, Fred J., F/O
Haut, Walter, S/Sgt.
Havrilla, Joseph R., S/Sgt.
Hawes, Samuel A., Lt.
Hawkins, Elvey J., S/Sgt.
Hawkins, George L., Lt.
Hawkins, John E., Lt.
Hawkins, John G., Lt.
Hawkins, Paul T., Lt.
Hawkins, Thaddeus I., Jr., Lt.
Hawkins, William B., Lt.
Hawkins, Wilma L., Lt.
Hawley, Robert E., Lt. (& OLC)
Hay, Henry G., Lt.
Hay, Lewis E., Lt.
Hay, Thomas G., Lt.
Hayden, arry J., Lt.
Hayden, Kenneth W., S/Sgt.
Hayes, Frank, Maj.
Hayes, Jack W., Jr., Maj.
Hayes, James J., Capt.
Hayes, John Joseph, S/Sgt.
Hayes, Joseph C., T/Sgt.
Hayes, Raymond A., S/Sgt.
*Hayes, Wesley J., Sgt.
Haymon, Albert W., T/Sgt.
Haynes, Collis P., Lt.
Haynes, Frank V., Capt.
Haynes, Robert E., Lt. Col. (& OLC)
Hays, George J., Lt.
Hays, William T., T/Sgt.
Hayworth, Carl O., Lt.
Hazelton, Walter L., S/Sgt.
*Hazle, John H., Lt.
Hazzard, William W., Jr., Lt.
Headley, Robert L., Sgt.
Healey, Patrick J., S/Sgt.
Healy, William C., Capt. (& OLC)
Healzer, Earl W., Lt.
Heard, John A., Lt.
Hearn, Walter J., Capt.
Heath, Charles C., Lt.
Heath, John H., Lt.
Heather, William J., Jr., Capt.
Hebert, James F., Lt. (& OLC)
Hebert, Kenneth G., Capt. (& OLC)
Hebner, Paul C., Lt.
Heckerson, Burton E., S/Sgt.
Heckert, George A., Lt.
Hedlund, Earl C., Lt.
Heffernan, Paul E., Lt.
Hefkin, Donald W., Lt.
Hefley, Elton C., Lt. (& OLC)
Hegman, William T., Jr., Lt.
Hegstead, Lester O., Lt.
Hegy, Clarence F., Col.
Heiken, Alfred E., S/Sgt.
*Heil, Robert F., Lt.
Heily, William H., Lt.
Heim, Lester N., Cpl.
Heinmiller, Philip R., Lt.
*Heinz, Eugene M., Lt. (& OLC)
Heinz, George W., Lt.
Heisel, Manville M., Lt.
Heitkamp, Adrian J., S/Sgt.
Hejny, Robert L., Lt.
Helbert, Joseph E., Capt.
Held, Alfred D., S/Sgt.
Heldreth, Howard S., Lt.
Heller, John M., S/Sgt. (& OLC)
Hellman, Abraham, Lt.
Hellwig, Alwin, S/Sgt. (& OLC)
Helmick, Frederick E., Lt.
Helms, Barney W., T/Sgt.
Helstowski, John J., S/Sgt.
*Helton, James G., M/Sgt.
Helvey, Hazen D., Lt.
Hemberger, Frank C., S/Sgt.
Hembree, William T., T/Sgt.
Hemphill, Robert C., Capt.
Henaire, Joseph A., S/Sgt.
Henderson, George W., S/Sgt.
Henderson, Paul E., S/Sgt.
Henderson, Ralph C., Jr., S/Sgt.
Henderson, Wilburn S., Lt.
Hendricks, Dean W., W/O
Hendricks, Wayne J., Lt.
Hendrix, Lloyd O., Lt.
Hendrix, Phillip L., Lt.
Hendrix, Tom, S/Sgt.
Hendry, John W., Jr., Lt.
Henebry, John P., Capt. (& 2 OLC)
Henery, William M., Lt.
Henington, Henry M., Lt.
Henion, Glen, S/Sgt.
Henion, John O., Cpl.
Henkel, Henry H., S/Sgt.
Henley, Justin O., Lt.
Henley, William O., Pfc. (& OLC)
*Henn, Raymond J., S/Sgt.
Hennon, William J., Capt. (& OLC)
Henry, George F., Lt.
Henry, Harry C., Maj.
Henry, Howard D., Lt.
Henry, Lawrence C., T/Sgt. (& OLC)
Henry, William H., Lt.
Henry, William W., S/Sgt.
Hensen, Helmuth F., Lt.
Hensler, Joseph E., Lt.
Henslovitz, Marvin, T/Sgt.
Henson, Walter C., Lt.
Hepfner, George W., Lt.
Herbert, Robert C., Lt.
Herman, Boyd F., Lt.
Herman, Charles L., Lt.
Herman, Leonard W., Lt.
Hermann, Max W., Lt.
Hernan, Howard E., T/Sgt.
Herndon, Albert V., S/Sgt.
Herndon, Joseph T., Lt.
Herod, Henry W., T/Sgt.
Herren, Travis R., S/Sgt.
Herried, Richard S., Lt.
Herring, William J., Lt.
*Herron, Christian I., Lt. (& OLC)
Hersh, Leonard, Lt.
Herter, Glenn A., Lt.
Hertzberg, Frank E., Lt. (& OLC)
Herzog, Frederick C., Jr., Lt. (& OLC)
Hesler, Paul M., F/O
Hess, William J., S/Sgt.
Hesse, Charles, Capt.
Hester, Elbert Lynn, Lt.
Hester, Virgil R., T/Sgt.
Heuser, Herbert A., Lt.
Hevener, Harold G., Jr., Lt.
Hewitt, Charles H., Cpl.
Heyman, Alfred A., Lt.
Hiatt, Dean R., Lt.
Hibbs, Ralph L., Sgt.
Himmel, Edward, Pfc.
Hibner, Edwin L., Capt.
Hickey, Thomas J., Cpl.
Hickman, Herbert C., F/O
Hickman, Richard H., Sgt.
Hickman, Roland C., T/Sgt.
Hickok, Ralph H., T/Sgt.
Hicks, William G., S/Sgt.
Hifler, William J., S/Sgt.
Higgins, Harry C., Lt. (& OLC)
Higgins, Langdon G., Lt.
Higgins, Thomas D., Jr., Lt.
High, Ashburn L., S/Sgt.
Highcove, Peter, T/Sgt.
Hight, Gordon L., Jr., Lt.
Hightower, James D., S/Sgt.
Hilbert, George A., Jr., Capt.
Hildreth, Elmer L., M/Sgt.
Hilger, Elvin D., Jr., T/Sgt.
Hilgert, Donald B., Lt.
Hill, Charles E., Jr., Lt.
Hill, Frank A., Maj.
Hill, James Ellison, Lt.
Hill, Joe L., Jr., Lt.
Hill, John E., S/Sgt.
Hill, John F., S/Sgt.
Hill, Kelly, Jr., S/Sgt.
Hill, Lawrence E., Cpl.
Hill, Lewis A., S/Sgt.
Hillabrant, John J., S/Sgt.
Hillegass, Paul J., S/Sgt.
Hilliard, Ray M., Lt. (& OLC)
Hilsabeck, Frank H., S/Sgt.
Hilsey, Arthur F., Cpl.
Himes, Ralph F., Capt.
Himmel, Lynn M., Cpl.
Hinds, Durward L., S/Sgt.
Hinds, Francis G., T/Sgt.
Hine, Raymond K., Lt.
Hinebaugh, Dan L., Jr., T/Sgt.
Hines, Amos D., Lt.
Hines, Larry A., Lt.
Hines, Thomas M., Jr., Lt.
Hinley, Jesse L., T/Sgt.
Hinton, Robert W., Lt.
Hipple, Ellsworth G., Sgt.
Hirsh, Nathan J., Lt.
Hirshburg, Ivan E., Lt.
Hise, Bobbie L., Lt.
Hitchcock, Craig R., Lt.
Hitchcock, James W., Lt.
Hively, Howard D., Lt.
Hlouchal, Otto A., Jr., Lt.
Hnatyk, Nicholas J., Lt.
Hoag, Roger H., Lt.
Hoag, Stanley D., Lt.
Hoagland, John G., Lt.
Hoagland, Ralph, Jr., Lt.
Hobbs, Frank B., S/Sgt.
Hobbs, James M., S/Sgt.
Hobert, Robert D., Lt.
Hobson, Kenneth B., Col.
Hobson, William R., Lt.
Hockery, John J., Lt.
Hockin, Robert A., Lt.
Hocutt, Ealon S., Lt.
Hodge, John E., T/Sgt.
Hodges, Edwin L., S/Sgt. (& OLC)
Hodges, Phillip, Lt.
Hodgson, Thomas D., Lt.
Hodson, Charles A., Lt.
Hodson, Robert G., Lt.
Hodson, Robert I., Capt. (& OLC)
Hodson, Robert L., Capt.
Hoerster, Morton K., Lt.
Hoey, Charles J., Capt.
Hofer, Herbert E., Lt.
Hoffacker, Victor A., S/Sgt.
Hoffman, Shirl J., T/Sgt.
Hoffman, Wilbur F., T/Sgt.
Hogan, David, T/Sgt.
Hoge, Everett J., T/Sgt.
Hoggan, Donald W., Lt.
Hoggatt, James L., Lt.
Hohman, Jack, F/O
Hokans, Carl A., Lt.
Hoke, Ralph M., S/Sgt.
Hoke, Robert A., Capt.
Holbert, George R., S/Sgt.
Holcomb, James R., S/Sgt.
Holcombe, Richard E., Capt.
Holcombe, Robert G., Lt.
Holcombe, Wesley C., Lt. (& OLC)
Holden, Warren A., Lt.
Holder, Maxwell R., Lt.
Hole, Howard D., Cpl.
Holguin, Jose L., Lt.
Holland, Curry W., S/Sgt.
Holland, John G., Lt.
Holland, Thomas E., Sgt.
Holleman, Steven H., S/Sgt.

5th OAK LEAF CLUSTER TO DISTINGUISHED FLYING CROSS

Adams, Ira A., S/Sgt.
Carlson, Robert E., Lt.

4th OAK LEAF CLUSTER TO DISTINGUISHED FLYING CROSS

Anderson, Alf Lester, S/Sgt.
Ashley, Burt S., F/O
Bong, Richard I., Maj.
Dial, Irwin W., S/Sgt.

3rd OAK LEAF CLUSTER TO DISTINGUISHED FLYING CROSS

Arts, Henry F., Jr., S/Sgt.
Burleigh, Albert H., Lt.
Corkrum, Uriah F., Lt.
Crawford, George H., S/Sgt.

2nd OAK LEAF CLUSTER TO DISTINGUISHED FLYING CROSS

Andrews, Stanley O., Lt.
Applegate, Rex A., Sgt.
Arneth, John P., Sgt.
Arnzen, Cyril H., Pvt.
Bailey, Joun D., Lt.
Ballantine, John V., Pvt.
Beard, Glenn E., T/Sgt.
Benner, John G., Lt.
Berryman, Lester C., Pfc.
Billimaier, Lawrence P., Cpl.
Bonito, Frank L., Cpl.
Brown, Llewellyn L., Lt.
Carlson, William E., Lt.
Cartwright, Phillip E., Lt.
Chaffin, Harold N., Capt.
Church, Frank C., Capt.
Creech, Robert M., Capt.
Culver, David, S/Sgt.
Dobson, Dorsey T., Cpl.
Dortch, Paul H., M/Sgt.
Dougherty, John, Maj.
Dubuisher, Francis E., Lt.

OAK LEAF CLUSTER TO DISTINGUISHED FLYING CROSS

Adams, Forrest M., S/Sgt.
Aldridge, Leroy A., Sgt.
Allen, David W., Lt.
Amann, John R., Lt.
Andrade, Michael R., Pfc.
Asbell, Clarence E., Sgt.
Bagby, Edward L., Jr., S/Sgt.
Baker, Edwin C., Capt.
Barton, Bruce Dero, Capt.
Bennett, Charles E., T/Sgt.
Bennett, Ravelle A., S/Sgt.
Billycu, Hal E., Lt.
Birdsong, George P., Lt.
Blakely, Warren A., Lt.
Bowden, Robert M., Sgt.
Bradley, William Barcliff, Cpl.
Bradford, William R., Maj.
Brown, Robert E., Capt.
Burns, Wilbert R., Sgt.
Cain, Carroll J., Lt.
Calhoun, William R., Jr., Lt.
Campbell, William Haddock, Lt.
Castellotti, Julio G., S/Sgt.
Cederholm, Bernard, Lt.
Chandler, George W., Lt.
Check, Willis, T/Sgt.
Coburn, Lewis L., Sgt.
Cliburn, Charles, Lt.
Cornut, William A., Sgt.
Coury, Charles L., Pfc.
Cox, John D., S/Sgt.
Cross, Frank E., T/Sgt.
Daigle, Lewellyn C., Maj.
Davidson, Paul E., S/Sgt.
Deniston, Dale R., Lt.
Devinney, James F., Capt.
Deyarmond, Jacob J., Pfc.
Doss, Edwin A., Capt.
Durbin, Cecil, Lt.
Eastus, Wardin M., Cpl.
Ehlers, Melville V., Lt.
Faulkner, Cecil L., Lt. Col.
*Ford, Walter R., Capt.
*Ingram, Virgil, Jr., Capt.
Janacek, Melick J., S/Sgt.
Kaboth, Jack W., Lt.
Lutz, Willis S., T/Sgt.
McDonald, Norman L., Lt.
*McIntyre, Patrick W., Capt.
McLaughlin, Tim O., S/Sgt.
Pezzella, Alfred W., Lt.
Prouty, R. V., Lt.
Toomey, John Marshall, Maj.
White, Sam B., Jr., Capt.
Wilcox, John R., Lt.
Wilkinson, Warren S., Capt.
Young, John S., Lt.

Answers to Quiz on page 36

1. (c) 20th Air Force
2. (c) 800 rounds per minute
3. (d) Twin-engine, twin-tail fighter
4. (b) Northern Burma
5. (a) The compression ratio of the engine
6. (a) 2,000 miles
7. True
8. (b) $300. WD Cir. 50, 4 Feb. 1944
9. (d) Radio operator
10. (b) Twin-engine fighter
11. (b) San Angelo, Texas
12. (b) $1,800
13. (c) Off the northwestern tip of New Guinea
14. A demolition bomb dropped by parachute
15. (c) Six. WD Cir. 268, 30 June 1944
16. (d) Gen. Lewis H. Brereton
17. (d) Military personnel attached to the Allied Military Government
18. (b) False. Anyone who desires may join the Society.
19. (b) Bangkok
20. Douglas C-54 (left) and Focke-Wulf 200.

GROUND CREW

By Lieut. Wm. T. Lent

AIR FORCE STAFF

Here we have a couple of GI radiators, Arctic model. At an Alaskan base, Sergeants Brown and Kelly warm the engines of a B-24 with a gasoline heater, while Sergeant Rawls thaws himself with a letter and snapshot from his little hometown de-icer.

In the CBI theatre, native families are often employed in airfield construction work. The tremendous job accomplished by these people, using primitive methods, is a never-ending source of amazement to the boys on the line.

While fighter pilots are subject to "blackout" and "redout," their crew chiefs also are susceptible to occupational ailments. None the least of which is "sweatitis." At a jungle base in the South Pacific, Sergeant Doyle nearly worries himself a stomach ulcer while watching one of his jockeys come home on a wet track.

Captain Knight and Sergeant Cole are at opposite ends of a shuttle bombing route between an AAF base in England and a Soviet airfield. Both are Texans, which may account for the Captain's ability to bring an occasional arm-load of scarce items from London for the ground crew.

At a bomber base in England, one of the squadrons schedules an informal S-2 session, after hours, at which the mechs are given their own briefing on the air war over Europe. Both flying and ground personnel take part in the critique that follows, aided and abetted by Java and sinkers from "Jowls," the long-suffering squadron chef.

CROSS COUNTRY

(Continued from Page 1)

For a year or more up to the time the B-29 went into combat, the AAF was filled with rumors about the new super bomber and its activities. This month we give you the story of what happened during that year or more of silence on the B-29. Our article is written by Brig. Gen. Kenneth B. Wolfe, first leader of the original B-29 outfit and now commanding general of the Materiel Command. It appears on Page 4.

☆

Are there any copies of the January and February, 1943, issues of AIR FORCE still intact around dayrooms, lounges or canteens at overseas or domestic bases? If so, we'd appreciate your sending them to us at 101 Park Avenue, New York 17, N. Y. We like to keep a number of copies of each issue for our files and we happen to be short on copies for those two months.

☆

"AUS (AC)" is no more. This familiar symbol, which labeled most Air Corps officer grades for nearly two and a half years, had served its purpose. On August 1, it was discarded, and all temporary officer grades were changed from AUS (AC) to AUS.

AUS means Army of the United States. AUS (AC) means Army of the United States (Air Corps), a designation established under authority of an Act of Congress shortly after Pearl Harbor to permit the Air Corps to advance its officers more rapidly than was permissible under AUS policy. The Air Corps was growing faster than any other branch of the Army. Officers had to be advanced fast enough to keep pace with the expansion of the Air Corps itself.

At that time, an officer must have served for at least six months in a position calling for a higher grade to qualify for promotion in AUS. In AUS (AC), the qualification was three months in grade. Therefore, an Air Corps officer advanced somewhat faster in AUS (AC) than in AUS, but his higher grade held only so long as he was in the Air Corps. If he was transferred to another branch, he reverted to his AUS grade.

As assignment vacancies were filled, the requirements were stiffened for both AUS and AUS (AC). In each instance, graduated scales of minimum time in grade were adopted, the higher the grade the longer the minimum. In addition, standards of minimum length of commissioned service were established in 1943 for promotions of Air Corps officers, both AUS and AUS (AC).

By 1944, promotions in AUS and AUS (AC) had slowed down to a walk. But by that time, more than two-thirds of the Air Corps officers had two ranks: one AUS, the other AUS (AC). The latter was from one to three grades higher than the former.

It was the officer in this situation who was affected by the August 1 order. In each case, the officer was promoted to an AUS grade corresponding to his AUS (AC) rank. The new AUS grades date from August 1, but in determining time in grade for promotion purposes full credit is given for time in AUS (AC) grade. Service outside continental U. S. or in Alaska counts as time-

and-a-half toward time in grade requirements for all AUS promotions.

Minimum times in grade now are as follows: To colonel, eighteen months; to lieutenant colonel, fifteen months; to major, twelve months; to captain, nine months; to first lieutenant, six months.

In explaining the new requirements, Army Reg. 605-12 points out that minimum time in grade should not be considered "as either the average time an officer should remain in a grade or as entitling an individual to promotion upon completion thereof."

The regulation adds that no officer should be recommended for promotion until he has demonstrated his qualifications by actually occupying a position and performing duties appropriate to the higher grade for at least three months. For promotion to lieutenant colonel or colonel, he should occupy for at least three months the specific position he is to hold after promotion.

These requirements, including minimum time in grade, may be waived in "exceptional circumstances" by theatre commanders in the case of officers who have demonstrated clearly their fitness for promotion by outstanding performances in actual combat.

☆

The Civil Aeronautics Administration has proposed an amendment to the Civil Air Regulations designed to facilitate the issuance of pilot certificates to military pilots following their discharge from the service. The test of the proposed amendment is published here as a matter of interest to military pilots:

An applicant who is or was within the preceding twelve calendar months on solo flying status as a member of the armed forces of the United States or the armed forces of any government allied with the United States as a rated military pilot and has served as such with solo flying status for a period of not less than six consecutive months shall be deemed to have met the aeronautical knowledge, experience and skill requirements of the Civil Air Regulations for the issuance of a pilot certificate of appropriate type and grade if:

(a) The requirements for the military pilot rating held are at least equivalent to the requirements of the Civil Air Regulations for type and grade of pilot certificate sought;

(b) He passes the written examination on the Civil Air Regulations required of applicants for the type and grade of certificate sought; and

(c) He submits to an Inspector of the Administrator:

(1) Documentary evidence that he is a member of the armed forces specified above, or that he has been honorably discharged or returned to inactive status, and

(2) A certificate from the appropriate officer in charge of flying showing the applicant's flight record as a military pilot and setting forth the pilot rating held by him, and the type, class and horsepower of aircraft he has been officially rated as competent to pilot.

☆

Responsibilities of the Assistant Chief of Air Staff, Materiel and Services, are clarified in AAF Regulation 20-43, amended as of 27 July 1944. He is accountable for "establishing AAF policies in the field of materiel and services, exercising staff supervision over the execution of policies in the field of materiel and services and for necessary liaison with War Department and other government agencies."

☆

What did you do in the war, Pop?

What will you tell him? That you were tossed on your bean while riding on a truck fender and had to spend 100 days in the hospital, or will you remember this simple rule?

When you ride anything (except a horse or a motorcycle), RIDE INSIDE.

☆

In our June issue, we reported that a station of the India-China Wing of the Air Transport Command had claimed for one of its C-47s a new GI operational record—360 hours and 10 minutes for the month of February, a daily average of 12 hours and 25 minutes.

Lieut. Col. Joseph C. Mackey, commanding officer of Headquarters Detachment, 563rd AAF Base Unit, Ferrying Division, Air Transport Command, Miami, Fla., now comes forth with a new claimant to the record—a C-87 numbered 004, which on the famous "Fireball" run between Miami and India hung up 407½ hours during April.

The colonel also supplies figures on seven other C-87s—all on the Fireball run—which have bettered the achievement of the India-China Wing station's candidate for top honors. He declares that No. 249 operated 369 hours and 35 minutes in March; No. 162, 372 hours and 20 minutes, and No. 148, 382 hours and 55 minutes, both in April; No. 733, 380 hours and 45 minutes in May, and No. 745, 381 hours and 15 minutes, No. 249, 377 hours and 20 minutes, and No. 139, 362 hours and ten minutes, all three in June.

"I might mention, too," adds Colonel Mackey, "that the overall fleet average for the Fireball run for the eight months from its inception to 16 July 1944 is ten hours and 23 minutes. This operation is over a route approximately 14,000 miles in each direction, and is GI-operated under the supervision of Brig. Gen. William H. Tunner, commanding general, Ferrying Division, Air Transport Command."

Thanks for the information, Colonel.

There probably are other outfits which have claims to operational or other records. Let's hear about them.

☆

AAF commanders have been directed to ground all flying personnel for 24 hours after they have given blood donations. A donor may be grounded for a longer period if the flight surgeon finds it advisable. It is the duty of the individual to advise his commanding officer and flight surgeon at the time the donation is made.

☆

Lost Parachutes

Nos. 36-1847, 37-300, 37-1445, 37-1447, 37-1448, 37-1495, 38-1004, 38-1555, 38-1556, 38-2244, 38-2248, 39-1026, 41-7067, 41-7068, 41-7069, 41-7080, 41-7082, 41-7061, 41-7084, 41-7085, 41-7086, 41-28271, 41-28272, 41-28273, 41-28274, 41-28275, 41-28276, 41-28277, 41-28279, 41-28285, 41-28305, 41-28307, 41-28308, 41-28310, 41-28311, 41-30899, 41-31269, 42-63452, 42-63453, 42-63454, 42-63455, 42-63461, 42-63463, 42-63465, 42-63466, 42-63467, 42-210090, 42-383815, 42-383827, 42-386456, 42-386468, 42-386470, 42-386478, 42-386489, 42-386492, 42-386495, 42-386499, 42-701024.

Return these parachutes, or address correspondence concerning them to Supply Officer, Base Operations, Bolling Field, D. C.

No. 42-488956 lost at Long Beach Army Air Base, Calif. Communicate with Lieut. M. J. Bidwell, Special Service Officer, Fort Ord, Calif., or return to Amarillo Army Air Base, Amarillo, Texas.

No. 42-543783, quick attachable type; return to Operations Officer, Army Air Forces, Lambert Field, St. Louis, Mo.

No. 42-108389, seat type; return to Operations Officer, AAF Pilot School (Basic), Majors Field, Greenville, Texas.

Found

No. 39-2522 held by Headquarters, AAF Pilot School (Basic), Perrin Field, Sherman, Texas.

PICTURE CREDITS

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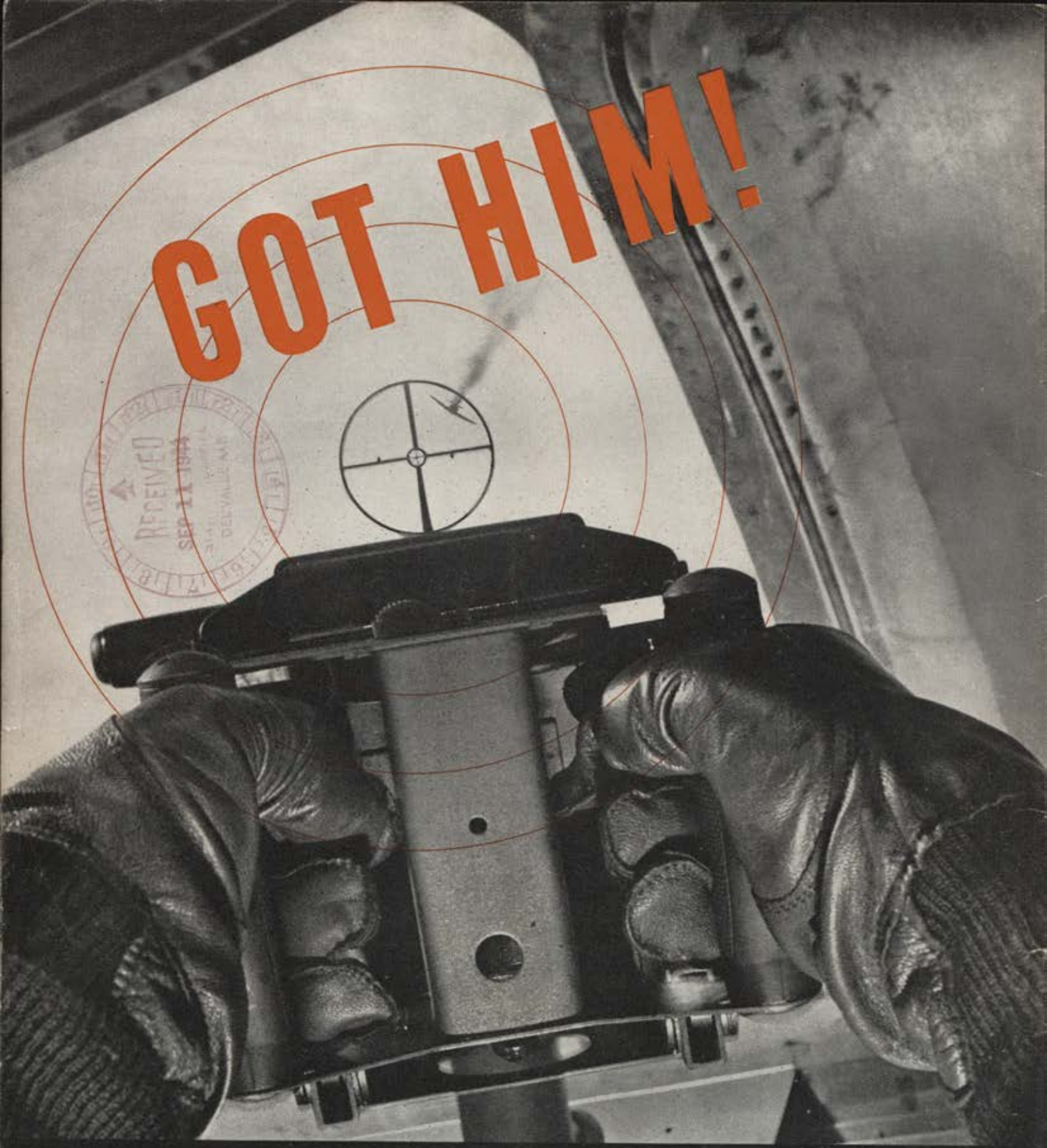
These returned combat veterans are starting their last hop in aerial evacuation. They are aboard a C-47 which will take them to hospitals within the geographic area of their homes. The story of air evacuation inside the United States is told in this issue of AIR FORCE.



This is aerial gunnery that brings crews home—guarantees the success of a mission. But this kind of shooting isn't luck. It takes the highest degree of knowledge and technical skill, developed and maintained by constant training.

A Gunner's Training Never Stops!