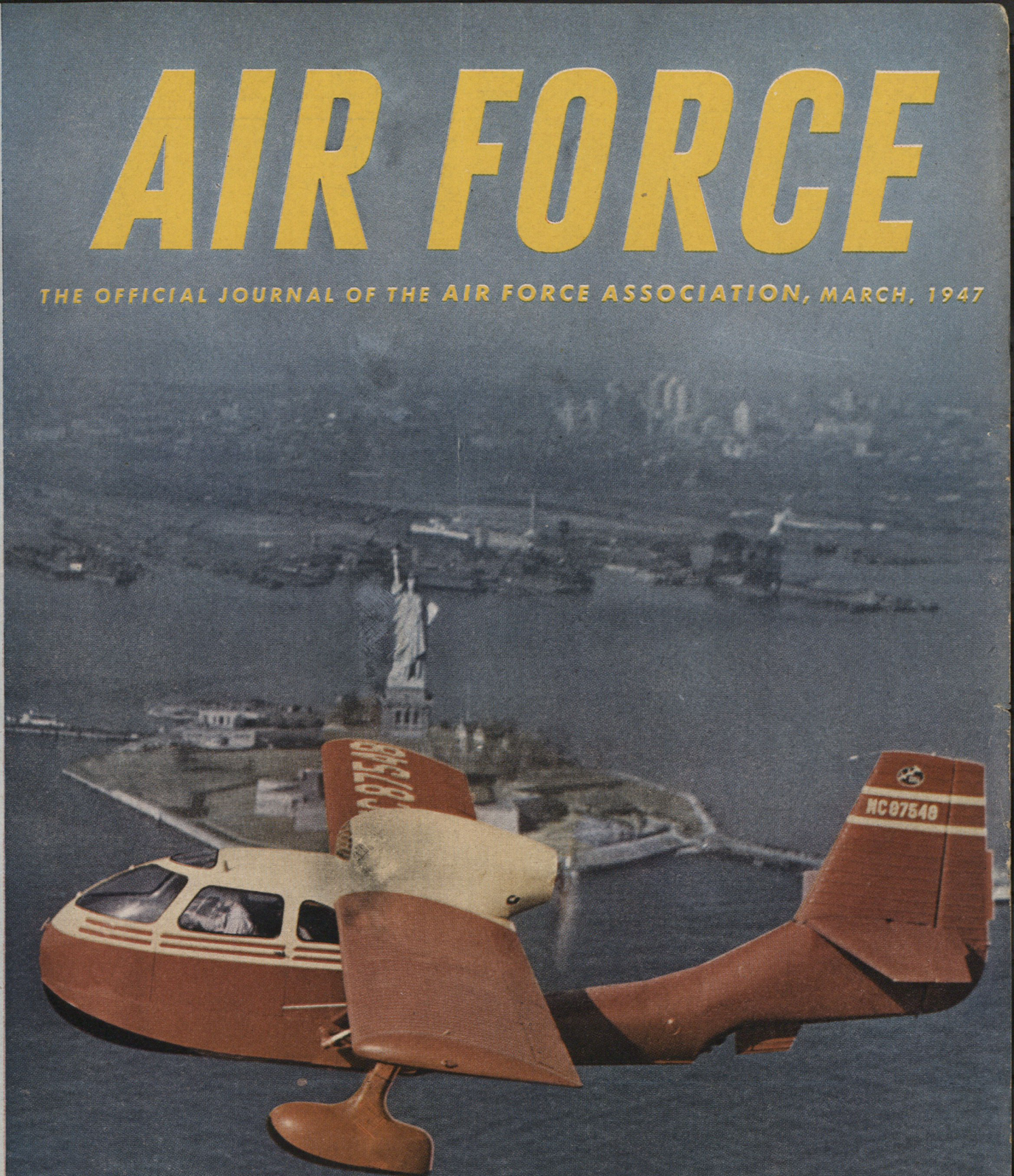
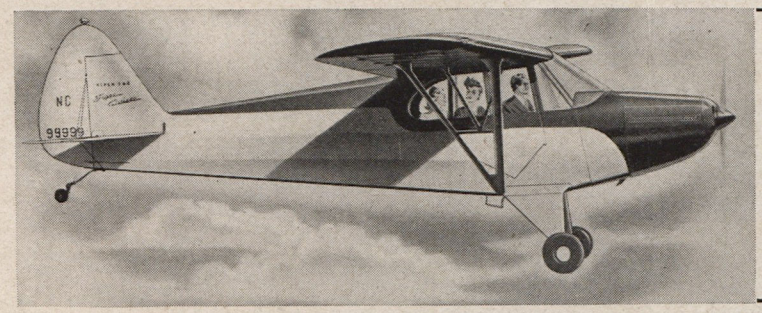
AIR FORCE

THE OFFICIAL JOURNAL OF THE AIR FORCE ASSOCIATION, MARCH, 1947



Republic Seabee



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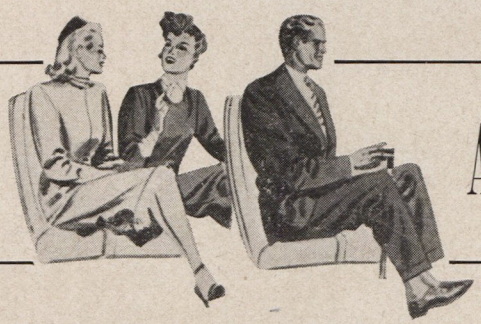

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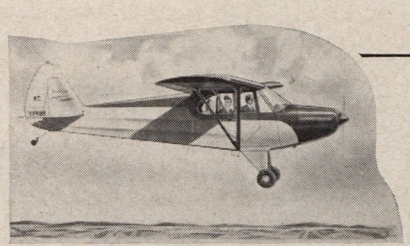

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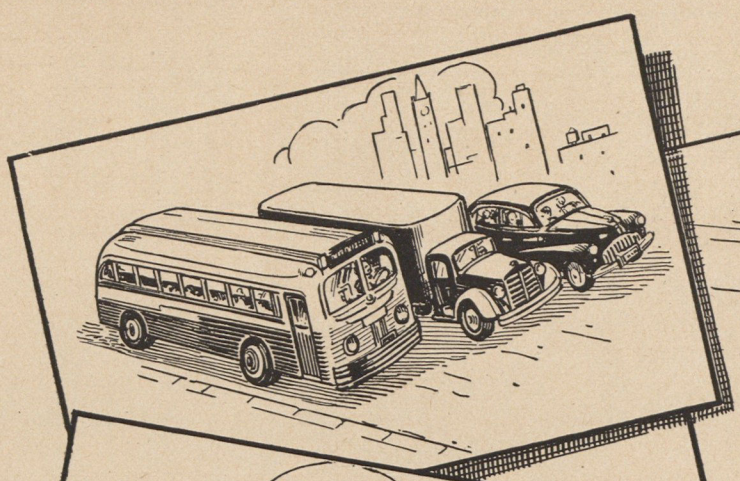

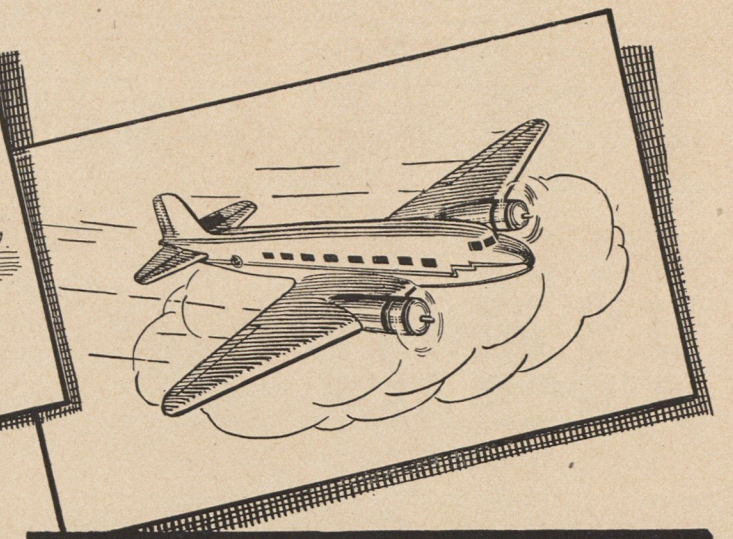

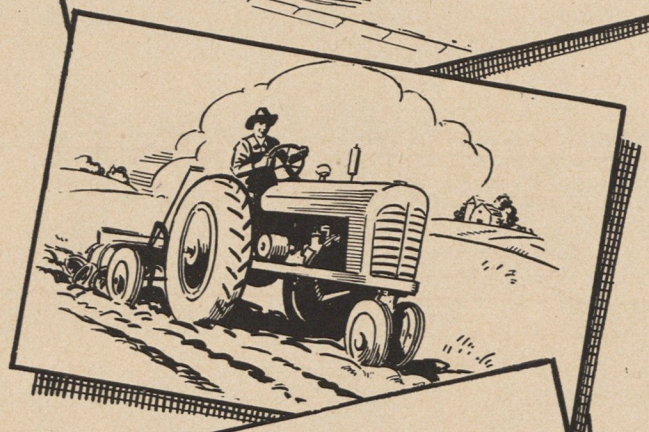

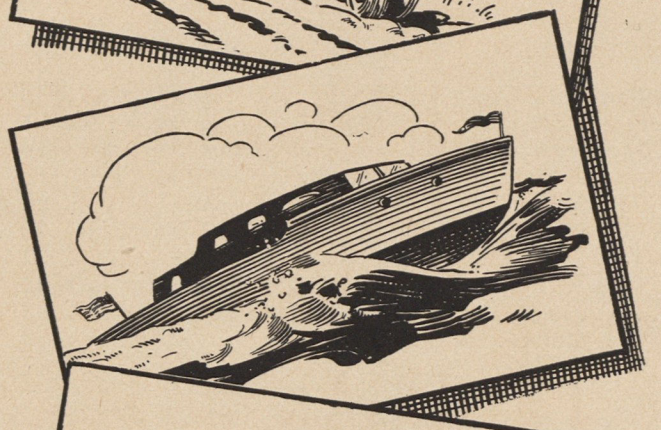

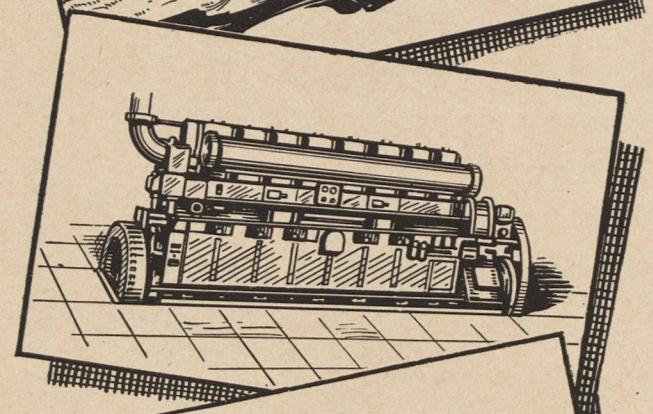

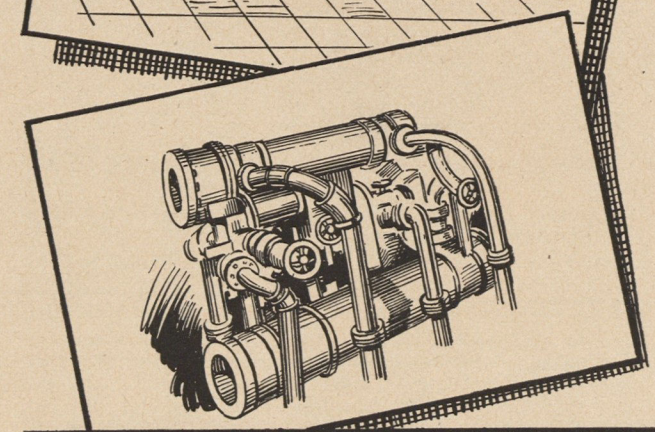

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AIR FORCE

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This Month

The Cover

View of the Republic Seabee over New York harbor with the Statue of Liberty in the background was taken by justly famed Rudy Arnold who specializes in airplane portrait work. This particular Seabee was dolled up in red strictly for photogenic reasons. Like most silver finished airplanes, the stock Seabee was murder to photograph in Kodachrome. It reflected the sky and as a result came out blue against a blue background. Arnold tried nearly all the filters in his case without result. The amount of Kodachrome wasted was terrific. Finally, at the collective suggestion of a number of color photographers, Republic's public relations unit, headed by the redoubtable Ken Ellington, got production to put this paint job on just one plane. The results speak for themselves.

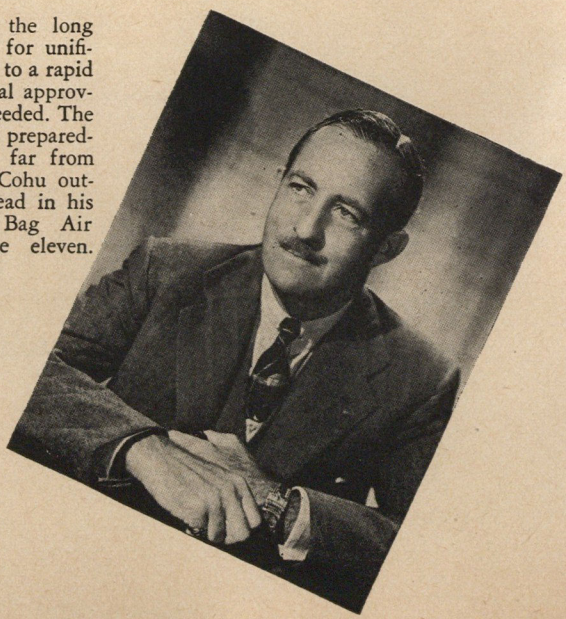
Boners, Etc.

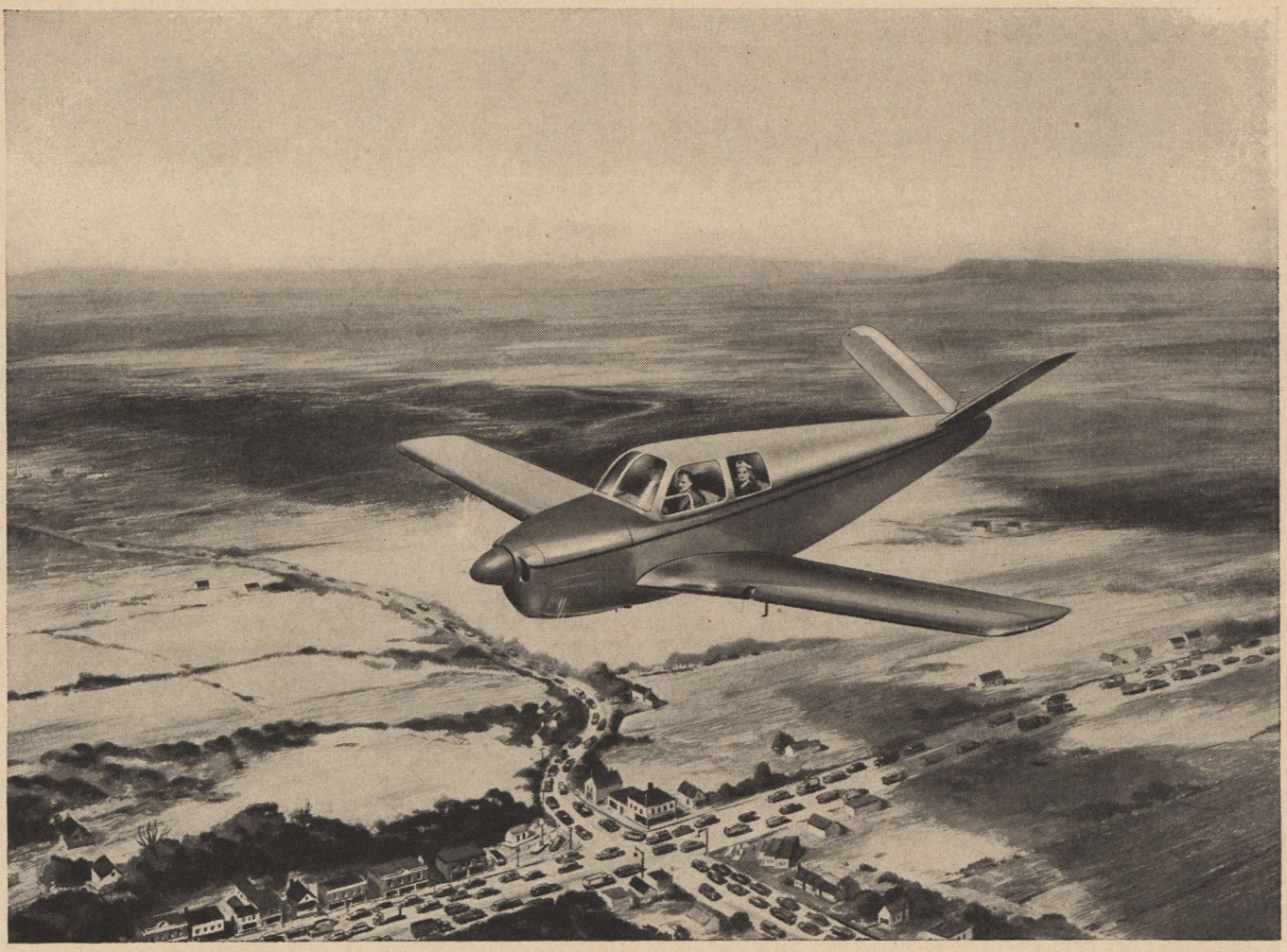
A large number of readers have written asking if it would be possible to resume publication of some of the departments which were featured in the old AIR FORCE magazine. The answer is yes. One of the first to reappear is "Plane Boners" which bows in on page 64 after an absence of eight months. As in the past, it will be prepared each month by the Flying Safety Division, Field Office of the Air Inspector.

Damned Island Damned Good

The story AIR FORCE reprinted from the book "One Damned Island After Another" (December) has brought forth more favorable comment than any other single article we have done in months. The clamor for more of the same has been so overwhelming that we are reprinting subsequent chapters beginning with "The Battle of Midway" in this issue (page 23). North Carolina Press, the publishers of the book, advise us incidentally, that the first printing has already been exhausted. They had no idea its sale would be so great.

At this moment the long and bitter battle for unification is drawing to a rapid end. Congressional approval is all that is needed. The fight for military preparedness however is far from over. La Motte Cohu outlines the job ahead in his article "Paper Bag Air Force" on page eleven.





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A STATEMENT ON UNIFICATION BY THE DIRECTORS OF AFA*

THE Air Force Association hails the compromise plan for unification of the armed forces proposed by the Army and Navy as a definite step in the right direction.

The purpose of our military establishment is essentially to keep us out of war, and if we should again become involved in an armed conflict, as we have twice in less than three decades, to enable us to win with the least possible loss of precious American lives. To accomplish this purpose, we must have in being a military establishment adequate to assure our national security.

In order not to unduly burden the national economy, our military establishment should be as small as possible and still capable of fulfilling this purpose.

We are primarily interested in effectiveness and economy. To attain the greatest degree of effectiveness and economy, our military establishment must of necessity have modernity, mobility, coordination, and clearly defined authority.

The proposed plan achieves coordination at the top level. It is anticipated that coordination at the operating level, desirable at all times and essential in time of war, will be developed later under this plan.

Defined authority for the Army Air Forces is achieved for the first time in the proposal. This is most desirable and is a splendid start.

It is expected that through a natural process of evolution, involving combined training and operation there will be, as time goes on, further unification permitting still greater increased economy and efficiency through drawing on one air force for serving the requirements of all the services.

Very real economies can be effected through:

1. Avoidance of duplication.
2. Multiple use of existent equipment. There is no valid reason why, after a sufficient period of training and indoctrination the same crews and the same general type planes used for strategic bombardment cannot be employed for long range Naval patrol and anti-submarine patrol. (Strategic bombers effectively demonstrated their ability to support Naval forces at Okinawa.) This multiple use of the same type planes for both strategic bombing and Naval cooperation will assure greater utility of all equipment. It is noted that the proposed plan permits the multiple use of equipment and personnel.
3. Greater uniformity of equipment and specifications and consequent economy in and simplification of procurement, maintenance and supply.
4. Reduced cost and increased efficiency incident to a combined training program.
5. Reduction in the number of required land plane bases and increased efficiency in the operation of those which are essential.

In the very important field of air research, additional economies can be effected through proper coordination. Until recently there were four uncoordinated agencies responsible for the development of the controlled air weapons of the future. There are still three. There should be one.

This does not mean that less money should be spent on air research and development, but rather that each dollar appropriated should be spent in such a way as to produce the greatest results. The future effectiveness of our military establishment depends in large part on the continuation and even augmentation of air research and development.

Inter-service competition can be beneficial but it should be integrated so that it becomes constructive rather than destructive and costly.

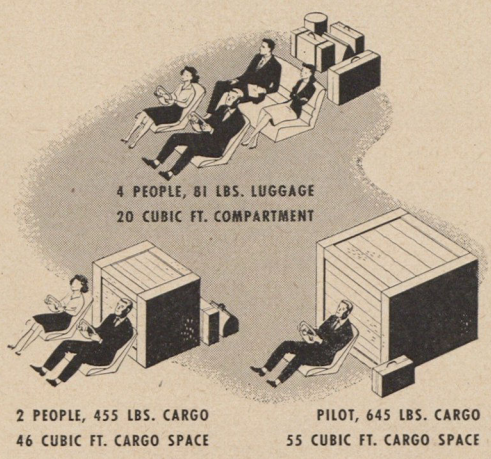
The Air Force Association is delighted at the progress made to date and wants to congratulate the Navy, the Army and particularly the individuals, both civil and military, responsible for working out the compromise plan on a splendid job well started.

It is our fervent hope that legislation will secure the gains already attained and that there may continue to be improvement in the effectiveness and economy of our military establishment through ever increasing cooperation and understanding between the various arms and services.

SIGNED:

The Board of Directors

*Issued publicly in behalf of the members of the Air Forces Association on the occasion of the organization's first birthday.



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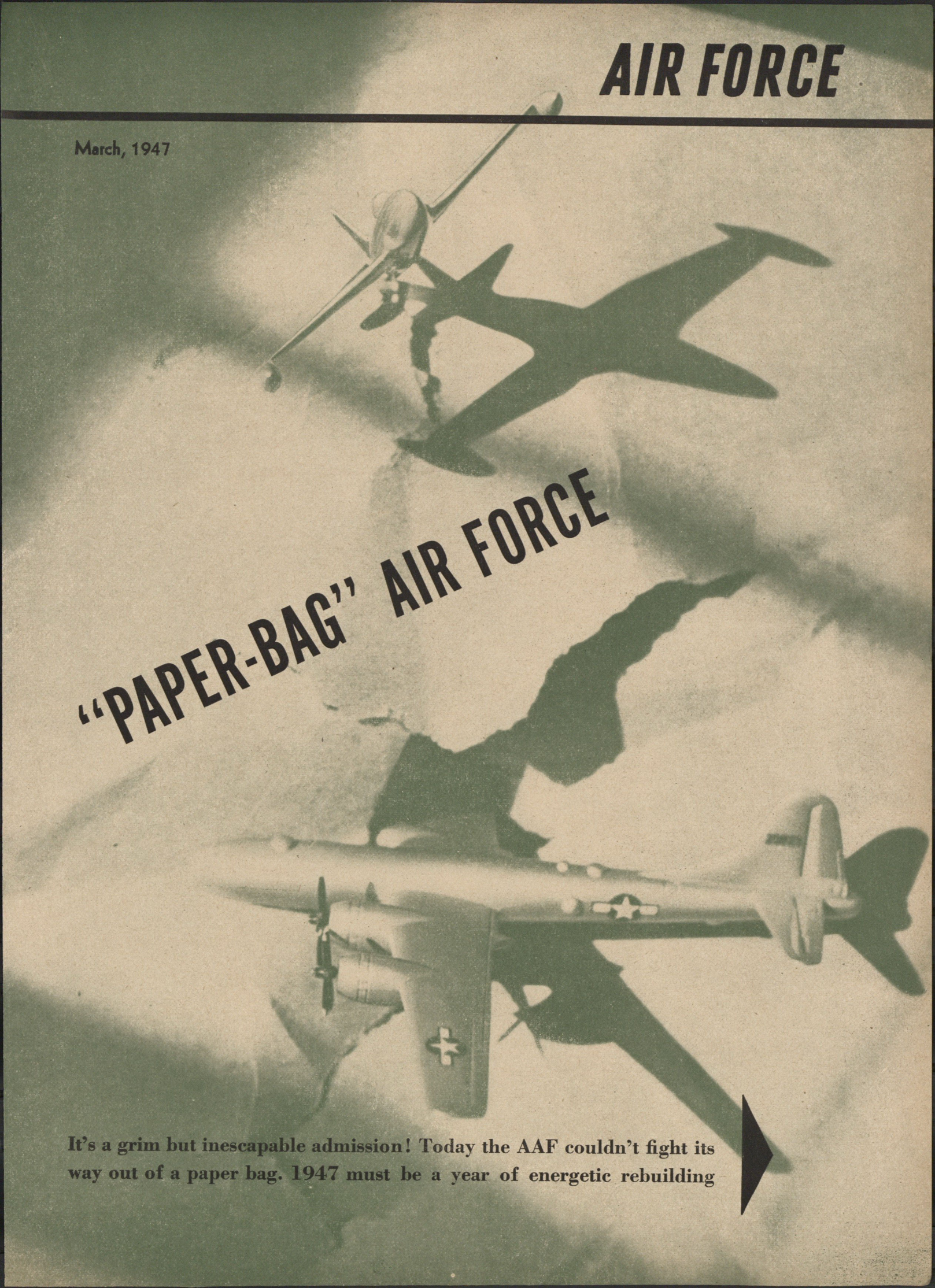
March, 1947



"PAPER-BAG" AIR FORCE

It's a grim but inescapable admission! Today the AAF couldn't fight its way out of a paper bag. 1947 must be a year of energetic rebuilding

"PAPER-BAG" AIR FORCE

BY LA MOTTE COHU

NOTE: *Mr. Cohu is President of Aircraft Industries Association and Chairman and General Manager of the Northrop Aircraft Corporation.*

RECONSTRUCTION of US air power is one of the most urgent problems facing the American people and its Congress in 1947.

Obviously there are other problems to be solved, complicated problems in our domestic economy and foreign relations. But our national security is basic to them all. And a strong defense program is our best insurance for security.

The core of that insurance is air power. Above all else, American air power won the global war. By its very existence it can make less probable the outbreak of another, vastly more terrible war. It is the most effective form of defense insurance. It is by far the cheapest.

During 1946, we all but let that insurance lapse. Following VJ-Day, demobilization was pushed through in such haste that our armed services were literally ripped apart. Our mighty air forces shrank to a remnant as pilots and crews were discharged, helterskelter, and great armadas of bombers and fighters junked or pickled. By midyear, officers who had led the AAF to victory assessed their skeleton commands and had to admit grimly that it would be impossible to put a single B-29 squadron in the air, and that "Today we couldn't fight our way out of a paper bag!" The US aircraft industry, which at the height of the war produced military aircraft at the rate of thousands a month, was dribbling them out in lots of a few dozens. Toward the end of 1946, it was estimated that disintegration had gone so far that no matter how grave the emergency, a minimum of two full years would be required to rebuild US air power to its VJ-Day pitch.

Meanwhile, United Nations negotiations notwithstanding, no other great people has been conspicuously tossing overboard its armed might. From all the evidence at hand, the contrary would seem to be true.

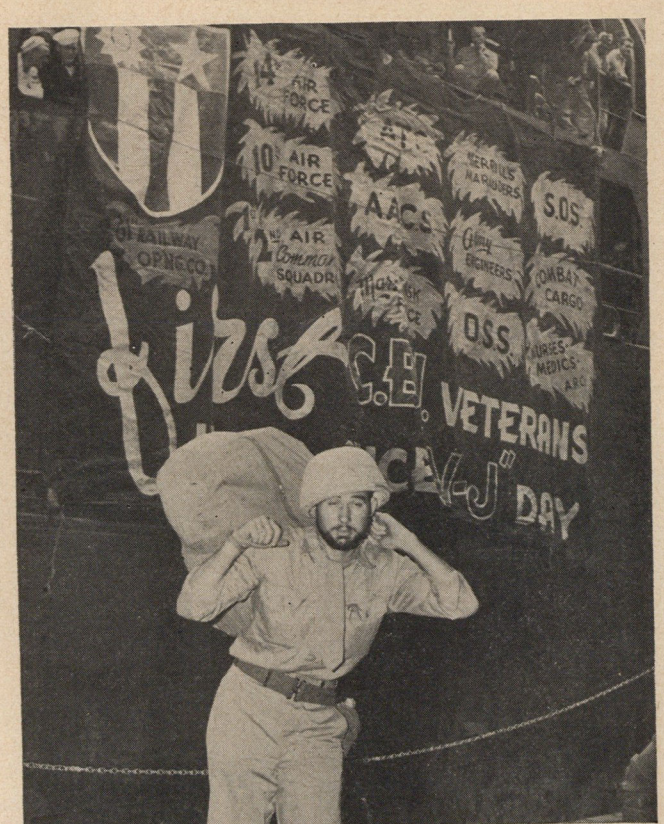
These facts have not escaped the American people and their representatives in Congress. Recent public opinion surveys, as well as statements by Congressmen and leaders of the Administration, underscore that a substantial majority demands a strong national defense program.

At the same time, the November elections show that the American people have determined upon drastic economies in government. The present Congress is committed to economy. The Administration has also declared itself in favor of cuts.

Always before in our history, when the pendulum swung to budget-paring, first to be slashed—and to get the most severe slashes—were the armed services. They were expendable, the whipping boys for generations of tub-thumpers. After all, we could feel reasonably secure behind our two immense oceans. In case of attack, we could muster up the plowmen and drygoods clerks, the fox hunters, mechanics, and bankers, long before an enemy could reach us in any strength.

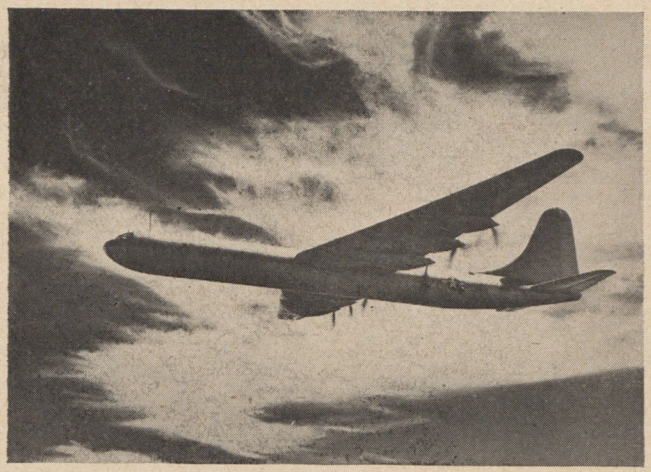
World War II destroyed our traditional American belief that we could rely for defense on Minute Men. It taught us in the blood and humiliation of Pearl Harbor that once-formidable barriers had actually become swift avenues of approach. Capitalizing on that lesson, we ranged through the air far into the homelands of our enemies and laid them waste. Thus we should be aware that history has taken a sharp vertical angle from its ancient course.

Looking to the future, we know that in the new dimension, the common air ocean—with its short cuts such as the Great Circle Polar route between North America, and Europe and



After V-J Day we worked night and day to get the boys home as soon as possible. We had no alternative, but we paid the price. Demobilization has shredded our forces far worse than the enemy.

Today, as in the past, we are thriftily storing up heaps of left-over equipment such as these P-51s which will be worse than useless in another war. Penny-wise is not only pound-foolish, but fatal.



The cost of building equipment such as the B-36 is not slight. But the only other choice, unpreparedness, would be far greater drain. At this moment we can only meet threats to peace by military might.

No other great people is conspicuously tossing overboard its armed strength. Britain, for example, is far ahead of the US in building modern air force, as indicated by the above flight of jet Vampires.

Asia—we have the other major powers practically in our backyard, instead of remote in space and time by weeks and thousands of slow surface miles. Today every section in the United States is vulnerable to crushing air attack from any quarter of the globe.

This concept is revolutionary. It plumbs through the bedrock of our national thinking. But, apparently, recognition of it is a key consideration with our representatives in Congress who are now busy with plans for intelligent economy in government.

Representative Taber, of New York, Chairman of the House Appropriations Committee, has flatly declared that the economy drive must be so directed that it will not damage the efficiency of the government. No concept of government can ignore national defense, the means for preserving our government and the 140,000,000 Americans it represents.

"In these perilous times," Massachusetts' Representative Joe Martin has stated, "we must maintain the Army, the Navy, and Air Forces up to full strength necessary to insure security to the country."

Aiming at some $9 billions reduction in Federal expenditures, the Republican House Steering Committee has placed itself on record for adequate national defense.

Seven major wars we have fought. For not one of them have we been adequately prepared. Thousands of unnecessary American graves bear testimony to that, as do other thousands of the lame, halt, and blind in our hospitals. And untold millions of dollars in squandered resources have gone to pay the bill for our chronic unreadiness. True enough, we have often thriftily stored up heaps of equipment left over from the latest war, and have found it almost worse than useless the next time national emergency came.

Defense can no longer be considered in terms of warehoused antiques. Penny-wise is not merely pound-foolish today. It can be fatal!

Americans have signified that they want their country strong. They have clearly indicated that they recognize strength in the air is of paramount importance. So far, so good. But if we are to have real air power and not simply a gesture in that direction, every citizen of the United States must go beyond saying, "I'm for it!" He must be willing to pay for that air power.

The cost will not be light to the taxpayer. But long, bitter experience shows that the alternative, unpreparedness, would in comparison be an astronomical drain.

Figured in the expense of preparedness is the training of airmen (both regulars and a large, well-equipped reserve) in constantly changing techniques. Design and development of aircraft must keep pace with the complex of new discoveries in a variety of fields—jet and rocket propulsion, electronics, supersonics, and human physiological and psychological adaptations to all of them. In addition, such aircraft must be quickly available in quantities. That means a potent air force in being, progressively bettered as to types, backed by a healthy aircraft industry which, in these times of fluid technology, can at short notice swing into large-scale production of the most advanced designs.

In no other way can the United States be ready to meet threats to peace and to its existence.

Here it is well to point out that the Buck Rogers kind of air-future is not yet upon us, although overblown newspaper stories about experimental work may have left that general impression. Ten or twenty years from now, push-button rocket craft will probably be hurtling through the stratosphere, or will even strike the moon. But this is certain:

For the immediate future, the most delicate period as far as prospects for peace are concerned, aircraft of more or less orthodox type will be predominant.

During 1946 the aircraft industry produced some 1400 military planes of all types, including experimental models. Output was badly hampered by strikes, materials scarcity, and shortages of skilled personnel. Unless military appropriations are drastically reduced, production in 1947 should rise to an estimated 2500 units. Even this gain, however, will fall below the 3,000 military aircraft recommended by The Air Coordinating Committee as minimum annual production for national security and to keep the industry prepared for emergency. Dollar value and pounds produced will go up sharply because emphasis will be on very heavy bombers such as the B-35, B-36, and B-50. The general inflationary trend in wages and materials prices will undoubtedly add to the mounting costs of military aircraft. Value of military deliveries, as now scheduled, should exceed $800,000,000.

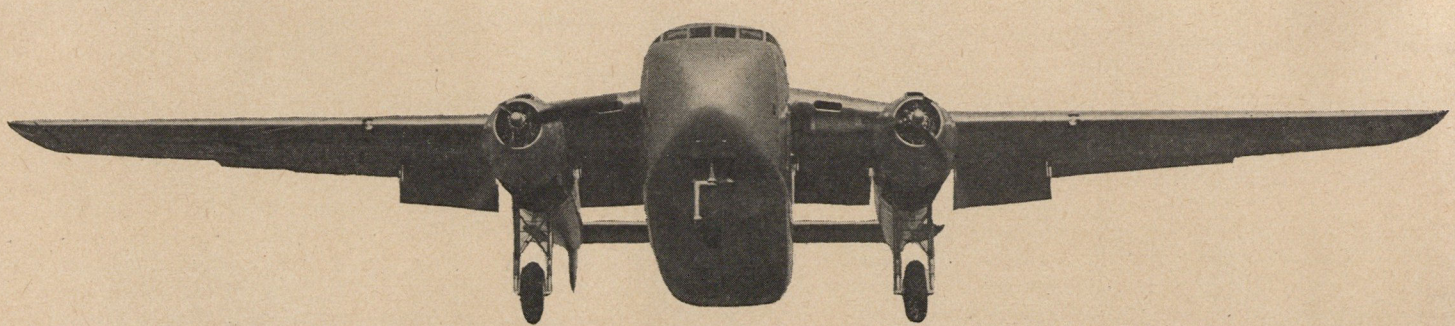
Industry-wide employment (more than 2,000,000 at the peak of production) was approximately 200,000 at the end of 1946, and is expected to remain at about that level through 1947. More than 44,000 of those presently employed, or one out of every five, are veterans of the armed services. However, employment opportunities are by no means closed in the aircraft industry. The shortage of skilled technicians, especially engineers, will be felt for months.

During 1947 the aircraft industry will have problems peculiar to itself. But in the main it will share those of the country as a whole, particularly those of the armed forces it serves. The all-important goal of rebuilding a strong air force to insure peace now and for years to come can be reached. Enlightened public understanding of what is at stake is all that is needed.

PARATROOP TROLLEY

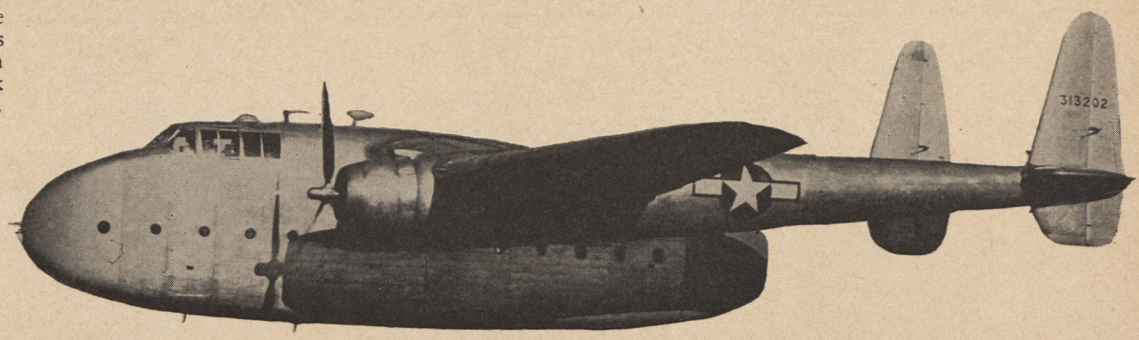
BY WILLIAM S. FRIEDMAN, *Sgt, AC Res.*

The C-82 was not designed to be pretty. Nicknamed the "expectant P-38," it has a hold volume 93 per cent of that of a railroad car.



Singularly wide tread gives the Packet excellent ground handling characteristics. Despite 106-foot span, the C-82 gets off in 800 feet.

High, boom-supported empennage eliminates danger of parachutes fouling in the tail. Split doors in rear allow loading of light tank ordnance or bulky equipment.



Fairchild's Packet boasts boxcar volume and grasshopper takeoff. Now it becomes Troop Carrier Command's main medium for air transport of paratroops, light tanks, vehicles, supplies

HAVING acquired a full complement of Fairchild C-82 Packets, the war-famed 36th Squadron of the 316th Troop Carrier Group, Pope Field, N. C., has become the first postwar unit of the AAF to be completely equipped with the new "Flying Boxcars," according to Major General Paul L. Williams, C.G. of the Ninth Air Force. Future plans for Troop Carrier Command call for the gradual abandonment of all Douglas C-47s and Curtiss C-46s in favor of the versatile, fast-stepping Fairchild ship.

The flying boxcar was developed during the closing days of the war. Hostilities ceased before its unique capacities could be demonstrated in actual combat. Designed to carry such cargo as a light tank, a heavy caliber field piece, 42 paratroopers or 34 litters, the Packet combined capacity and operational speed with a short takeoff and landing run unique for an airplane of that bulk.

The C-82 has a wingspan of 106 feet, and is 77 feet long. It is powered by two 2100 hp Pratt & Whitney Engines, which push it along at a cruising speed of over 200 mph. Its gross weight is 45,000 lbs. With its full military load, the Packet can take off in about 800 feet. The box-like cargo compartment has 93% of the capacity of a standard rail boxcar.

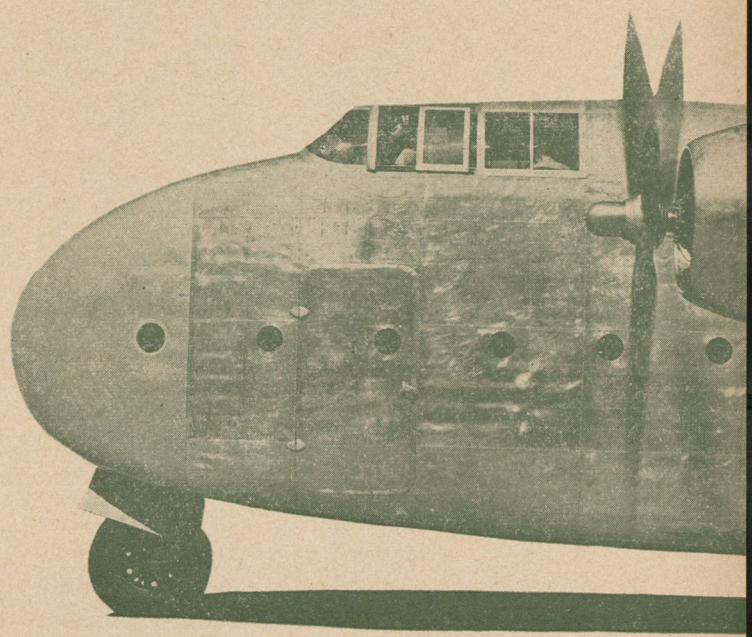
The 36th Squadron, the first all-Packet outfit, has battle stars for campaigns in Egypt-Libya, Tunisia, Sicily, Naples-Foggia, Rome-Arno, Normandy, Northern France, Rhineland and Central Europe. It has also been awarded three distinguished unit citations.

Its current assignment revives a memorable association with the famed 82nd Airborne Division. Back when TTC was just a bunch of "troop ferries," the 36th participated in the training of the 504th and 505th Parachute regiment of the 82nd Airborne. In the intervening four years, the 36th carried the 82nd into such places as Sicily, Italy, England, Normandy, Holland and Germany. Back in the US since May, 1945, the 36th again is associated with the 82nd in its airborne operations.

One of the most interesting operations in which the 36th demonstrated the versatility of its Packets was Operation Meteor, the mass transcontinental flight of jet fighters. C-82s carried engines and spare parts, so that the P-80s could be serviced throughout the operation.

On the return flight from the West Coast, one of the Packets set a new speed record for twin-engined cargo planes, making the crossing in 9 hours, 14 minutes and 5 seconds. Another outstanding achievement of the unit was a 6-month tour of Europe in a C-82. Lt. Col. William Mandt and a crew of six flew 25,000 miles in Europe, demonstrating the craft to thousands of GIs and civilians. More than 1000 demonstration paratroop drops were made during this trip.

Besides being a paratrooper's favorite, Packets are popular with cargo handlers. Like the tail door, the side hatch (right) is set at truck height to facilitate loading. In a general program to replace all wartime equipment in the Troop Carrier Command, the famed 36th Sq. of the 316th Troop Carrier Group based at Pope Field, N. C., has had its C-46s and C-47s replaced by the new giant "Flying Boxcars."



With the pressure of war removed, the AAF's Training Command enters a new era of more deliberate instruction for tomorrow's airmen

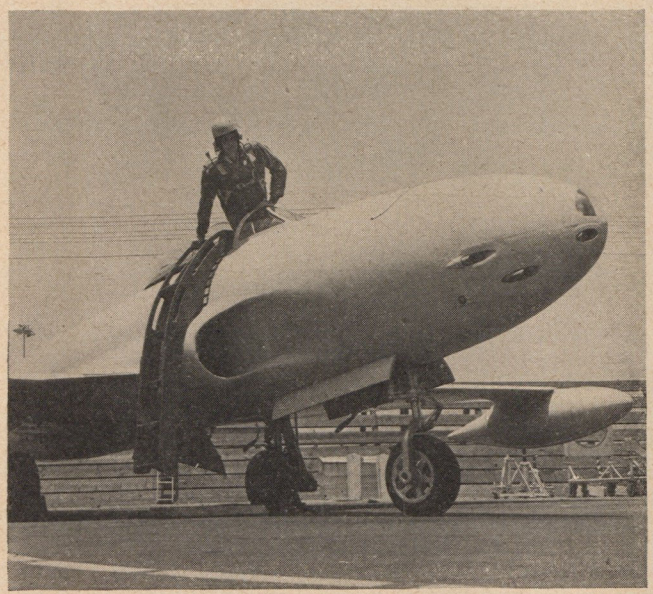
School for SECURITY

BY LIEUT. GENERAL JOHN K. CANNON
Commanding General, Air Training Command

BARKSDALE FIELD, LA.

ON V-J Day the AAF Training Command was slightly more than two years of age. But in those two years it had presented diplomas of graduation to more than 200,000 wartime pilots, 50,000 bombardiers, 50,000 navigators and 275,000 aerial gunners. Technicians had completed 839,764 specialist courses. In all, the Command had awarded 3,054,911 diplomas to Air Force and allied personnel.

Despite the haste with which the program was perfected, Training Command pioneered many new instructional techniques. The field of mass education was explored as never before. Training films, elaborate cutaways and functional mockups—hundreds of elaborately devised and scientifically designed training short cuts—were perfected and incorporated into the program. Many of them, because of the effective results they made possible, have since been snapped up in prin-



Williams Field, Ariz., operated by Training Command's flying Division is center for jet fighter transition instruction. It is also site of fighter gunnery and advanced single-engine courses (below).

ciple by civilian educational institutions. Technical military training became, for the first time in history, a scientific formula keyed to one final product—combat needs.

Expanding the training program was simple, however, compared to post-VJ Day problems that confronted the Command. In two short years, leaders had erected the most polished assembly line of knowledge in the world. Then, almost overnight, the vast machine went into reverse gear. Instead of training men for a specific skill, Air Training Command began operating Separation Centers to speed the return of war veterans to civilian life.

Strength dropped steadily as the entire organization teamed to pump the nation's fighting manpower back into peacetime industry.

Training Command's formula worked as well in subtraction as it did in addition and multiplication. The retreat from war-swollen operation was accomplished without fumbling.

A "postwar plan of operations" was blueprinted almost before the first flood of returnees began wearing the ruptured duck of civilianhood.

Combat needs soon became occupational needs and, as the Air Force began to prepare itself for a peacetime role of vigilance, Air Training Command revamped its machine to provide alert, well-trained Regulars for operational units.

The training program had already been consolidated considerably before 1946-47 budget curtailments were announced, but when the new reductions came, the program was charted through further necessary reductions. The Command concentrated on mapping an elastic, economic postwar training program guaranteed to provide training in every essential category and to provide that training on a plane consistent with the peacetime Air Force budget.

Today, wartime training centers have largely been inactivated or declared surplus, and the postwar Air Force training program, wide in scope but limited in physical outlay and cost, is moving toward a refinement of technical acumen. The Command is determined that while quantity of training may fluctuate widely, quality will be constantly advanced.

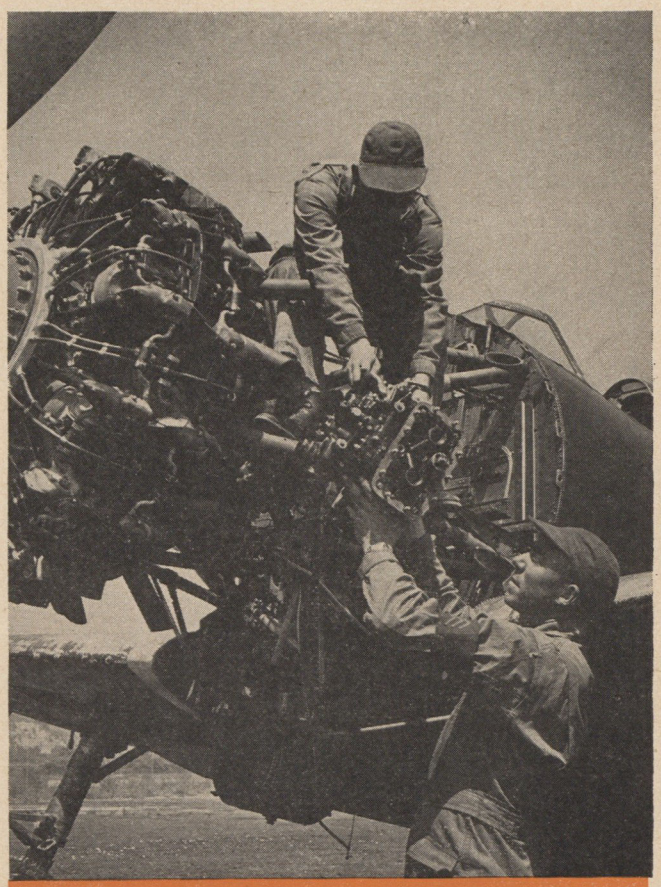
Physically, Training Command's postwar establishment is but a skeleton of the wartime structure. The old AAF Flying Training Command and the AAF Technical Training Command have disappeared into the Flying Division, Air Training Command, with headquarters at Randolph Field, Texas, and the Technical Division, Air Training Command, with headquarters at Scott Field, Ill. A new division, the Indoctrination Division, Air Training Command, has been developed for operation of the only basic training center in the postwar Air Force, the former AAF Military Training Center.

During the war it was often impossible for one installation to provide facilities for more than one training course. Today, with smaller classes and a general reduction of production requirements, a single station may serve two or more full-time training programs.

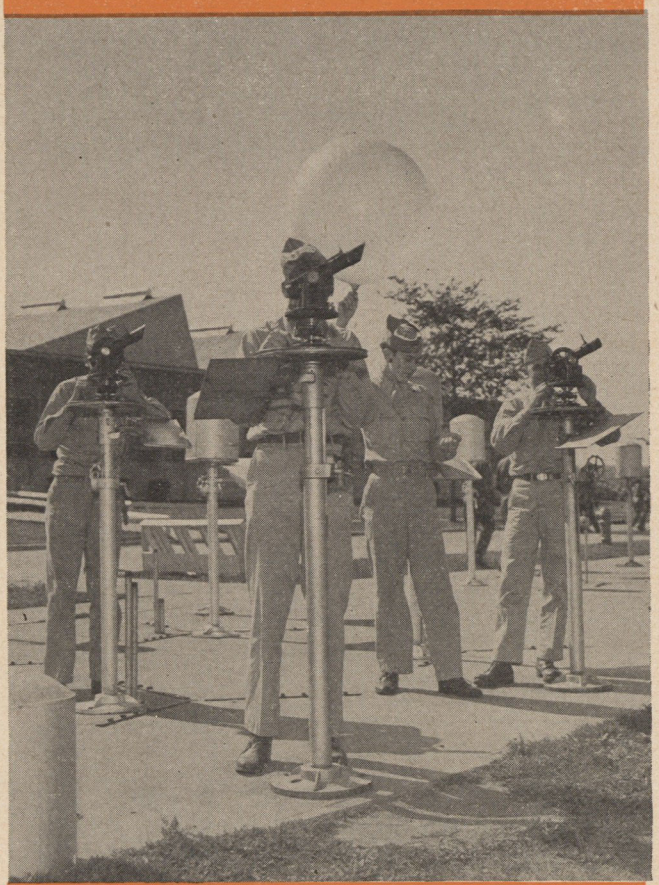
Flying Training Command, for example, has been consolidated into four highly active installations. Randolph Field, serving as headquarters for Maj. General James P. Hodges and the Flying Division staff, also serves as a primary and basic pilot school. The base also operates the Air Force Helicopter Pilot School at near-by San Marcos Army Air Field, handling control through a satellite operational setup.

At Barksdale Field, Shreveport, La., home of Air Training Command Headquarters, the Flying Division utilizes academic and airdrome facilities for its instrument pilot and instrument instructor schools and has moved in the advanced twin-engine pilot school to make use of facilities.

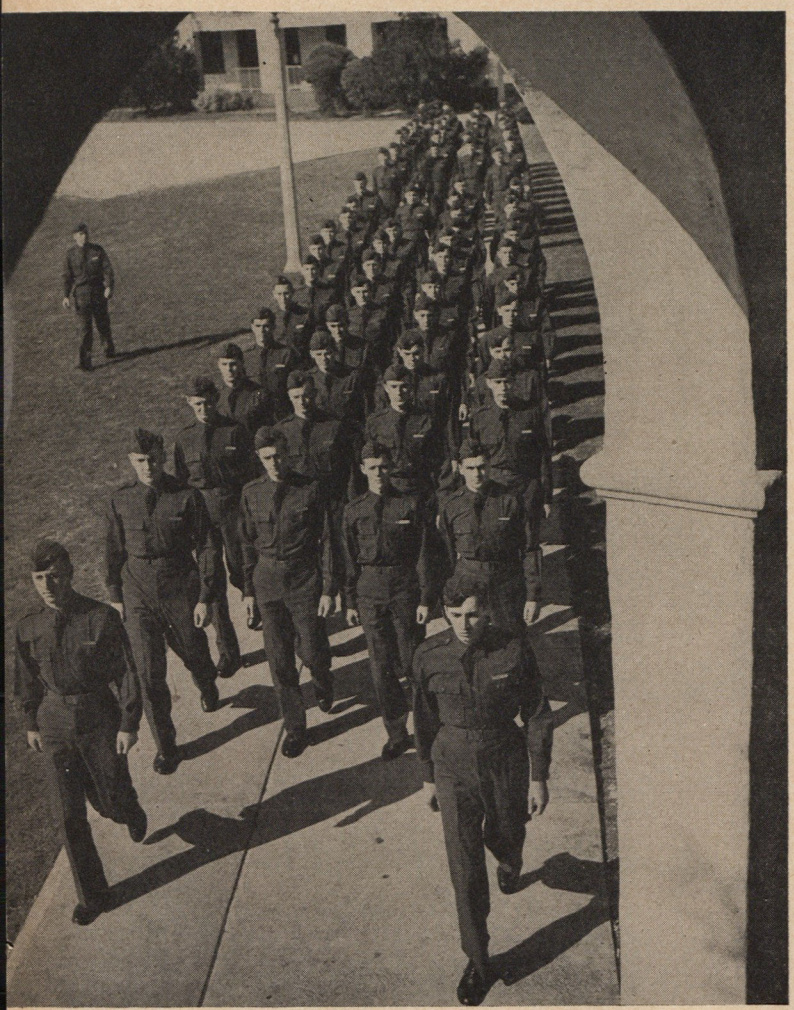
The "Aircraft Observer—Bombardment" course, a new innovation in Air Force training, is scheduled to begin operations shortly at Las Vegas Army Air Field, Las Vegas, Nev. This course, which will integrate navigator, bombardier and radar observer skills into one individual, will be one of



Chanute Field remains one of AAF's busiest installations, conducting training in sixty-six specialties, including maintenance.



With theodolites, students at AAFTC's Weather School, Chanute Field, predict weather by drift of balloon as charted on instrument.



For the first time since the discontinuance of wartime schedules, AAFTC is accepting applicants for student cadet pilot training. First quotas will be taken from ranks of Regular Army enlisted men.

the nation's most modern flying schools. Integration of the three positions is designed to give the United States Air Force one of the most versatile airmen in history and is indicative of the multiple skills and wide knowledge to be expected of tomorrow's airmen.

Williams Field, Ariz., operated by Training Command through its Flying Division, is the Command's center for jet fighter transition training, advanced single-engine pilot instruction and for the postwar AAF Fighter Gunnery School.

All peacetime flying courses are being conducted at these four installations, with three additional bases—Perrin Field, Sherman, Tex., Luke Field, Phoenix, Ariz., and Goodfellow Field, San Angelo, Tex.—on temporary inactive status as standby installations. Should expansion of the training program be necessary in the future, these standby installations will go into instant action.

The Technical Division, Air Training Command, commanded by Maj. General William E. Kepner, is operating six postwar installations, each devoted to training specialists in several categories.

Chanute Field, Ill., for example, is conducting training in 66 different specialties, including the airplane maintenance officer course, aircraft weight and balance course, airplane and engine mechanic courses for all pursuit type aircraft, including the P-80 jet-propelled fighter, airplane electrical mechanics course, airplane hydraulic mechanics, airplane instrument mechanics course, airplane power plant courses, airplane propeller specialists courses, sheet metal workers, parachute rigger and repairmen, welders, machinists, weather officers course, weather observer courses, forecasters courses, Rawinsonde operator and technician courses, synthetic trainer operator and mechanic courses, and others.

Scott Field is the Command's communications training center, producing communications officers, message center officers, radio operators, radio direction finding specialists, cryptographic technicians and teletype mechanics.

At Boca Raton Army Air Field, Boca Raton, Fla., Training

During the war the North American AT-6 was to the training program what the Douglas DC-3 was to transport. Later it was used in both Basic and Advanced schools, still one of TC's workhorses.

Command's Technical Division is producing radar operators and mechanics as well as operators and maintenance men for the Ground Controlled Approach radio-radar instrument landing system.

Keesler Field, Biloxi, Miss., specializes in the production of airplane and engine mechanics for cargo and bombardment aircraft and also operates the only Air Force helicopter mechanic course and the Military Police School.

Lowry Field, Denver, Colo., is the postwar Training Command photographic and armament training center, producing aerial and ground photographers, photographic laboratory technicians, armament officers and mechanics, bombsight and automatic pilot repairmen and power turret and gunsight operators. The field also graduates remote control turret mechanics and finance technicians and operates the Air Force Crash Fire Fighting and Rescue School.

At Geiger Field, Spokane, Wash., aviation engineers are trained in 36 different courses. The field centralizes the entire engineering training output of the Air Training Command and its schools produce men for every position on the Air Force construction team. The curriculum includes courses for Diesel mechanics, draftsmen, blacksmiths, automotive equipment mechanics, construction technicians, structural steel workers, physics laboratory technicians, surveyors, bulldozer operators, demolition technicians and others.

The Indoctrination Division, operating the largest military installation in the San Antonio, Tex., area, is commanded by Brig. General Russell E. Randall. The Division provides basic training for all AAF recruits and also operates the postwar AAF Officer Candidate School.

Air Training Command Headquarters, located in a permanent peacetime home at Barksdale Field, exercises top control over all three subordinate divisional headquarters. The over-all training picture is under constant study and regulation. The flow of recruit airmen into the Indoctrination Division and the training program conducted there are mapped down to the last detail. As quickly as men satisfactorily complete basic, they are assigned to technical schools.

A recent recapitulation of Air Training Command's curriculum listed more than 175 flying and technical courses in current operation. The strength of each class has declined sharply from wartime records, but the scope of the curriculum has been reduced only slightly.

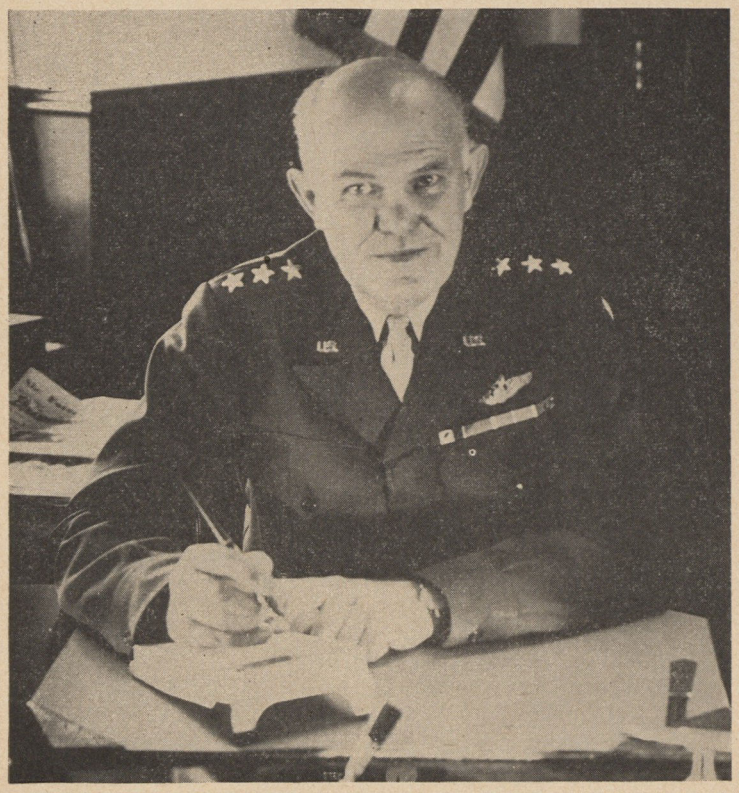
Postwar Training Command courses are reflecting important internal improvements. The hectic haste dictated by war is giving way to a more scholarly pace. As a means of assisting airmen in the ready assimilation of technological advances, Air Training Command is broadening the study of theoretical and background knowledge in all courses. The study of theory, while not cut below practical levels in war, was briefed considerably in efforts to shave training schedules. With the return to peacetime operation, it is possible to impart a complete general knowledge of theory to each man in his particular field of work. Most future technological advances in any one field will represent an expansion or development of basic theory. If these fundamentals are clearly understood, the airman will find the assimilation of improvements considerably simplified.

While theoretical phases of courses are expanding, the "learn by doing" technique of instruction is being retained as a characteristic of Air Training Command schooling.

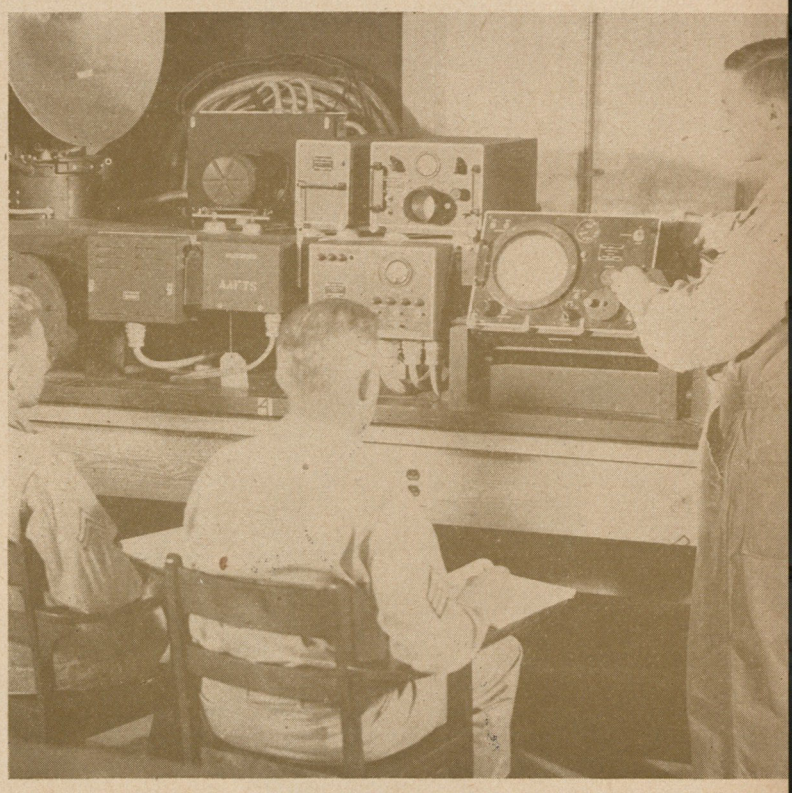
"Learn by doing" instruction is a simple adaptation of the apprentice system. Students first study their equipment, then go to work on it under expert supervision. Instructors put operational malfunctions into the equipment and the trainee must discover the trouble and correct it. The student encounters, in training, all the malfunctions he will find when he takes his place as a member of the Air Force team.

No man can accurately predict, in this world of scientific and mechanical complexity, the exact future of air power. It is Air Training Command's job to keep pace, however, with advances as they become practical. In accomplishing this task, Air Training Command keys its system to the future, "Training Tomorrow's Airmen Today."

Lieut. Gen. John K. Cannon, known to the gang as "Uncle Joe," is head of AAF Training Command. It's his job to see that peacetime training program stays abreast of proven technological advances.



Radar, the all-seeing eye of electronics (below) is studied at Boca Raton, Fla. The radar course is one of more than 175 flying and technical subjects given by AAFTC in its postwar curriculum.



With "the boss" gone, Tex Beneke has fallen heir to the job of fronting one of the finest popular music groups ever assembled. Miller had long planned to assist Tex in organizing a unit of his own—it was one of Tex's lifelong ambitions. The tragedy of war brought about the accomplishment of that ambition sooner than either had anticipated. Tex is now stubbornly devoted to perpetuating the master's musical ideals.

the MELODY lingers on

BY SANFORD A. WOLF

Two years ago last December fifteenth, Major Alton G. Miller of Tenafly, New Jersey, Lt. Col. Norman Paessell of Washington, D. C., and Captain Don Haynes of New York City stood beside the runway of London's Twinwood Airfield listening and waiting for a plane which was to fly in from a B-17 strip called 507, pick up Miller and Paessell, and take them on to Orley Field outside Paris where Miller was to make some personal appearance arrangements for his GI band. It was early morning and cold—nearly freezing. On top of that there was a 200-foot ceiling. From where the trio stood they couldn't even see the tower. Nervously Major Miller repeated the classic remark about "even the birds walking," but the Colonel reassured him that he had flown before with the pilot who was coming to pick them up and that there was nothing to worry about.

Tex Beneke has been a member of the Miller band ever since there was a Miller band—since 1938 to be exact.

Haynes had just started jockeying first on one foot and then the other to keep warm when the ship—a single-engined Norseman C-64, piloted by F/O John Morgan of Detroit—broke out of the overcast and made a perfect landing. The Colonel and the Major tucked their coats around their necks, said goodbye to Haynes and climbed aboard while the engine was still turning. Morgan's radio was on the fritz so to save time he took off without clearance. They were out of sight before the Captain had walked away a hundred paces. None of them were ever seen again. Without purpose or warning the treacherous English Channel took unto itself the lives of three fine soldiers—Paessell, Miller and Morgan. Miller, by chance, was a musician, and one of the best.

That was two and a half years ago. Today the official band of the AFA is still drawing record-breaking crowds in theaters and night spots from coast to coast. Miller has gone. But the melodies of the band he would have fronted if he had lived will linger for a long time to come.

Miller accepted a commission as a Captain in the AAF in October, 1942 to assist the AAF Training Command in recruiting mechanics and aviation cadets. He had been approached earlier by TC officials who explained that their Command was on the spot to train over a hundred thousand cadets a year and an even more staggering number of mechanics. It was a tough assignment, the officers explained to Mr. Miller, and they wondered if he would help. As an inducement they said he would be given authority to select musicians from any of the Command's 475 continental bases for his orchestra, and allowed to build a radio recruiting program of his own design. Miller, who was draft-exempt,

dropped a job that had grossed him over a million dollars a year for the three previous years, to accept the assignment.

But at first things didn't move as smoothly as the boys in khaki had led Mr. Miller to expect. In those days every station in the country was sorely pressed for men and it was quite a chore to get a base commander to relinquish personnel without replacements. Bodies were bodies and there wasn't a C.O. in the land who had more of them than he needed. As a result many of Miller's requests for musicians were turned down by commanders who couldn't understand the logic of taking a man off the line to put him in an orchestra. Training Command Headquarters, while it wanted to help Miller, didn't want to strain relations with subordinate echelons by issuing "orders." So the job of assembling the horn-tooters had to be kept on a request basis. It was a long and heartbreaking task. More than once Glenn thought of giving the whole thing up and going back to civilian life. About 300 requests went out from TC Headquarters in Fort Worth, some of them accumulating a dozen or so endorsements, before Glenn had an orchestra he was willing to put on the air under his signature, and even then he did so with some hesitation.

The "Band of the Training Command," which was stationed at the photographic school at Yale because of the proximity of New York broadcasting facilities, made its debut on Saturday afternoon June 5, 1943 from the stage of C.B.S. Playhouse number four. The occasion was the first broadcast of "I Sustain The Wings." For half an hour the boys played "American Patrol," "Moonlight Becomes You," "The Caissons," etc., and it is safe to say that never in the history of radio had the airlanes been treated to popular music of such artistry and craftsmanship. Miller had assembled 38 of the

Major Alton G. Miller (above) "in the mood." General Jimmy Doolittle once told Glenn that next to a letter from home his orchestra was the greatest morale builder in the ETO. Bing Crosby, who appeared with the group overseas, commented that it was the "most terrific outfit since the invention of cupped mutes." Coming home from war (below) was a happy event, but it was saddened by the absence of the unit's C.O. During their overseas tour each man earned seven ribbons, including the Unit Citation badge bestowed by Gen. Eisenhower. Mrs. Miller now directs band's activities.

A great musician was lost when the tragedy of war claimed the life of Major Glenn Miller. But his music is being perpetuated by a loyal bunch of vets

Only member of the Beneke outfit who isn't an Air Force veteran is easy-to-look-at Ginny O'Connor, band's featured female vocalist.

nation's best musicians and had molded them into the finest popular orchestra of all time. This is not opinion. Any man in the music business will tell you the same thing. Among the boys in the band were such names as Mel Powell on piano, Ray McKinley on drums, Trigger Alpert on bass, Bill Conway on guitar and nineteen of the smoothest fiddlers anywhere.

Through all the long months of organizing Miller had been deliberate and calculating in his plans. To be successful in its recruiting assignment, he reasoned, the orchestra would have to be especially built to arrest the attention of the kids from nineteen to twenty-three or so. It would have to talk their language. To go over "in the trade," along Tin-Pan-Alley that is, it would have to be new and different and as good or better than his old civilian outfit. To satisfy the military it would have to be able to do martial music without drawing the bronx cheer from either the prospective cadets or the music world.

To all who listened on that Saturday afternoon it was abundantly evident that the master had accomplished all of these difficult objectives. The orchestra "talked" to the prospective enrollees in the idiom they understood best. To them Miller was about the most righteous cat that ever licked a chop. It also clicked along Fifty-Second street where Miller's tradesmen agreed that he had achieved something completely unique in an orchestra which had powerful brass, rocking saxes, and an out-of-this-world string section that worked with the lead instead of around it.

When he relaxed, Miller had to admit himself that he had something pretty terrific. "Couldn't have done this in civilian life," he would smile, "couldn't afford it." The band cost the government $2,700 a month in salaries. Today the payroll for a unit which is smaller by nine men is over $26,000. When you consider the radio time Miller wrangled from the networks for free it is doubtful if any advertiser ever got as much for his money.

By the spring of 1944 the job Miller had accepted a commission to do was done. The Training Command was over the hump, and the bespeckled trombonist could have retired from active duty if he had so desired. But instead he elected to stick around on the chance that he could get overseas to entertain combat troops.

About the same time his request for foreign duty was working its laborious way up channels from Yale to St. Louis to Fort Worth to Washington, a similar request was coming the other way. General Eisenhower had heard about the aggregation, and thought it was probably just what the kids overseas needed to help them keep their chins off their muddy boots. He mentioned it to General Marshall who asked General Arnold who referred the matter to General Barton K. Yount, head of the Training Command. Coincidentally General Yount received the request from Miller about the same time. He was almost as jealous of the unit as he was of the fact that he had met his training quota, but he said yes, Miller could go.

The record of the Miller men overseas is a proud one. The whole outfit logged more than 500 hours in the air, traveling to eleven different countries to play before more than two million troops in combat areas and behind the lines. They also did seventeen broadcasts over the AEF radio network a week. General James Doolittle once told Miller that next to a letter from home his orchestra was the greatest morale builder in the ETO. Once at the Nuremberg Stadium, where Hitler's oratory had often whipped his Nazi followers into screaming frenzies, Miller and the crew played for two hours before 40,000 GI's. It was a strange kind of noise that spread through the Nuremberg hills that day. It was the spontaneous cheering of a whole stadium full of cats who were plenty hep —American cats without swastikas on their sleeves, but with more clean genuine spirit than could be found in all of Germany in those days. The gang considered this date one of the highlights of its career. Another was the time they played at the famous French Opera House in Paris, where each seat sold for 1,500 francs. The proceeds were used for French prisoner-of-war relief. The occasion marked the first time that an American orchestra, playing popular music, had

(Continued on page 63)

Trumpet man Bobby Nichols stands outside his overseas tent ready for Saturday inspection, it says here.

THE BATTLE OF MIDWAY

Another thrilling chapter from "One Damned Island After Another"—the saga of the 7th

BY CLIVE HOWARD and JOE WHITLEY,
ex-Staff Sgts, USAAF

SOMEBODY in Tokyo sent to somebody somewhere else in the Japanese Empire the detailed plan, in secret code, of the blow to be struck at Midway. Somebody sitting before a short wave radio at Pearl Harbor was listening. Somebody else methodically decoded the secret message.

One day the Hawaiian sky was full of harmlessly patrolling B-17s. The next day these same planes were on the ground, mechanics swarmed over them, checking engines and controls, testing bomb releases, hunting flaws in the intricate wiring systems, checking and double-checking the machine guns and bombsights. They were being made ready for a fight.

Now, finally, we knew where the Japs were going to strike.

The target was Midway. Then, probably, Hawaii. Then—well, there was the California mainland. It might not follow, of course. But it could. It could happen if Midway fell. It could happen if Midway, then Hawaii, became their outposts instead of ours.

The intercepted communication revealing the Jap plan to attack the island with an invasion force, supported by a tremendous task force, was not specific as to date. June 1 seemed likely, although any time up to June 5 seemed probable.

This information fell into our hands about the middle of May.

It could have been a deliberately contrived misdirection to send what little fleet we had, and the few combat aircraft we had, on an 1100-mile wild goose chase while the Jap fleet and landing force struck instead at almost undefended Hawaii.

Or it could have been that the Japanese did not know we had cracked their secret military code.

The Army and Navy decided to gamble. The payoff, if they could intercept the Japanese fleet at Midway, was too great to overlook. The gamble worked. The Battle of Midway was a Navy show, essentially. But the Seventh Air Force did its share. It slugged and tortured and harassed the enemy, striking, tearing, delaying, throwing plans off schedule. It made its kills, and it took its losses, and it produced its heroes.

The Navy minimized but did not deny its aid. It could not, very well, in view of the record.

The men who had been flying the B-17s on patrol since the start of the war—a wearing, monotonous, griping routine which left their nerves ragged and their morale low—were pleased but perplexed when the order came through on May 18 putting them on ground alert. The B-18s took up their work as best they could. This limited the distances from the Island which could be patrolled and was further proof of the risks involved in the great gamble.

The alerted B-17 crews began to sense action. They were eager, but they were apprehensive.

Were they ready for combat?

For four long months, from December 7 until April 1, the long-range bombers had been doing nothing but patrol. Except for an occasional bomb dropped on what they suspected was an enemy submarine, bombardiers had no training. Gunners had found no targets.

Then, on May 20, the period of alert expanded to one of action and the next day six planes of the 431st, two from the 31st and one from the 72nd squadron were flown to Midway. The 1400-air-mile flight was completed without mishap. Lt. Col. Walter Sweeney was commanding and under him were such experienced men as Cecil Faulkner, Bob Sullivan, Bob Andrews, Paul Payne—men with reputations as sound as the great planes they flew.

At Midway, with practically no rest after the long flight from Oahu, the nine crews were immediately thrown into patrol. Another day went by, and still another, the brutal, long-range patrols continuing without cessation—with the flight crews, pilots included, doing their own servicing.

Colonel Sweeney protested to the Midway commander that his men couldn't keep it up, that if the crews were thrown into combat on top of the gruelling patrol flights, their chances for survival would be lessened.

Even as the Seventh Air Force was giving the Jap fleet a terrific shellacking at sea, Jap bombers knifed through to pound Midway.

The Midway commander, tense with genuine alarm, refused to relieve the crews. Sweeney and his crews carried on. Still no Japs.

Then, suddenly, when the men were draining the last reservoirs of their strength, it happened. A Navy search plane, on the morning of June 3, radioed to Midway that an enemy surface force was approaching from the west.

Shortly before noon, Colonel Sweeney called his men about him. The eight pilots besides himself who were to take part in the first strike from Midway were Gregory and Woodbury, who were to accompany Sweeney in the first element; Tokarz, Sullivan, and Payne, who made up the second; Faulkner, Steedman, and Andrews, who comprised the third. There were no more seasoned over-water fliers in the world than these nine and when they roared into the air from Eastern Island on Midway atoll, they were as qualified as any man could be to undertake the difficult job of locating and bombing the invading force.

The laconic intelligence report reads this way: "Late in the afternoon, at a distance of 570 miles south of west of Midway, interception of the Japanese force was effected."

What no report could adequately say and no man could fitting express is the impact, on the American fliers, of the first startling sight of the Japanese task force as it broke into view.

Sweeney turned to his co-pilot, Everett Wessman. "Good God," he said, "look at 'em!"

It was a staggering force even for that period, estimated to number forty-five ships, including five battleships or big cruisers, a number of destroyers and auxiliary ships and transports.

Sweeney switched the interplane radio onto "command," and gave instructions. "Element two go in at 10,000 feet, element three at 12,000." He was taking his own flight in over the Japanese fleet at 8,000 feet.

As Sweeney led his flight into the bomb run over the Jap force, every gun below them opened up. The darting red spurts flashing on and off looked to one crew member, "like a Times Square electric sign gone haywire."

Each plane in the first element dropped 600-pound bombs, their targets being either a battleship or a heavy cruiser—it was impossible to say which, since flak crashing around the planes made observation difficult.

It was believed that one hit, possibly two, with near misses on the port side, were scored by the first element.

Tokarz, Sullivan, and Payne, in the second element at 10,000 feet, fared somewhat better. Two hits were scored on a battleship or heavy cruiser, setting fire to the target. Two of Paul Payne's 600-pounders failed to release on the first run, so he swung his plane back over the objective, picked out a fat transport and let go. At least one of the bombs hit its mark, for the transport was seen to be burning as Payne wheeled around and started for home.

Faulkner, Steedman and Andrews scored with one near miss on a transport. Faulkner and Andrews dropped their load of four 600-pound bombs each, but Steedman's electrical release system failed to operate and only one projectile was sent on its way.

As the nine planes winged homeward individually, after breaking formation to avoid antiaircraft fire, Sweeney circled out of range and looked back. Both the heavy battlewagon and the transport were out of column, appeared motionless and, as the flight leader described it, "huge clouds of dark smoke mushroomed above them."

Strike one for the B-17s. The weary, flight-drunk crews flew home, landing at night at Eastern Island, hoping to snatch a few hours sleep.

They needed that rest. But they got precious little of it.

While Sweeney's planes were on their first mission, six B-17s from the 42nd Squadron, under Lieutenant Colonel Brooke Allen, arrived from Barking Sands.

Allen had been ordered to the scene too quickly to take on more than a few maintenance men and spare parts. The new plane crews pitched in with the old to help the overworked mechanics service the fifteen fortresses now on the little field.

Sweeney, Faulkner, Toparz and the other six pilots of that first mission spent most of the night describing to the newcomers their first experience under fire.

"They are pretty good, those Japs; keep your wits about you," Sweeney advised. "Watch them at the bomb release line. That is where they hit hardest. Break quick when your bombs are away. Their fire was consistently trailing us, but they must have learned something today too."

June 4, the second day of the Battle of Midway, was the longest day of the war for many of the air and ground crews on the island.

It was the day the Seventh Air Force hit the Jap fleet the hardest, the day it took most of its losses. It began before dawn with Fortresses taking off into the first streak of light and ended long after dark with pilots guiding their crippled planes onto the runway by the light of burning oil dumps.

For the nine crews under Colonel Sweeney, the days began while it was still dark, when an operations officer shook them out of their exhausted sleep and herded them to the runway so the Fortresses could be airborne and away from the island in case the Japs unleashed an attack timed with the first light of dawn.

In all, fourteen Fortresses got away from the island before dawn.

Rendezvous for the big Fortresses was at Kure Island, west and south of Midway, from where they were ordered to proceed west to attack the same body of ships bombed the previous day. En route—Allen remembered it as being about a hundred miles out—a message was received, uncoded and succinct, directing the planes to change course and attack another enemy task force approaching Midway from almost due north and was within 145 miles of the Island.

Its planes already dispatched to attack Midway, this Jap carrier churns the sea in an effort to dodge the Seventh's raining bombs.

This second task force was made up of four carriers and escorting ships, ranging from the Japs' great battlewagons to myriads of destroyers. It was the dagger to be plunged into the heart of the defending forces. The carrier planes were to slash down the Navy and Army Air Forces on the island, rake gun emplacements, and prepare the way for the invasion of assault troops which were approaching on the transports of the task force previously attacked and steaming from the west and south.

There was no time to lose. The new Jap force was already cutting down those 145 miles to Midway. Even as the message crackled over the radio, the Jap planes undoubtedly had already been launched from their carriers.

"They're probably knocking hell out of Midway right now," Bob Andrews told his co-pilot, Paul Willis.

They were.

Staff Sergeant Joseph Soler, one of the group crewmen who had been flown hurriedly to the scene of battle, was working over the grounded B-17 from Allen's flight when the alert sounded.

Soler was running toward a slit trench when the Japs came in. "It looked like hundreds of them," he said. "They came in low and we could see they weren't going to bomb the runway itself—apparently they were saving it for their own use after the invasion. But they hit everything else on the island."

Soler arrived at his slit trench just behind a gooney bird, one of the crazy flying creatures which infest Midway by the thousands. They stand about two feet high, with a wingspread of about four feet, and have the comedy instincts of a panda. As Sergeant Soler found out, they can be pretty tough on occasion.

"The Japs were lacing the field with machine guns, so I picked up that gooney and tossed him the hell out of there."

Soler dived into the slit trench.

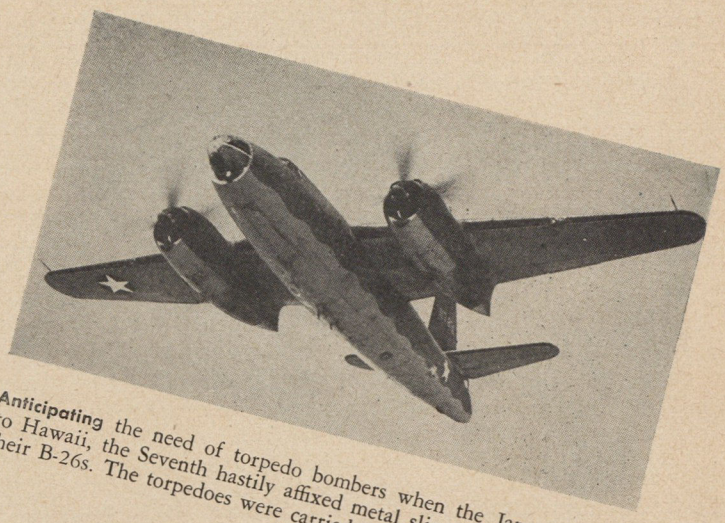
"Whereupon," Soler continued, "that damned gooney jumps in on top of me and beats the bejesus out of me with his wings."

But while the fighters and bombers were attacking Midway, the Navy, the Marines, and the Seventh Army Air Force were pounding the Jap carriers. Even so, all the fighters and dive bombers were not at Midway, and it was not by any means as cut-and-dried as the flight surgeon made it sound.

There was opposition above the carriers—and plenty of it.

The flight of fourteen Flying Fortresses, in command of Sweeney and Allen, flying now at 20,000 feet so they could search wide areas of the sea, were en route to the stiffest fighter and antiaircraft opposition of the whole battle.

And four other Seventh Air Force planes, faster, smaller than the big bombers, now in flight and destined to find the target first, were to test the opposition over the carriers and find it so strong that only two were able to return to base. And they were little more than flying pieces of junk when they crash-landed on the island. The planes were B-26s.



Anticipating the need of torpedo bombers when the Japs returned to Hawaii, the Seventh hastily affixed metal slings to the bellies of their B-26s. The torpedoes were carried in the sling like huge logs.

Torpedoes were too big for the 26's bomb-bays; so a metal sling was invented and fixed to the bomber's belly. In flight, the plane looked as though it was carrying a huge log.

Four B-26s took off in a swirl of coral dust from Midway that morning. Two came back.

Captain James F. Collins, Jr., was one of the survivors.

"We sighted the enemy force at five minutes after 7:00 in the morning," he said. "Our formation turned slightly to the left, then sharply to the right in order to avoid the ack-ack of the surface vessels."

"We were going through heavy fire at 700 feet when six Zeroes came at us head-on. We dove down to 200 feet off the water; most of their fire passed over us."

It was at this point that Collins lost sight of his Number 2 and 3 wingmen, Lieutenant Herbert C. Mayes and Lieutenant William S. Watson. Collins turned his plane again to the right and started his torpedo run from about twenty degrees off the carrier's bow.

"We released our torpedo 800 yards from the carrier at about 220 feet and at 210 miles per hour."

Collins saw the carrier's long wake standing almost at right angles to the big ship as it squirmed in the ocean to avoid the torpedo.

"Just after release I could see my No. 4 ship (Lieutenant Muri's), slightly under us and to the left, making his attack. His navigator said our torpedo hit the water cleanly and when last seen was making a true run toward the carrier."

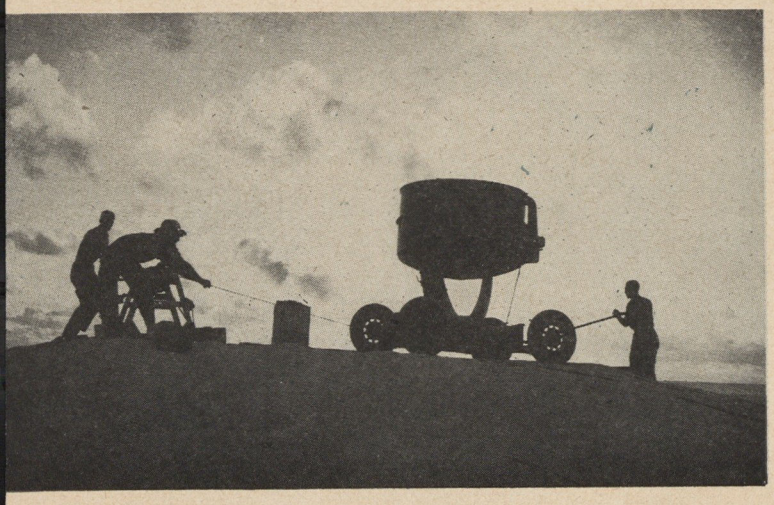
In a fight like that you don't stick around to watch your own or the other fellow's torpedo run its course. Lieutenant Muri's ship was at that moment pressing home its attack.

Muri's torpedo was released 450 yards slightly ahead of the carrier, 150 feet off the water. He turned directly in to the carrier, sped across it and gave his engines full throttle to out-fly the swarm of Zeroes crowding him.

For fifteen or twenty minutes, the fighters pressed home their attacks against the two bombers. Finally, the B-26s flew inside an overcast, shook off the last Zero and turned toward home, little more than flying pieces of junk.

It was a miracle that the two planes remained together until they reached Midway, where they both crash landed. The planes were never flown again. Ground crewmen who hauled the broken skeletons from the runway found fifty bullet holes in a leakproof tank of one of the bombers.

For four long months, from December 7 until April 1, the men of the VII Bomber Command did nothing but wait, watch, fly patrols.



The other two B-26s were shot down during the attack. One of them was observed to have launched its torpedo just before it cartwheeled into the sea.

At 7:30 in the morning, twenty-five minutes after the B-26s located the Jap fleet the formation of fourteen Fortresses arrived at 20,000 feet over the same objective. They skirted the fleet and flew for thirty minutes, trailing long sleeves of vapor, before the real objectives—the carriers—broke the cloud coverage under which they had been circling, and were open to bombing.

Sweeney led his flight to the right, Allen to the left. Each plane was loaded with eight 500-pound bombs. Tactics called for pattern bombing as the most effective method of getting hits on such minute and difficult targets.

Captain Faulkner, leader of the third element of three planes in Sweeney's flight, reported that one hit was scored on the port bow of a carrier, possibly other hits on the starboard bow and five near misses by his element. Faulkner's plane was attacked by four Zeroes on the return flight, one of which hit his No. 4 engine, disabling it. But they got one of the Zeroes.

The lead element—Sweeney, Gregory and Woodbury, scored one hit on the stern of a carrier. The second element —Tokarz, Sullivan, and Payne—observed no hits, but one Zero was shot down.

Colonel Allen, Lieutenant Eberenz, and Lieutenant Williams making up another element, believed they got one hit and two near misses on a carrier, while Captain Wuertele and Lieutenant Grundman, in a flight of two, claimed one hit, one possible and one near miss.

Scarred and torn, the fourteen great planes lumbered back to Midway to lick their wounds, refuel and, if possible, take to the air again. But for some of them this was not to be possible, for there wasn't much of a landing field left. Jagged chips of coral and splintered shells littered the runway and the tires of four of the incoming Fortresses were ripped to shreds.

The field was clear of Japs at the moment, but they were expected back, and the weary combat crews had to help ground crews get the planes ready to go back into the air. Gasoline had to be dumped in by hand or at best with the aid of small put-puts which a few planes carried.

All that was worth salvaging from the B-26, "Susie Q," after it returned from Jap attack, was its nameplate. The crew: Cpl. Frank Melo, Lt. C. O. Villines, Lt. T. N. Weems, Lt. P. L. Moore, Lt. W. M. Moore and Lt. H. Russell. The Susie torpedoed a Jap carrier.

Less than two hours later, when an alert was sounded, seven of the B-17s got into the air, many of them hurriedly patched up with parts from ships too wrecked for combat. Again Sweeney and Allen led the flights. It was a beautiful, cloudless afternoon with visibility unlimited, so the planes climbed to an altitude of 25,000 feet for better search vision. At the bearing they were given, they sighted a burning carrier and a burning capital ship, but they saved their bomb loads for an undamaged carrier, if there was one around, and continued their search. Then, as Colonel Sweeney put it, "not finding a conditioned carrier, and because sunset was approaching, decision was made to attack a heavy cruiser."

The hard-hit enemy fleet was by this time "deployed and weaving," but conditions on the bombing run were excellent and the pattern bombing of the five planes resulted in one hit on the cruiser, one possible and two near misses. When the planes turned for home, a heavy cloud of smoke was seen issuing from the cruiser, which immediately lost speed. But the attack had not been without cost. At the bomb release line, an antiaircraft shell burst near the wing of Woodbury's plane, damaging it severely, and Gregory's ship was also hit.

The planes returned to Midway at sundown and rejoined as sorry a lot of B-17s as were ever gathered together. Only three ships of Allen's command were fit for further combat; none of Sweeney's were. Wings, fuselages, and bomb-bay doors were damaged, engines were not performing—and the men were dead on their feet. Sweeney's men had had one more day of fighting than Allen's outfit, as well as two days of patrol, and many of them would have been greater liabilities than assets if they attempted more combat. Some of them had gone ninety-six hours without sleep.

So, it was time for Colonel Sweeney and his weary crews to climb into such planes as could fly, but were unfit for combat, and get back to Hickam. It was not as if they were abandoning Colonel Allen to his fate, however, for that same night Major George Blakey had led a flight of six B-17s of the 23rd Squadron from Hickam to Midway.

At dawn on the morning of June 5 two flights of four planes each, under Colonel Allen, took to the air on what was to be the last day of battle. At the same time, six more Fortresses left Hawaii for Midway to refuel and load there and enter the final stages of the fight during the late afternoon. This was a flight led by Captain Donald Ridings of the 72nd Squadron and it was to provide the worst B-17 tragedy of the engagement.

Colonel Allen, Major Blakey, and their flights rendezvoused as usual over Kure Island where instructions were received to attack two cruisers reported to be from forty to ninety miles north of Midway. But the weather was overcast, and after searching vainly for a couple of hours, the flights returned to Kure to report and receive further instructions.

These were quick in coming. Two battleships, Midway informed them, had been located by Navy scout planes 150 miles due west.

"We found the battleships and my flight dropped on one, Blakey's on the other," Colonel Allen afterwards reported. "We put a pattern over the battleships and think we got two hits. Midway then thought it had located the original carrier force and we went back to the field for gas and bombs before proceeding. We were helped by Marines. We were delayed in getting oxygen which had to be brought by barge from the other island (Sand) to Eastern. We went back out that afternoon."

"The target was expected to be 280 miles out, traveling at a speed of twelve knots," Allen stated. "There was no sign of carriers when we got to the point of interception, but we found a heavy cruiser steaming back toward Midway. I assumed it to be a decoy and we went on a wide search for 420 miles, but found nothing.

(Continued on page 58)

NEWS

The formation of Wing groups in all states drew to a close as Wing Commanders started intensive organization campaigns throughout the country.

In Delaware, William W. Spruance of Wilmington accepted General Doolittle's invitation to head up the state organizing committee.

New Jersey's Malcolm McAlpin, long one of the state's leading air enthusiasts and resident of Morristown, accepted the post of Wing Commander and made plans to put New Jersey out in front with Squadron formation.

Down at Winter Park, Florida, former Major General Edwin J. House, wartime CG of the AAF's famed Tactical Center at Orlando, gathered a group of Florida's AAF men together to form the state Wing and get the Squadron activation program under way.

Al Near, one of Kentucky's leading aviation figures and superintendent of the Louisville Municipal Airport, took over organization in the state as Wing Commander.

Mississippi's Tom Grayson accepted President Doolittle's invitation to head up organization activities in the state as Wing Commander.

In Virginia, Beverley R. Tucker, Jr., of Richmond took over as Wing Commander to formally organize the Wing group and activate Squadrons throughout the state.

The Missouri Wing, with Karl M. Goetz of St. Joseph as Commander and John Hayward and James Johnson of St. Louis as Secretaries, prepared to put the Ohio-originated districting plan into effect throughout the state to facilitate organizaion of Missouri Squadrons.

Organization in the Northwest started in earnest in Minnesota, North Dakota, Utah, and Wyoming, under the direction of Wing Commanders Langdon McMillan of Minneapolis; Donald R. Howland of Fargo; Vern Halliday of Salt Lake City; and Dave Edwards of Cheyenne.

Two more states brought the far Southwest into the organization front as Newton Cromley of Elko became Wing Commander for Nevada and Harold C. Stuart became Wing Commander for Oklahoma.

Down in Texas, A. W. Snyder of Houston was elected Wing Commander and Charles J. Giezendanner, Jr., also of Houston, was elected Secretary. With Wing committeemen representing all sections of the Lone Star State, Squadron organization is the number one order of business.

SQUADRON NOTES

Squadron organization activities hit a new high as twenty-six local groups were chartered last month and more than sixty others planned organization meetings and campaigns.

ARKANSAS

In Arkansas, the Little Rock Squadron elected Alexis M. Neel as Commander; Louie S. Hoffman, Vice Commander; Etta G. Wilson, Secretary; William W. Broadnax, Treasurer; and Richard Wolfe, Kenneth Brock, A. G. Neal, and Berkley Peterson, Councilmen. Former AAF men in Little Rock are invited to get in touch with Miss Wilson, the Secretary, at 305 West Eighth Street, concerning coming meetings and plans.

CALIFORNIA

The Santa Monica Bay Area Squadron elected the following officers: Stuart Purcell, Commander; Bert D. Lynn, Vice Commander; Edward Snyder, Secretary; William P. Pailing, Treasurer; and Francis S. Gabreski (California's Wing Commander), Joseph Nadel, Robert Schwarz, and Thomas Menzies as Councilmen. All AAF men in the Bay Area can get the latest word on Squadron activities from Secretary Edward Snyder at 28 Horizon Avenue, Venice, California.

Sacramento, California, Squadron No. 1 got under way with more than half a hundred initial members under the able organizing leadership of Commander LeRoy J. Johnson. Other officers include Vernon I. Osborn, Vice Commander; Gladys M. Strain, Secretary; Harold R. Wine, Treasurer; and Lea W. Lott, George O. Thorne, and Orville H. Wulf, Councilmen. Secretary Gladys Strain can be reached at 1416 Twelfth Street, Sacramento, and all former Air Force personnel in the Sacramento area are urged to contact her for full information on Squadron meetings and activities.

Stockton Squadron No. 1 in California was organized under the able leadership of Mrs. Florence E. Spaniel. Mr. Leland Apperson was elected Squadron Commander; Harry Plymire, Vice Commander; and Mrs. Spaniel, Secretary, Stockton's former AAF personnel are urged to get in touch with Mrs. Spaniel at 341 East Magnolia Street. The Stockton Squadron has as one of its charter members Congressman J. Leroy Johnson.

ILLINOIS

With the cooperation and assistance of Lt. Colonel M. H. Shedd, Professor of Air Science and Tactics, AAF men at the University of Illinois organized the Illini Squadron. Officers elected were: Donald L. Dorward, Commander; Robert H. Hodgin, Vice Commander; Harold F. McGalliard, Secretary; Eugene W. Dingledine, Treasurer; and Herbert Friedman, Ruth Anderson, Harold H. Salzman, and James F. Leach, Councilmen. Commander Dorward can be reached at the Ice Rink, 408 East Armory, Champaign.

IOWA

Under Wing Commander Ellis Eno's direction, four squadrons received charters in Iowa—Davenport, Des Moines,

Three members of the Santa Monica Bay, Calif. Squadron of AFA discuss plans for 1947. From left, A. F. Kelly, Actg. Wing Secretary, Stuart Purcell, Actg. Sqdn. Cmdr., Maj. J. L. Gaylord, AAF.

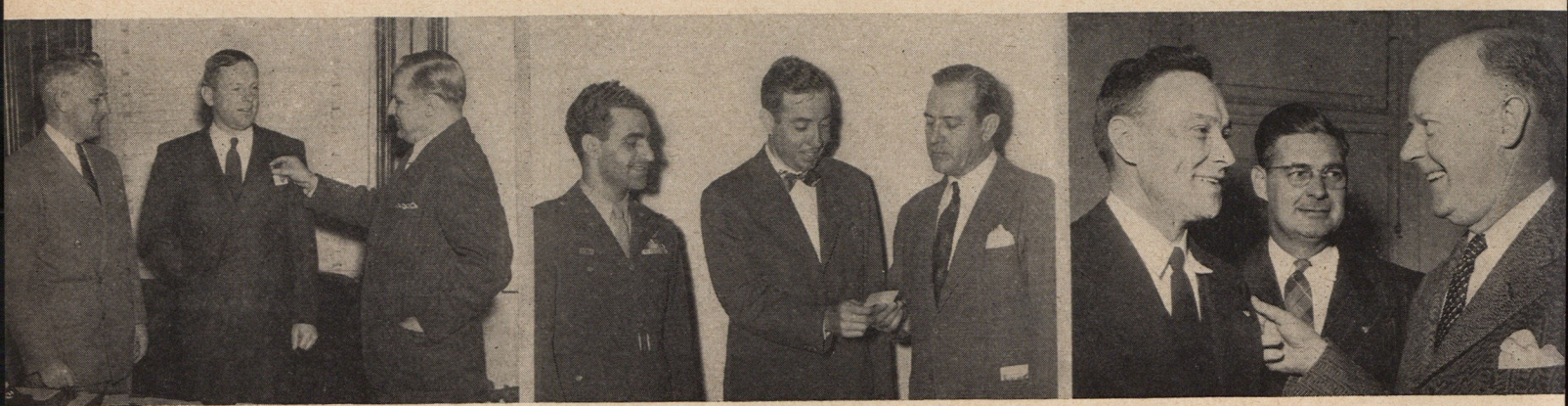
Pella, and Sioux City. The Davenport Squadron officers are: Herbert R. Elliott, Commander; Darwin H. Pope, Vice Commander; John R. Gibney, Secretary-Treasurer; and Donald E. Helwig, Lloyd E. Siders, Hubert W. Strahan, and Grant E. Tigwell, Councilmen. Davenport's AAF men are urged to get in touch with John Gibney at P. O. Box 418, Davenport.

In Des Moines, the Squadron officers are D. E. Songer, Commander; Oscar D. Norling, Vice Commander; M. D. Hennings, Secretary; James C. Coe, Treasurer; and Claude S. Geisler, Gordon W. Churchill, Jack K. Joseph, and Robert M. Moorhead, Councilmen. All AAF men in Des Moines are invited to get in touch with Commander Songer at 3804 Forest Avenue.

Former AAF men in Pella, Iowa, are urged to contact Squadron Commander Lee W. Vriezelaar, 116 Broadway, around Ann Arbor are urged to get in touch with Squadron Commander Philip G. Smith at 315 North Thayer. Other Squadron officers are Max Mathers, Vice Commander; Al Mundt, Secretary; Herman Miller, Treasurer; and Michael Miatech, William McDermott, John Reeves, William Saulson, and Don B. Wilson, Councilmen.

MISSOURI

Under the leadership of AFA Director William H. Carter, the Columbia, Missouri, Squadron organized and elected the following officers: William H. Carter, Commander; Lyle K. Vale, Vice Commander; G. F. Huson, Secretary; James F. Watkins, Treasurer; and Lewis H. Allen, George Hughes, and Philip Salati, Councilmen. The Squadron has the valued cooperation of Colonel Kenneth L. Glassburn, Professor of Air Science and Tactics at the University of Missouri and



Noses haven't been counted officially yet, but it is a good bet that there are more veterans in House and Senate chairs on Capitol Hill this year than ever before in Congressional history. Among them there is a considerable sprinkling of Air Force Association members. Extreme left: Congressman William Jennings Bryan Dorn of So. Carolina (center) accepts his AFA button from W. R. Geddings, So. Carolina organization head. Mayor Frank C. Owens of Columbia, a charter AFAer looks on. Next: Rep. John Bell Williams (center) of Miss. receives his AFA membership card from T. J. Grayson, AFA Wing Commander of Miss. Maj. G. J. Mehess looks on. Cen-

for details on future meetings and plans. Other Squadron Officers are Marion Roorda, Vice Commander; Ben Stouwie, Secretary; Carl B. Bogelaar, Treasurer; and Lloyd L. Clevenger, Kieth W. Emmert, Gerald A. Terlouw, and James Vriezelaar, Councilmen.

In Sioux City, Squadron membership is constantly climbing, and local Air Force men are cordially invited to see Commander William R. Haines, 308 Fourteenth Street, for details. Sioux City Squadron officers include Don Gereau as Vice Commander; Kathleen Addison as Secretary; James N. Hittle as Treasurer; and Raymond E. Anderson, Edward D. Force, Ernest G. Parry, and Bernard Olson as Councilmen.

MASSACHUSETTS

Massachusetts added another chartered Squadron to its ranks at Arlington when James R. Smith was elected Squadron Commander; Carl H. Carlson, Vice Commander; Charles E. Fiske, Secretary; Alice J. Kirsis, Treasurer; and Richard Bower, Edward W. Gaddis, and Leonard Hill, Councilmen. Information on future meetings and activities may be obtained from Secretary Charles Fiske at 65 Trowbridge Street, Arlington.

MICHIGAN

In Ann Arbor, Michigan, Lt. Colonel D. H. Ainsworth, Professor of Air Science and Tactics at the University of Michigan, rounded up several former AAF men on campus and started the Ann Arbor Squadron rolling. The Squadron will include the entire Ann Arbor area as well as the University campus, and all former AAF personnel in and

will, like the Ann Arbor Squadron, include the entire Columbia area as well as the University campus. Commander Carter can be reached at 15 Allen Place, Columbia.

NEW MEXICO

The Albuquerque, New Mexico, Squadron got off to a resounding start with almost one hundred members under the able direction of Commander Arthur P. Gatewood; Vice Commander Hugh Root; Secretary Frank A. Cronican; Treasurer Roy T. Stryker; and Councilmen Fyfe Peters, Thomas B. Scott, Jr., and Ray Tucker. Secretary Cronican can be contacted at the Albuquerque National Trust and Savings Bank.

NEW YORK

The state of New York added six squadrons to the ranks of chartered groups, with Albany, Buffalo, New York University, Rochester, Westchester County, and the all-feminine New York City Squadron No. 1.

In Albany, Squadron officers are Edward J. Healy, Commander; John J. Doran, Vice Commander; Earl P. Ribero, Secretary; Peter D. Kiernan, Jr., Treasurer; and Gerald W. O'Connor, Edwin F. Livingstone, George J. Holbine, Robert A. Shaw, and Charles J. Gallagher, Councilmen. All former AAF men in the Albany area are invited to get in touch with Secretary Earle Ribero at Box 185, Delmar, New York, for further details concerning Squadron meetings and activities.

The Buffalo Squadron, with a membership of almost three hundred, has elected Maurice Fitzgerald as Commander; John O'Neil, Secretary; William J. Keeler, Treasurer; and

J. F. Schoellkapt, J. Leroy Sutton, Roland L. O'Brian, and Earl Robinson, Councilmen. Information on future Squadron activities may be obtained from Treasurer Bill Keeler at 520 Ellicott Square Building, Buffalo.

The New York University Squadron, with E. Ralph Sims, Jr., as Commander; Robert A. Coonrod as Secretary; Herman C. Leuther as Treasurer; and George Ogle as Councilman is the fourth campus Squadron to be organized in the New York City area. All former AAF men at NYU are urged to contact Commander Sims at either his home, 41 Pratt Street, New Rochelle, or the University's ROTC unit on campus.

The Rochester Squadron elected David J. Whalen Commander; Donald W. McKibben, Vice Commander; Mrs. M. Elizabeth Crabbe, Secretary; Philip H. Stape, Treasurer; and George P. Carr, Eugene F. Richner, and G. Rolfe Scofield, Jr., Councilmen. Rochester's former Air Force personnel are invited to contact Mrs. Crabbe at 5352 St. Paul Boulevard for full information as to meetings and future activities.

ter: Sen. W. E. Jenner of Ind. (left) is given his pin by E. J. Lanagan. Ind. Wing Commander. P. H. Roettger, Wing Sec., observes proceedings. Next: Rep. W. J. Miller of Conn. receives his insignia from R. Hanson. Extreme right: Gen. Doolittle pins AFA button on Rep. C. Albert of Okla.; S. Clammer, Okla. AFA organizer looks on.

Westchester Squadron No. 1 opened the way for succeeding Squadrons in the area by organizing and electing the following officers: George W. Jones, Jr., Commander; Carl H. Norcross, Vice Commander; William F. Hampel, Secretary; Arthur Wesley Cable, Treasurer; and William Ervin, John E. Harmon, and Edward Alexay, Councilmen. State Wing committeemen James D. Landauer and John P. Edmondson are members of the Squadron and complete information on meetings and activities can be obtained from Commander Jones at 30 Rugby Lane, Scarsdale.

New York City Squadron No. 1, organized by Prexy Doolittle's enthusiastic secretary Mary E. Gill and composed entirely of former Air Wacs, the second all-feminine group to be chartered, elected the following officers: Mary E. Gill, Commander; Mary Waterman, Vice Commander; Barbara A. Brown, Secretary; and Allison Smith, Treasurer. Commander Gill can be reached at Room 3925, 50 West 50th Street, New York City 20.

OHIO

In Ohio two more Squadrons joined the ranks as Akron Squadron No. 1 got under way with the able organizing leadership of B. E. "Shorty" Fulton. Officers elected include Clark O. Thornton, Commander; William E. Eisenhart, Vice Commander; B. E. Fulton, Secretary; Cornelius P. Chima, Treasurer; and Kenneth E. Banks, Jr., Maurice G. Evans, William C. McFadden, Robert E. Frantz, Harry E. Hinderliter, Jr., Robert R. Kitchingman, T. O. Myers, and C. H. Whitaker, Councilmen. Secretary "Shorty" Fulton urges all former AAF men in the Akron area to get in touch with him at the Akron Municipal Airport.

In Cleveland, under the leadership of Group Commander Arman L. Merriam, the Cuyahoga Founders Squadron organized and elected Erwin H. Cooper Commander; Bernard C. Sauer, Jr., Vice Commander; Ann Lathe, Secretary; and Clifford H. Pearson, Treasurer. AAF men in the Cleveland area are invited to contact Miss Lathe at 2876 Attleboro Road, Shaker Heights.

PENNSYLVANIA

York Squadron No. 1, Pennsylvania's first chartered Squadron, held its organization meeting of seventy charter members at the American Legion Hall and elected the following officers: Harry E. Gnau, Commander; Franklin A. Fenner, Vice Commander; Kathryn Welsh, Secretary; and Walter Spangler, Treasurer.

RHODE ISLAND

Organization of the Providence and Woonsocket Squadrons brought Rhode Island into the chartered Squadron group. Providence officers include Charles E. Trowbridge, Commander; Winsor O. Coleman, Vice Commander; William D. F. Morrisson, Secretary; Philip Simonds, Treasurer; and Anthony G. Laramie, Antone Amoral, Edward Perry, and Ralph H. Taylor, Councilmen. Secretary Morrisson can be reached at the Rhode Island Hospital Trust Company.

At Woonsocket, George E. Lepoutre is Commander; Francis E. Martineau, Vice Commander; Conrad A. Lemery, Secretary; Joseph E. Boucher, Treasurer; and James P. McQuade, Paul Mousseau, and Lucian G. Robitaille, Councilmen. Secretary Lemery urges all AAF men in the Woonsocket area to get in touch with him at 286 Park Place.

TEXAS

San Antonio, Texas, Squadron No. 1 elected the following officers: Frank T. Mooty, Commander; Joseph T. Shaffer, Vice Commander; Herbert A. Holzmann, Secretary; Robert J. Graif, Treasurer; and Elmer R. Collier, Glover A. Husky, Charles Martin, and Fred A. Polka, Councilmen. Secretary Herb Holzmann can be reached at 1210 Grayson Street.

WYOMING

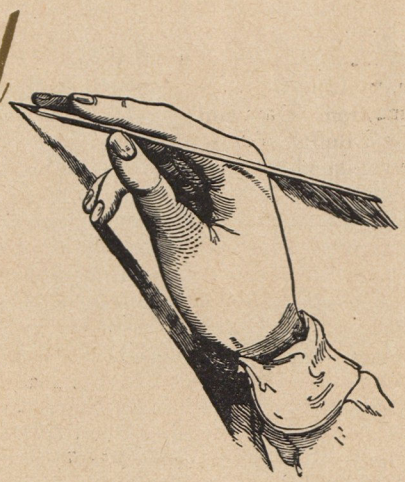
Out in Wyoming Lt. Colonel Clifton Pyle, Professor of Air Science and Tactics at the University of Wyoming at Laramie, got together with several former AAF men and organized the Laramie Squadron. The Laramie Squadron will include all former AAF personnel in the Laramie area, and its officers are Melvin W. Witham, Commander; Robert C. Millikan, Vice Commander; Arthur F. Ryan, Secretary-Treasurer; and Thomas J. Carroll, Max E. Fisher, John M. Hill, Donald E. Hull, Robert O. Bose, Harold B. Meyers, and Jack E. Nixon, Councilmen. Commander Mell Witham's address is Box 50, Wyoming Union.

Greetings From The Lord Lieutenant

Christmas greetings arrived this month (transatlantic mail was a little slow) from the Lord Lieutenant of Essex, England, and his colleagues of the Essex Anglo-American Goodwill Association. The aims of the Association are (a) to raise in the County certain monuments to commemorate the places where units of the US Ninth Air Force were stationed, (b) to compile a book which will tell the story of Essex County with relation to America, and (c) to encourage public education on America in the schools and clubs of Essex County and to encourage as many Americans as possible who were formerly stationed in Essex County to visit England with their families. The over-all objective is to preserve and strengthen the friendship existing between the two countries.

Summary of civil aviation's progress during the first full year of peace

For the Record



DESPITE the tendency on the part of some reviewers to sell 1946 short as an aviation era the record shows it to have been the best yet—commercially that is. What the pessimists forget is that 1946 was the first pure aviation year since Hitler walked into Poland, that all the years between, the flying industry was in the business of war and the dollars that flowed through it were munitions dollars.

The score sheets of the first full year of peace were compiled by T. P. Wright, Administrator of Civil Aeronautics, who stated, "All phases of Civil Aviation showed a growth beyond our predictions. The tremendous spurt in personal flying and flight training is reflected in the fact that the number of registered aircraft has more than doubled, from 37,789 to upward of 85,000, and the number of certified pilots, private, commercial and transport, has increased from 296,895 to over 400,000. Student pilots certificates issued during 1946 were 170,000 as against 77,188 in 1945."

Primarily to meet demands for small aircraft, civil aircraft production rose from 2,047 in 1945 to 35,000 this past year, while the acquisition of surplus aircraft accounted for the increase in registration.

The Administrator's figures went on to show that the airlines nearly doubled their 1945 haul carrying 13,819,000 passengers 7,258,000,000 passenger miles. This topped by 35% the forecast made for the year. It exceeds by six billion passenger miles the last year of US peacetime operation 1940.

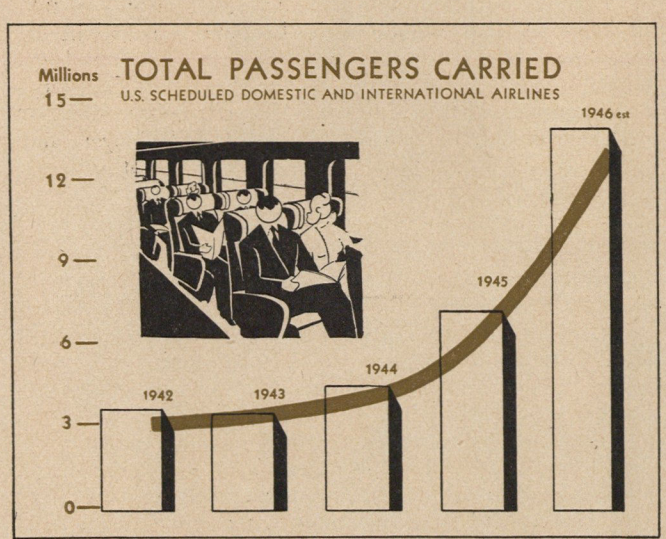
Further breakdown of the combined domestic-foreign travel shows that in 1946, passengers traveling on US international air routes exceeded one million for the first time.

"This tremendous volume in airline operation," Wright said in his report, "was accomplished with a significant improvement in safety record not generally appreciated by the public which is not aware of the increase in the volume of traffic. Passenger fatalities per million passenger miles flown were reduced from 2.31 in 1945 to 1.47 in 1946."

During the year, CAA kept pace with this upsurge by broadening the scope of its activities. To enforce safety regulations on US carriers operating abroad, offices were opened in Paris, London, Cairo, Mexico City and Sydney, Australia. Technical missions were sent abroad to Turkey, Colombia, Peru, Venezuela, Chile, Mexico and Brazil. Engineers were sent to the Philippines to pave the way for airway construction under the Philippine Rehabilitation Act. In addition CAA personnel were assigned to operate surplus Navy facilities considered essential to civil flying in Paris, Dakar and the Azores. These crews will operate the equipment until local staffs can be trained to take over. In Alaska, certain Army installations were turned over to CAA operation.

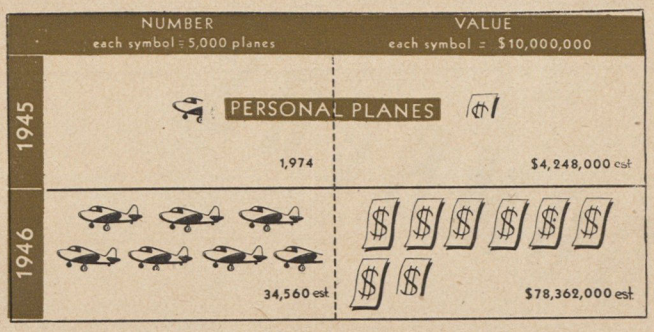
During the year, initial steps were taken under the $500,000,000 National Airport Act. Included was the completion of regulations and the formulation of a three-year National Airport Plan, as well as approval of projects for the first year of the program.

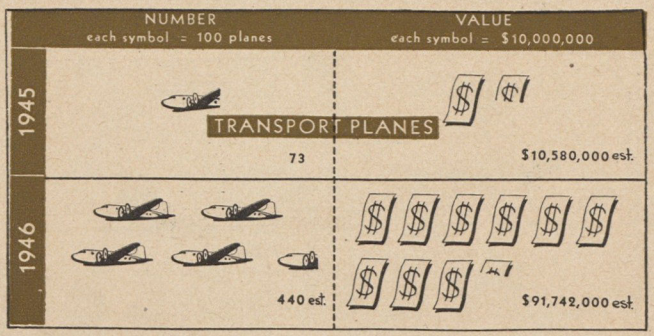
The increase of airway traffic has imposed new operational problems. To cope with them, new devices, many of them developed during the war, are being applied to the increased



Total volume of passenger traffic on US airlines in '46 rose sharply over previous year, despite most serious strike in air history. Reductions in children's fares were instituted during 1946.

Adverse publicity notwithstanding, passenger casualties in domestic air carriers dropped to a new low, bettering, in many instances, the safety record of long-accepted surface transportation media.





CIVIL AIRCRAFT PRODUCTION—1945-1946

Personal aircraft showed the most striking increase in volume, considering the fact that most of the craft involved were new products, not surplus. A large number were four-place craft or bigger.

Fourfold gain in transport deliveries indicated not only increased traffic expectation, but more complete conversion of plants to commercial building. This did not include export figures.

tasks. For instance, three of the latest radar Ground Control Approach systems, acquired from the Army Air Forces, were ordered to be installed for experimental use at New York, Washington and Chicago. Instrument landing systems were installed at about fifty new airfields, as the airlines servicing these routes installed the receiving end of the sets, and trained their personnel in its use. A very High Frequency airway system was placed in operation between Las Vegas and Denver, the pioneering leg for a proposed 40,000 mile VHF airways network.

One of the most important legal steps taken during the year was a series of agreements reached between the Federal, state and local authorities concerning the enforcement of regulations concerning reckless flying. This universal agreement plan would define the acts, and stop jurisdictional arguments from interfering with the punishment of violators of commonsense practices in flying. This work was augmented by a series of CAA "fly right" posters which received wide circulation as part of a campaign to raise the level of engineering and operational safety. It also inaugurated an anti-noise campaign which was designed to curb pilots who enjoyed buzzing areas with their propellers in flat pitch.

The Air Cargo field showed a 57% gain in traffic over the 1945 average, which is surprising, considering that 1945 was still largely a war year, and much expedited tonnage still flowed via air cargo. The 37,000,000 cargo ton miles for 1946 was some 5,000,000 more than the total of US airline operation for the first 17 years of operation.

The program for installing high-intensity runway lights got underway in 1946 with four cities installing this aid to all-weather operation. The total in the program will be 148.

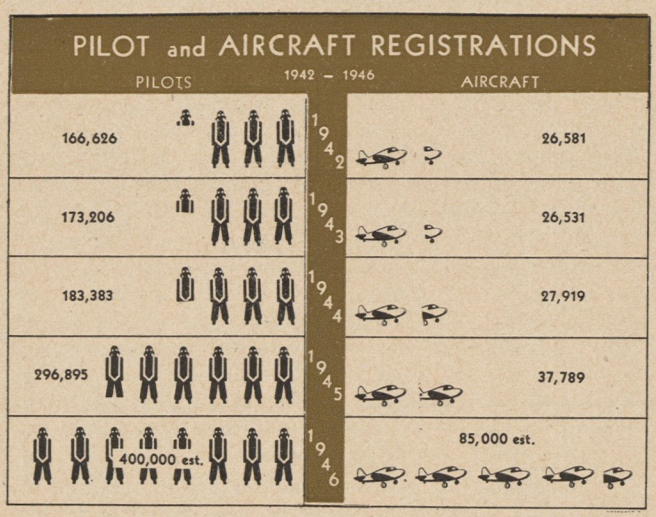
The less optimistic reflection on the industry came from the financial side of the picture, a subject not covered by Wright's report. Despite increased revenue, the listed value of airline securities declined no less than 50% from their best levels. Blasted by strikes and other mishaps, TWA, whose high value was 71 closed at about 21, tumbling 72%. Western Air declined from 35 to 9, a 74% drop.

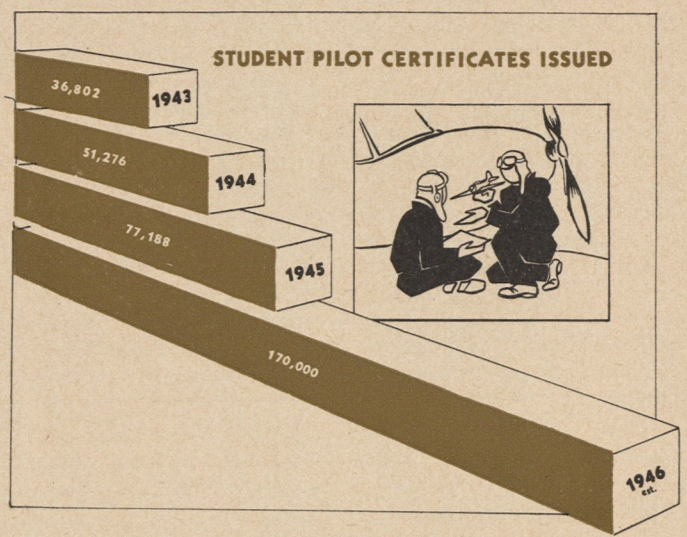
This decline reflected no technical instability in most cases, but rather a "shaking out" of speculative capital and a return to closer to normal value.

The manufacturing field saw a general "wringing out" among lightplane builders. Three major companies appeared to be facing bankruptcy, but in all cases, arrangements for re-organization, in one form or another, were effected.

Major 1947 problems as seen by the industry, were the establishment of better ground facilities, and the wider use of radar and electronic airways equipment to allow greater approach to all-weather operation.

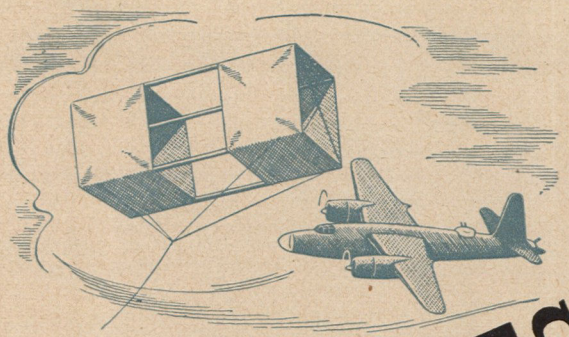
Some 30,000 miles of feeder-line operation was laid out last year. 1947 must show whether short-haul air lines can be made profitable. Some authorities predict a $20,000,000 annual revenue possibility for this kind of line. Pioneer lines, such as Wiggins Airways in New England, found that while there was adequate traffic available, inadequate airports made service infeasible in many communities.





Most conservative increase was in number of pilot licenses issued, a mere third addition over '45. Certified aircraft followed trend by more than doubling, aided somewhat by war surplus purchases.

Flight training under GI Bill of Rights boosted the '46 total of student pilot certificates over double the '45 figure. The increase without this number would have been higher than forecast.



BOX KITES to BOMBERS

Glenn Martin, who built his first pusher by lamplight in an abandoned church, is today the only aviation pioneer still in command of his own industrial destiny

THERE was something in the air above him that had intrigued the boy for as long as he could remember. At the age of four he had rigged one of his mother's bedsheets to a little red express wagon. When the contrivance after a brief exciting run before the wind sent him sprawling, he was jarred into a quick and lasting respect for the atmosphere and its vagaries. Once he used a sail to carry him on skates over the frozen pond, and when summer came, he sail-rigged his bicycle. He turned his mother's kitchen into a kite factory, but Minta Martin who had dreamed of flying before her son was born, accepted this preordination with easy tolerance and unquestioning confidence.

When Glenn Luther Martin was nine, the family moved from Liberal, Kansas, to Salina. After school hours he worked in a bicycle shop. Later, as a garage mechanic between semesters at Kansas Wesleyan, he studiously observed the intricacies of crude internal combustion engines and—perhaps more significantly in the light of his later successes—he learned how to run the kind of a business that was founded less firmly on precedence than on faith in the future. The experience must have served him well, for today he is the only aeronautical pioneer of the Wright-Curtiss era who continues to control the destiny of his own company.

Like any other Kansas youth, he liked to hunt, but unlike the others he closely noticed how the stub-winged prairie chicken took off quickly, climbed fast, flew slowly and in short hops. He observed how ducks with their short tapered wings took off more slowly but flew greater distances at higher speeds. His affinity for the wind, the memory of birds in flight, things that Minta Martin had read to him about Lilienthal and Chanute, what he had learned of internal combustion engines—all these were a kaleidoscope in his mind. Then suddenly in 1903 the shifting colored crystals converged to form a strange and startling image. Across the country at Kittyhawk, two bicycle builders from Dayton, Ohio had launched a machine from level ground into the air. It continued for a full minute and forty seconds in controlled flight!

Two years later the Martins moved to Santa Ana, California where Clarence Martin took a position with a hardware firm. Glenn worked for a time in the local garage, then, at 19, opened his own shop and sales agency. He sold Fords and Maxwells at sufficient frequency and profit to net him $4,000 in the first year. As befitted his new-found position in the community, Glenn Martin dressed and acted the part except perhaps for a penchant toward driving too fast. But soon people began to whisper about how this young Dr. Jekyll became a Mr. Hyde at night, toiling over weird kite-like affairs which in the half-light of early morning he would wheel to the edge of town to go skimming and hopping over the hills like an exuberant Leprechaun. That the budding aeronaut's next experiments were carried on, in of all places, an abandoned church set more tongues wagging. Here Glenn Martin built a machine which, in the more enlightened vocabulary of later years could be described as a "pusher biplane powered by a four-cylinder twelve-horsepower Ford engine." Out of laminated hickory and Oregon pine, he and his helpers (a group that included his mother) had hand-whittled a propeller. The main structure was of spruce, the outriggers, bamboo. Into this progenitor of a long line of Martin aircraft went thirteen months of hard work and some three thousand dollars. At the corner store butter was selling for twelve cents a pound.

On the first day of August, 1909, Glenn gingerly wheeled the fruit of his labors to a near-by pasture. With a caution that was to become a paradoxical characteristic, he nursed the craft along a few feet above the ground, settled shakily to earth after a feeble flight of not more than a hundred feet. The 12-horsepower Ford motor was not enough. Into the original bed went a three-cylinder Eldridge marine of thirty-horsepower. The flights became longer and higher. The church, filled with lumber, fabric, wire, and willing helpers, became overcrowded. Martin moved his little group to a larger building that once had been a cannery. Here he established the industry's first assembly line. There were as many as two aircraft on the floor at one time! And there was a payroll. Most of the money to meet it came from fees and prizes at neighboring fairs. Between times, Glenn would hustle downtown and sell somebody a Maxwell. This was always done reluctantly and as a last resort. Aviation must support itself. And why not? There were hundreds of wealthy sportsmen who spent vast sums of money on polo ponies, African safaris, and fast motor cars—all for the privilege of risking their necks. The aeroplane seemed to have a market. It was expensive, novel, exciting, dangerous.

To glamorize his profession and his product, Martin affected riding breeches, black leather coat and helmet. His sartorial elegance earned him the sobriquet "Flying Dude," a few orders for aircraft, and a role opposite Mary Pickford in "The Girl of Yesterday" at $700 per day.

Glenn Martin and his aeroplanes were attracting the attention of people who were prepared to pay the price on the very good chance that sooner or later they would watch his spectacular descent to oblivion. It was a profitable business though hardly a useful one. He was determined to justify his existence beyond that of a carnival attraction, and to demonstrate the utility of his machines.

May 10, 1912, will ever remain a marked page in aviation history. It was on that date that Glenn Martin made the first considerable over-ocean flight—from Newport Bay to Avalon, on Catalina Island. Thirty-four miles away, Catalina was a speck on the Pacific horizon, yet the aviator made it in thirty-seven minutes and then turned around and flew back.

Martin had already experimented successfully with water aircraft, had launched a plane through the Pacific surf and mastered the tricky art of landing and taking off on protected waters. He had even demonstrated that he could pick up a man from a motorboat in open water.

It was a tense crowd that waited on the beach at Balboa that day, however. Many thought the attempt was suicidal. There were low-hanging clouds. Less tense than most was a slim, smiling woman whom aviation had already learned to know and admire—Mrs. Minta Martin. Her son had said the voyage was feasible; that was enough for her, even though her husband, Clarence Y. Martin, was patently disturbed. Roy Knabenshue, Martin's exhibition manager, and Charlie Day busied themselves with last-minute preparations. When all was in readiness, the pilot climbed into the fresh-air seat, strapped a barometer to one knee and a compass to the other. Around his shoulders he hung an inflated bicycle innertube for a life preserver.

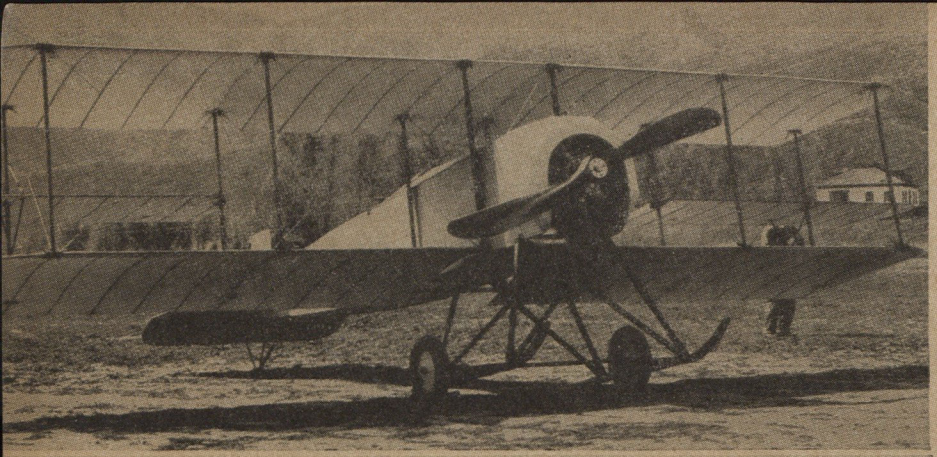
The frail little craft scudded over the water and lifted smoothly into the air. In a few moments it was lost in the clouds, and the aviator was "on instruments," depending on his compass to guide him and his barometer to tell him his altitude. It was an early instrument flight.

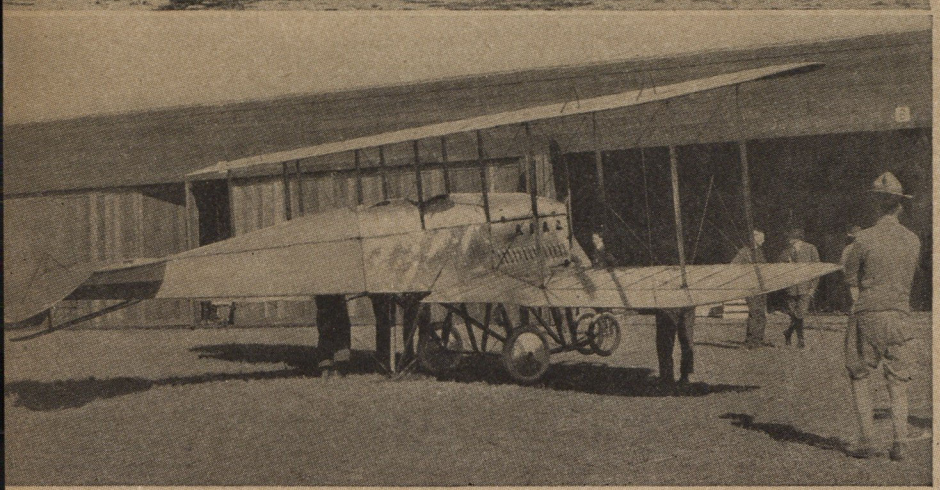
A wildly cheering group of Catalinians received the aeronaut as his biplane swooped down to touch its single pontoon lightly in the shadows of Avalon's hills. But they were too enthusiastic. Eager hands grasped the bamboo outriggers and beached the plane so vigorously on the pebbles that the thin shell of the pontoon was ruptured. A crude patch was made and, with many misgivings, Martin turned into the wind for his takeoff.

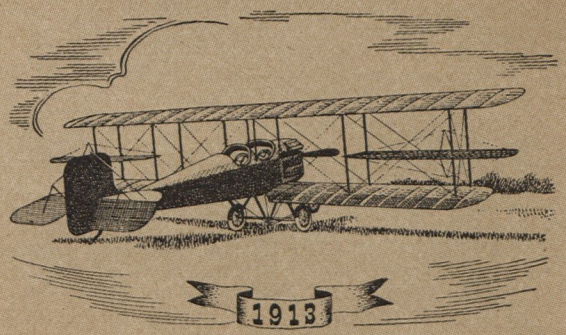
"Just as I got off I felt the patch let go," Mr. Martin recalls. "I knew I was in for it then. So I followed the steamer lane, realizing that I would have a better chance of being picked up if I had to land."

There is a story about his landing at Balboa. Martin had turned over a highly prized watch to Charlie Day just before

Fuel for longest over-water flight in history could be handled in a pitcher back in 1912 when Glenn Martin made his hop to Catalina Island. Left, Martin at one of early aviation exhibitions. Left, above, Martin at his desk, with models of the Mars and pioneer pusher.







Martin's first fuselage tractor biplane was the TT, sold to the Signal Corps in 1913. Model below is the first armored airplane on record. The upper trainer has a rotary engine. The battleplane was powered by an 80 hp Curtiss OX-2 engine, with a top speed of eighty mph. Note noseover gear systems.

his first takeoff, "just in case I decided to go swimming." When the biplane returned to the spot, the excited crowd failed to observe the damaged pontoon, and when Martin stalled in perilously close to the shore for his landing so that he might be in shallow water, the ship began to sink immediately. Valiantly, Day dived and began to swim frantically toward the gesticulating Martin. When he reached the craft, its lower wing was barely awash and the pontoon was on bottom. Martin was looking at him reproachfully.

"Charlie! What have you done with my watch?"

But the aeroplane was still far from achieving public acceptance as a means of transportation. It was held to be no less reliable than the automobile, but in the minds of most, the comparison was faint praise.

Military Application

Years earlier balloons had been used for observation in the Civil War, and to ferry refugees from beleaguered Paris in the Franco-Prussian War. Therefore utility of the aeroplane for similar military purposes was regarded, theoretically at least, as within the realm of possibility. The potential claimed for it as an offensive weapon was another matter. There was much talk on the subject, however, talk that led to a display of night-bombing tactics over Los Angeles harbor by Martin and Lincoln Beachy. White acetylene torches illuminated Beachy's craft while red flares played on the machine piloted by Martin. When this harmless game of aerial tag had built up a suitable degree of suspense in the crowd below, Martin and Beachy made their way toward a wooden fort, target for the night. A series of bomb-like objects could be seen hurtling toward the fort and as they landed, there was a thunderous roar and a great burst of flame. In a few minutes a military objective had been destroyed from the air. That the Army and Navy officers in attendance were not unduly impressed was attributable no doubt to the fact that "bombs" had been but loosely sewn sacks of flour and the explosions the result of black gunpowder set off by electrical charges within the fort.

A few farsighted Army officers, however, were not unaware of the aeroplane's potentialities as an offensive weapon. In 1913 orders were placed for Martin's TT trainer, a tractor-propelled biplane with which it was proposed to conduct a series of real bombardment tests at San Diego.

Such aerial operations as these were at the time under the jurisdiction of the Signal Corps, which, since it had comparatively slight knowledge of explosions, sent an Ordnance Division colonel to observe the results. The tests were run with the aid of Lts. Scott and Goodyear. Scott had developed an elementary bombsight composed mainly of a set of crosshairs in a tube but adjustable to variance in altitude, speed, and drift.

The colonel ensconced himself in a trench with earthworks on one side from which he could safely observe the accuracy and destructive power of the impending bombardment. The object of the test was to drop the bombs behind the earth-

works in such a manner as to have the bomb fragments fall in front of the observer. On the TT's first run, the bombs fell some distance from the shelter.

On landing, they found a thoroughly irritated officer facing them. "How do you expect me to observe the fragments if you drop the bombs all the way out there!"

"Sorry, Colonel," Martin replied. "When I looked through the bombsight, all I could see was you!"

On the next attempt, the bombs fell close enough to rattle the colonel's teeth. Martin awaited the Army's report, but because the tests were secret, so was the result.

Martin was participating indirectly and without his knowledge in a more sanguinary experiment. Some months before, a biplane had been sold to Didier Masson ostensibly for the purpose of barnstorming. Instead he had taken the plane to Mexico. Federal troops, then engaged in a war with the Huertastas, were holding well until suddenly an airplane appeared at low level over the city of Guayamas dropping a salvo of bombs into the principal street, and according to a cryptic despatch, "causing some loss of life and some damage." It was not until a year later that the French dropped the first bombs of World War I on the German city of Konz-Kartaus from the blimp "Fleurus-I."

That same year, Martin built what was probably the first airplane designed as a passenger transport. A four-place version of the military TT on a single float capable of eighty mph, it was to serve as an aerial ferry across Coos Bay in Washington. Renamed the Great Lakes Tourer, it was taken to Chicago where it popularized the sport of "air yachting" over the water, and won the Curtiss Marine Trophy for covering the greatest number of air miles in a single day.

The new type of ship earned Glenn Martin national acclaim. He broke speed and altitude and reliability world records, many of which were already his own. In Chicago he set up the fad of "air yachting," carrying wealthy ladies and gentlemen for rides over Lake Michigan. He won the Curtiss Marine Trophy for covering the largest number of miles in a single day.

And it was in this plane also that Martin made another contribution to aeronautical science—the free-fall parachute, a device on which he held the original patents.

The whole thing had started as a hippodrome stunt when the aviator-manufacturer had engaged the services of Tiny Broadwick, an intrepid girl parachutist who had been dropping from hot-air balloons to thrill fairground crowds. They made a great team, and the money rolled in. It was badly needed, for the Martin experiments were costing dearly.

Martin had rigged a special trap-seat alongside the fuselage and Miss Broadwick would dangle there from the take-off until the point at which the pilot would cut her loose. She would float down, lightly as a feather, under her gaily colored umbrella.

From the very start, Martin had sensed that this might be to aircraft what the life preserver was to ships. When vessels were in distress, their crews and passengers floated about on cork rings. When airplanes were in trouble their pilots and passengers were at the mercy of the frail wings and the aviator's skill. The elements were different, but could not the solution be the same?

Glenn Martin pondered. Parachutes rigged to the plane offered little opportunity in the split seconds of distress. Why not rig the parachutes to the person? Then one could jump free of the airplane, just as passengers jumped free of a sinking ship. He must figure some way for the umbrella to open without being fixed to the plane itself.

Oddly enough, the newspapers failed to recognize the significance of the event one day in mid-June of 1913 when Tiny Broadwick, with a mysterious pack on her back, climbed overside the airplane above suburban Los Angeles and sprang free. Seventy-five feet she fell before the silk streamed out above her, and the big 'chute opened agonizing seconds later. It was recorded, of course, but the old clippings show it simply as another exhibition stunt.

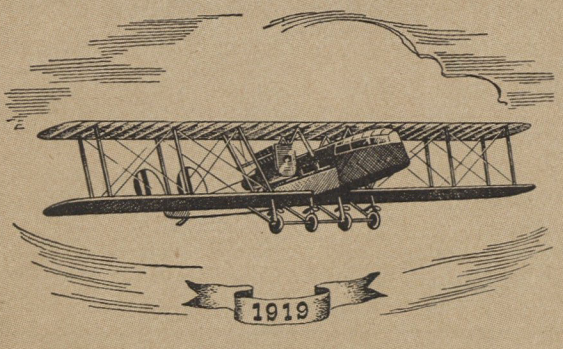
It was not until January 10, 1914, that the national press awoke to the importance of the discovery. Martin had not been satisfied with the first experiment of his "life vest." With Charles Broadwick, Tiny's husband, and Floyd Smith, one of the Martin technicians, he had set about perfecting the device. The weight of the knapsack was cut to eleven pounds, the harness made stronger. And then Martin beat the tom-toms of publicity.

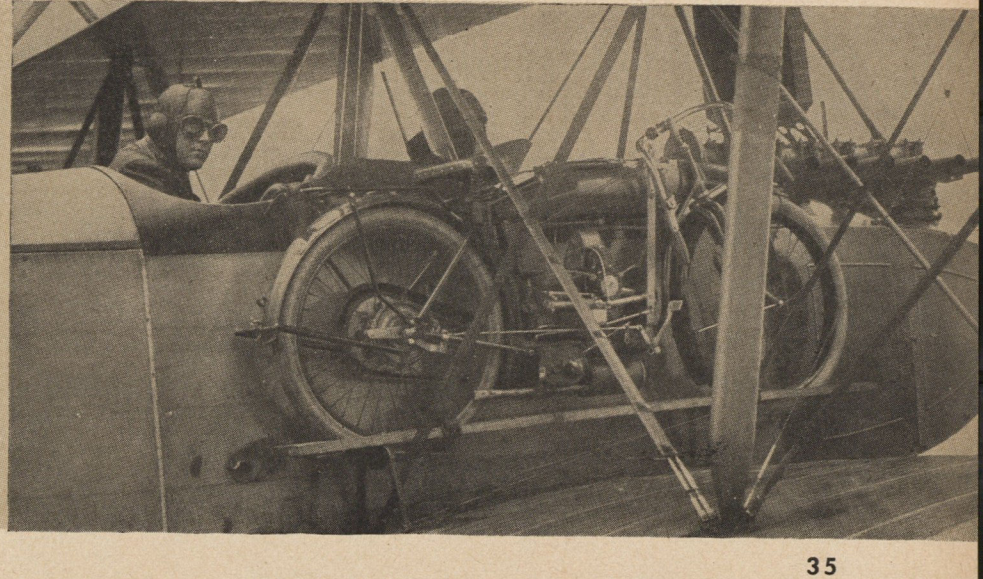
Came a great crowd to Griffith Park on the appointed day. Many were spurred by the Roman-holiday aspect; a girl stepping into space thousands of feet up. But there were sober-faced Army officers in the crowd as well. A girl reporter of the Los Angeles *Times* boarded the plane with Martin and Miss Broadwick to record the event from above. At 3,000 feet Tiny stepped over the side, smiled at the reporter and leaped free.

The brave little figure hurtled downward. There was a strained silence on the field. Above, the reporter turned away, but glanced down a few seconds later to see the silken umbrella below, with Martin spiralling steeply around it in triumph.

When it was all over, people had things to say. Brig. Gen. Robert Wankowski, who was there with his aide, commented:

"The demonstration was successful and there is no ques-





More pioneering. Left (1913) the Winchester-armed battleplane, above, 12-place transport-version MB-2. Right, 1916 model Martin R, which could carry a paratrooper and his motorcycle.

"Tiny" Broadwick in her special balloon-chute harness, preparing to take off with Martin in S-type seaplane. She tested first free-manual 'chute from this plane in June 1913.

tion in my mind but that aviation would have a much smaller list of victims had the life vest been used before."

Said the Los Angeles *Times*, under the heading "Triumph of Aviation":

"We may be permitted to hope that no longer shall the demons of the air pluck sacrificial victims from the birdmen. One of the greatest triumphs of aviation since the sons of men learned to fly came at the Griffith Aviation Field last Friday when a brave girl stepped from the biplane of Glenn Martin and dropped a thousand feet to earth—dropped as lightly as one jumps from a table at play. Martin had staked a courageous human life in his game with death, and won by a device of silk and cord, woven under his directions and according to plans of his own."

"The new device should prove useful in war operations also," was Mr. Martin's opinion. "An aviator could fly over a certain point, drop off a scout and return to camp without having to land."

Prophetic? Yes. During World War II newspapers screamed vindication. The word "paratroop" was added to the language.

World War I

When the first world conflict arrived, it appeared sorely overdue. For a full generation in Europe, men had been saying—"it will come this Spring!" On August 7, 1914, Martin, then president of the world's largest airplane company, wrote a letter to the Los Angeles *Times*. "The airplane," he said, "will practically decide the war in Europe. Veritable flying death will wreck armies, wreck mammoth battleships, and bring to the world a vivid realization of the awful possibilities of a few men and a few swift aerial demons. For the old-time war tactics are no more. The generals who realize this quickest and fight first with the flying death will win."

This was written before Duhet, even before Mitchell, and while the first World War was not decided in the air, the plane did prove a potent weapon. Four months before the war flared in the Balkans, the *Aeroplane Destroyer,* a pusher armed with a Winchester rifle, appeared in Griffith Park. While the Army had previously fired a Lewis machine gun from an airplane, this was the first time an airplane had been specifically designed to do combat with another craft. The World War was many months old before the famed air duel between the Farman and the Taube occurred.

The onset of actual war brought aviation into a faint glimmer of limelight. Contracts came in from Holland and from England, as well as from our own. By the Spring of 1916, the Secretary of War asked Martin to serve on the War Aviation Board. While he was acting in this new capacity, he was approached by the Wright Company who proposed a merger. Wright-Martin was created as a $10,000,000 company with Glenn as vice-president in charge of production. At this point, even the normally friendly San Diego *Sun* pointed a front-page editorial at the possibility of an airplane trust.

At the time of the merger, the Martin Company had three airplanes in production, the T, a side-by-side trainer, the S, which was a tandem job on a float, and the R, which was an advanced-trainer observation plane. One of the tricky rigs in the R was an arrangement for a lightweight motorcycle that was carried in a rack alongside the fuselage. This was to be dropped by parachute along with a soldier, so that he could have transportation after landing—this in 1916.

In addition to his factory, Martin maintained an active flying school at Griffith Park where he had among his students a wealthy lumberman named William E. Boeing, who, after learning to fly, purchased a Martin seaplane and proceeded to his home in Seattle where he set up a company of his own. While the earliest Boeing trainer is by no means a copy of the S, it bears it a natural family resemblance.

Everything in the new Wright-Martin setup went well as long as airplane building was an airplane builder's task. Freed from administrative cares, Glenn waged a production battle. In the meantime, a battle that was to reoccur in another war was brewing. The automotive business, sniffing profits in the coming conflict, had taken preliminary steps in order to cut up the aviation business for itself.

When the U S finally made the jump into the maelstrom, the aircraft production board, topheavy with automotive executives, decided to "improve" foreign aircraft rather than to build U S designs. American airframe builders were virtually frozen out of their "plan" to build 100,000 airplanes in two years. For the record, only 213 U S built airplanes got to Europe, and only a fraction of these got to the front. By the time they did, they were so close to obsolete that they were of little military import.

Because greater profits lay in airframe production, the automotive groups tried to shift the less lucrative engine-building job off onto the traditional airplane manufacturers. This didn't suit Glenn Martin at all. Resigning from the Wright-Martin setup, he moved east to merge his own resources with patriotic capital. At Cleveland, Martin built an imposing plant in which he proposed to build something new on the military scene—a twin-engined bomber with near-pursuit speed. He laid the plans before the War Production Board. "New Airplane—no deal," was the answer, "America will build only proven foreign design aircraft."

The beginning of 1918 saw the Aircraft Production Board in more hot water than was comfortable. The grandiose statements on production turned out to be just figures. Congress was asking why, and authoritative writers were pointing out that experienced plane builders were sitting idle while the "superefficient" auto builders fumbled. In January 1918 Martin received a contract for his MB-2. The airplane no one would look at in 1917 became the backbone of U S bombing.

The general manager of the Cleveland outfit where the MB-2 was built was Larry Bell, founder of Bell Aircraft.

Donald Douglas, president of Douglas Aircraft, was chief engineer. J. A. "Dutch" Kindelberger, president of North American, and C. A. Van Dusen of Brewster were only a few of the immortals who graced the "miracle plant."

"The most formidable battleplane ever built," was the Cleveland *Plain Dealer's* story the day the pilot Eric Springer lifted the first MB-2 off the sod surface of the Martin airfield. There was enthusiasm in the plant. The new job had performed up to expectation. For the record, it spanned seventy-two feet, which was a big plane in those days. Powered by two 400 hp Liberty engines, it had a top speed of 125 mph. It could carry a ton of bombs in an enclosed bay. It carried a four-man crew—two pilots, a gunner-bombardier in the front cockpit, and a rear gunner aft of the wing. Both gunners had twin-Lewis machine guns on flexible Scarff mounts. Later versions of the MB-2 carried such innovations as crew armor, 37mm Baldwin cannons and armored tanks.

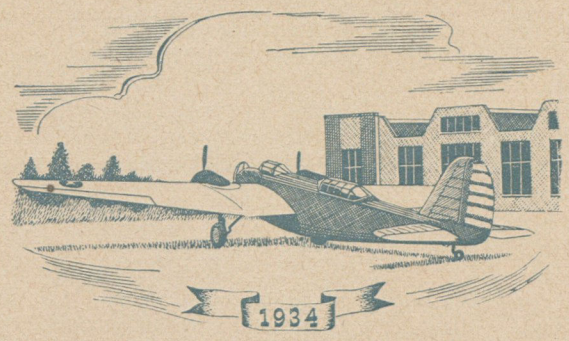
The Martin crew, anxious to hurry the MB-2 into battle, declared the craft ready for Army acceptance tests two weeks after the test flight. Martin, Don Douglas, and Springer packed suit cases and boarded the MB-2 for the 200-mile flight to McCook Field near Dayton, Ohio.

There was real excitement when they landed at McCook. In the first place, the landing was unauthorized. The occupants of the plane were arrested, and the plane put under guard. Furthermore, the conservatives regarded the craft as such a radical thing that Army personnel were forbidden to fly it. It took a lot of tall talking to get the plane and crew freed. In time, the immortal "Shorty" Schroeder climbed aboard and his test results aided the MB-2 in making history.

Between Wars

The Armistice came before any MB-2s saw action. The results the British got with their bomber aircraft indicated that, had the MB-2 been put into production when it was first proposed, it might have had a real effect on the course of the war. When November 11, 1918 arrived, Martin had on the drawing boards a passenger-transport version of the MB-2. Six months later, the Army asked for 200 MB-2s. However, in consideration of the rest of the industry, the contract was split up.

Like most aviation dreamers, Martin kept pushing the commercial aspects of aviation in the face of a marked military trend. In the spring of 1919, the first of a fleet of six commercial-version MB-2s was test flown. These planes were intended to fly passengers and mail between New York and



Chicago. However, disaster was being written on the front pages of the nation's papers. Airmen, just out of the service, were acquiring surplus airplanes and barnstorming the nation. This in itself might have been a good thing, but there was virtually no regulation in those days, either as to operational conditions or mechanical safety. While there were well organized groups, like the Gates Flying Circus, many barnstorming airplanes were overworked and ill-maintained, and the accident rate was spectacular.

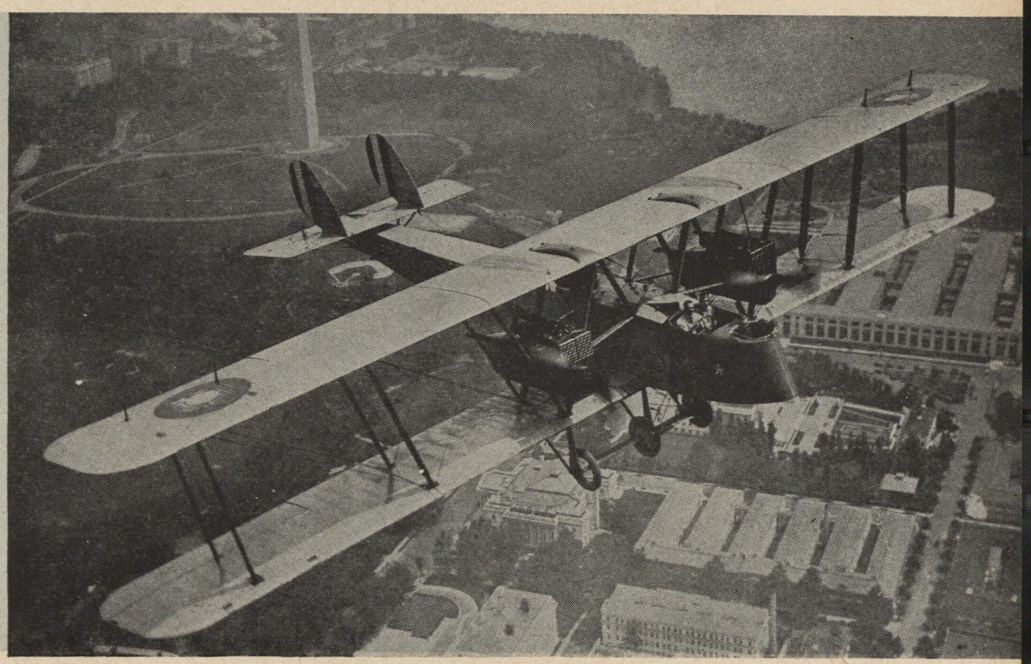
The bad press maimed the budding air transport industry. Martin had run ads in the *Saturday Evening Post* boosting the idea of air travel, but the public response was poor. The pioneer transport MB-2 with its comfortable seats wound up as a military transport, whose first assignment was flying the McCook Field baseball team from one game to another. The "heavens weren't going to be filled with commerce" that particular season.

So it was that Martin found himself absorbed in the strenuous contentions of General "Billy" Mitchell, of the Air Corps, that bombers could sink battleships. And the pioneer was enormously pleased when General Mitchell selected the Martin bomber to demonstrate.

"A bomb was fired today that will be heard around the world!"

Maj. Gen. Clarence C. Williams, Army Chief of Ordnance, did not overstate. Indeed, the reverberations of that explosion of July 21, 1921, were to be heard completely around the world twenty years later.

It was a stunned group of Army and Navy officers and newshawks who stood on the decks of the naval transport *Henderson* that blazing day off the Virginia Capes to see the last act of one of the greatest of military dramas.



As a protest against Aircraft Production Board's "foreign designs only" policy, Martin withdrew from his Wright-Martin connection, set up his own plant in Cleveland, where he proposed the MB-2 bomber. Rejected for three years, it was put into production when the nation's auto builders failed to produce aircraft in decent numbers. The MB-2 remained standard type for many years.

A few minutes before the tremendous bulk of the prize German dreadnought *Ostfriesland* had reared itself over the undulating green carpet of ocean. Now there was nothing to be seen, except a V of seven dots in the sky—seven Martin MB-2 bombers which had unleashed terrible bolts from their blue element. The airplane had proved that it could sink a battleship!

High in the sky a man exulted. Several thousand feet below him he found an echo. Brig. Gen. William Mitchell, Assistant Chief of the Army Air Service, had proven a hotly debated point. Now he sat at the controls of the lead Martin bomber, while Glenn L. Martin watched proudly from a ship deck as his winged giants wheeled back toward Langley Field.

Six months before, "Billy" Mitchell had started a tempest by telling the House Appropriations Committee that the airplane had "obsoleted" the battleship. He was asking for $60,000,000 for the Army Air Service, or the equivalent, in cost, of a battleship and a half.

It had been seven years before—in August of 1914—that Martin had predicted that airplanes would sink battleships.

As the fire of controversy blew hotter, fanned by a national press that sensed sensational events, the pressure was put on Washington to prove or disprove the point. So it was that Navy Secretary Josephus Daniels and War Secretary Newton D. Baker arranged the test.

It was to be an elaborate affair. Four ex-members of the German imperial fleet were chosen as the targets. These ships had fallen to the United States when the remnants of the German navy were divided among the Allies. There was the submarine *U-117,* which had sunk American shipping a few years before. There were the destroyer *G-102* and the light cruiser *Frankfurt.* But the *piece de resistance* was the 22,800-ton *Ostfriesland,* a powerful battleship that had played a major role in the Battle of Jutland.

The Navy got the first crack. Three of its F-5-L bombers were to attack the *U-117* on June 21. It was all over so quickly that it left the watchers blinking. Using only twelve 163-pound bombs, the F-5-Ls literally smothered the subsurface raider and in sixteen minutes it lay on the bottom of the Atlantic.

That was all for the day. But a sub was a frail craft. Just wait until they got to the bigger ships!

So on July 13 the destroyer *G-102* was towed out. It was General Mitchell's turn, and he led out his planes to simulate actual war conditions. Eleven low-flying SE-5s swished over and dropped 25-pound fragmentation bombs "to clear the decks." Then twenty-eight Martin bombers, carrying 300-pound demolition bombs, appeared at 1,500 feet. Down rained the bombs and nineteen minutes from the time the first was dropped, the *G-102* had sunk.

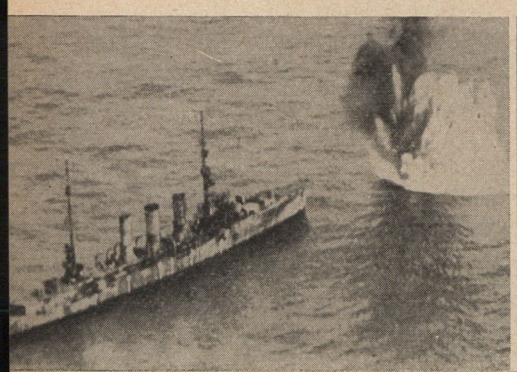
So far, the airplane had a perfect score. But what about the heavier ships? The *Frankfurt,* for instance? Here was a stout cruiser built to stand major combat. She lasted just thirty-five minutes. On July 18 three Martin bombers swooped over, dropped eleven bombs and down went the *Frankfurt.*

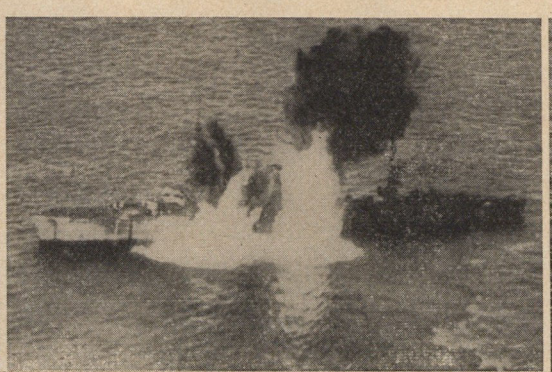
Revealing though they were, these tests were but preliminaries. Then came the main event. Two days were allotted to the *Ostfriesland* attacks. The Armed Services wanted to see the effect of various sizes of bombs. On July 20 Army Martin bombers, Navy F-5-Ls and Marine De Havilands showered 230-pound, 520-pound and 600-pound bombs on the dreadnought, but the effect was hardly more than the tattering of her superstructure.

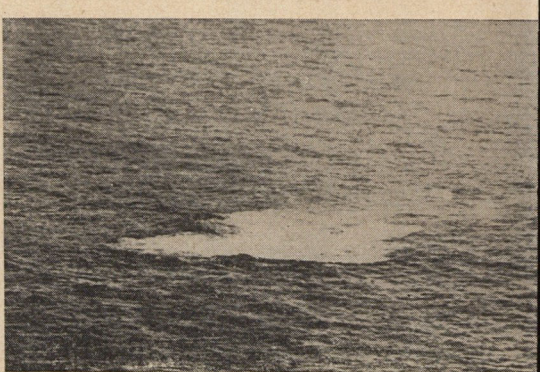
The big day was July 21. For this General Mitchell and Glenn Martin had been saving a surprise. There had been developed 2,000-pound bombs and the MB-2s had been fitted out to carry them.

When only seven of the Martins appeared to administer the *coup de grace,* some observers smiled. Seven puny Davids against an especially able-looking Goliath!

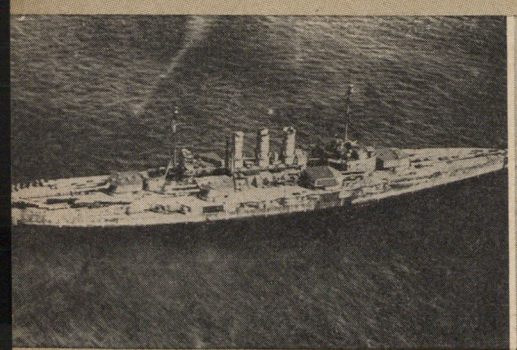
The rest is history. The MB-2 put four of the bombs alongside, a fifth directly on the deck and the other two at







Air power was vindicated at the famed Virginia Capes trial. Top row shows effect of 250- and 300-lb bombs on German destroyer G-102, which vanished under water only nineteen minutes after first bomb fell. SE-5s and ME-2s took part in this air attack. Seven



Martin bombers, each carrying a 2,000-pound bomb attacked the battleship *Ostfriesenland* on the second day of last trial. After two misses, four bombs alongside and one direct hit, she started heeling over, was out of sight in a little over 21 minutes.

Martin built the B-10 prototype "on spec" in the depression year of 1931. Radical for its time, it contained such innovations as retractable landing gear, enclosed gun turrets, a 200 mph top speed. It altered the design trend.

some distance. A series of flashes and explosions and great geysers of water deluged the great ship. As the water and smoke cleared, the *Ostfriesland* was seen sinking by the stern. A few moments later her bow reared toward the heavens and she rolled on her side and then slid beneath the waves. The whole business took only twenty-one and a half minutes.

The results of the test were not what history might have expected. The Navy started BUAER and initiated the flat-top program. The Army, under a conservative administration, scarcely allowed the air units enough money to keep themselves in fuel and salaries. There was little money for equipment; less for development. But the Navy, having had its security attacked, was anxious to bolster its now insecure position in the air. The need for marine equipment sponsored Martin's next move—from Cleveland to a place where tidewater, land and weather could be combined with trained industrial help. The answer was Baltimore, where the present plant is located.

By 1931, the anti-military feeling had begun to run its course. Some money became available for development. After a decade of slumber the nation began to catch up. Martin, speculating on this trend, built the XB-907, a mid-wing medium bomber which, on acceptance became the B-10, the first thoroughly medium bomber in the AAF's stable. It carried the first enclosed turret, which later begat the power-operated units. For this development, Martin received the Collier Trophy for 1932. In addition to the Air Force, the Dutch East Indies, Spain, Argentina, China, Siam, Turkey and the USSR filed orders.

Alongside this development, Martin built the China Clipper. International overseas air lines began to take form and the pioneering S-42 wasn't big enough to make money. The Clipper was the answer. Its record is history. But Martin's plant was not destined to stay in peaceful production for long. In 1936, Martin's engineering division came through with two developments. One was the first power-operated turret built in the US. Britain had developed hydraulic equipment along those lines, but getting one to carry 50 caliber guns was another matter. Another development was the self-sealing tank. While Germany had built a partially successful cell, and demonstrated it in Spain, it proved heavy and fully as difficult to install as the standard tanks. Martin's engineering staff came up with the MARENG cell which became virtually standard on all U S wartime aircraft, and was used outside aviation for transporting liquids in boxcars when the submarine menace was crippling our coastwise tanker service.

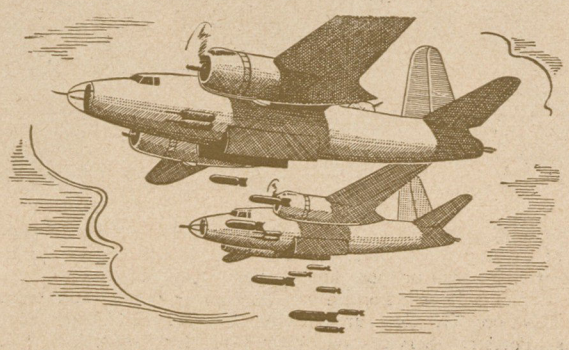
Early in March, 1939, a model plane known as the Martin 167 was test flown. France, weakened by internal industrial strife, ordered the first major batch to augment her air supply. Martin was faced by the problem of doubling the size of his plant to meet the order, in eleven weeks. Seventy-seven days later, production started in building C. 115 airplanes were finished in ten months. When France fell, England picked up the contract, renamed the 167 the Maryland, and specified some changes to be put in subsequent ships to suit her tactical needs in Africa. The modified plane, known as the Baltimore, hung up a record in Africa. Montgomery labeled it "a deciding factor at El Alamein." When the AAF took over the Baltimore contract, the design was tagged A-30, but most of them continued to go to Britain under lend-lease.

While the same plant built flying boats for the Navy, probably the most discussed wartime Martin was the B-26. The Marauder won the 1939 Army competition in the Medium bomber class. When Ken Ebel test flew the first one late in 1940, there were those who were willing to wager she would never take off. Like the bumblebee, it could have been proved mathematically that it couldn't fly. The B-26's history is the answer to all of its critics.

There was to be a four-engined version of the Marauder, but events never let it get past the drawing stage. The B-26's part in the ETO and in the Pacific is too long a story to be part of a general Saga. At a later date, it will be told in AIR FORCE'S Famous Planes series.

The coming of peace did not catch Glenn Martin asleep. His company had survived one peace, it would another. Large military transports had been designed which would fit into the commercial transport picture with little or no adjustment. The Douglas DC-4 was available under surplus, the Lockheed Constellation had cut its teeth as a fast personnel carrier. However, in the medium-sized domestic transport class, only the trustworthy DC-3 was available, and the airlines were talking about superseding this when war started. This was the class of airplane that was needed, and Martin's engineers had the 202 transport past the discussion stage when war was over. Its characteristics will be discussed in a design analysis in the Air Tech section at a later date. Its virtues are best indicated by the fact that some half of our domestic airlines have 202s or its supercharged version, the 303 on order. There is also a 304, which is the same airframe, powered by gas turbines.

The most advanced project on Martin's books is cryptically called the XP-48, a long-range six-engined jet bomber. There has, as yet, been little said about it. Rumors of course emanate from Engineering, but these are better not discussed. In the meantime, Glenn Luther Martin emerges from another war, still boss of his own company in an era when Wall Street bankers have control over most such companies. How come—? "We'll make Catalina all right, but just in case—hold my watch!"



CROSS-COUNTRY

Heartbreaking Breakdown

There are better ways of establishing a point than by the display of figures and statistics. The "numbers game" was so overworked during the war that by now most of us are just about as unimpressed by a ten-digit figure as we are by a two. We're cipher-happy.

But nevertheless there are still occasions when the significance of a particularly arresting set of numbers will seep through to our consciousness and bring us up with a jerk.

Such is the case in the recent announcement from Wright Field that during 1946 the Army Air Forces took delivery on a total of only 1010 military aircraft of all types—bombers, fighters, transports, liaison ships and so forth. Two years ago we sent that many bombers on a single mission into Germany.

The Wright Field statement compares this figure with the 1944 production total of 70 thousand ships, and points out that under the AAF's Air Industrial Preparedness Program, an annual procurement of at least 3,000 military aircraft is considered the minimum necessary to maintain the aircraft industry at a "healthy" level of production and to provide a flow of modern combat aircraft replacements to the using agencies.

If Air Power is in truth Peace Power, it would certainly seem that we are trifling with national security. Are we so poor as to be able to afford, for example, only sixty-three new bombers a year? Economy in military appropriations is a worthy objective, but there are two million AAF veterans who will question whether or not it is so important as to risk another war.

Here is the 1946 breakdown! 453 fighter planes were delivered. 63 bombers were accepted of which 62 were B-29s and one was an A-26. 19 photographic ships and 81 heavy transports were built. Boeing produced one experimental transport.

The balance of the 1946 procurement consisted of 60 communication type aircraft and 329 special purpose ships. Not included in the total were 15 gliders.

E. M. Wings

Regular Army enlisted men are responding enthusiastically to General Spaatz' recent announcement that candidates for aviation cadet pilot training will henceforth be drawn solely from the ranks. According to the General, the decision to open the course to enlisted men only is a reflection of the Army's desire to have as many officers as possible taken from the pool of men who know what it is to be a GI. "The Army has long looked forward to the day when it could regard every enlisted man as a potential commissioned officer," General Spaatz says. "The caliber of men volunteering from every section of the country is steadily bringing that day nearer. While we are now limiting the field to enlisted men of the AAF, the next step will be to expand the list of eligibles to include every enlisted man in the Regular Army."

The pilot training classes for enlisted men which are opening this spring at Randolph Field, Texas, will be the first for student cadets since the discontinuance of the wartime schedules. Present plans call for training approximately 1,500 men in three classes of about 500 each, but the exact number to be trained hinges upon Congressional determination

Having been called on by state forestry officials to aid in important task of curbing forest fires, pilots of Fort Worth Army Air Field are now flying two or more fire-spotting patrol missions each week. Here Captains Robert Lundin and A. George Bettete and Lieutenant Theodore G. Zeh are briefed by W. E. White of the Texas Forestry Service on procedure for reporting blazes.

Major General C. B. Stone, III, Dep. Com. of Air Defense Command, meets with civilian Art Reservists at first session of ADC's Air Reserve Advisory Board at Mitchel Field, N. Y. From left: Col. M. F. Scanlon, ADC's PRO; Col. T. B. Herndon, Wing Organizer in La.; M/Sgt. J. J. Mulligan, of Brooklyn; Lt. Col. D. S. Earhart, of Columbus; Gen. Stone; Lt. Col. L. A. Sheppard of N. Y.

of the size of the nation's armed forces. The new program, incidentally, provides for more extensive training than was given during the war. Instruction courses have been increased to 52 weeks. To be eligible for admission to the pilot training courses, enlisted men must be on duty in the continental United States, unmarried, between the ages of 18 and 26 years and 6 months and have excellent character and health. In addition, they must have two years of service remaining under their present enlistment, be graduates of four-year high school courses and be able to pass the mental and aptitude qualifying examinations. Under the new pilot training schedule, classes will normally begin on the first day of March, July and October of each year. Qualified applicants will be selected under a priority plan with college graduates heading the list.

Each enlisted man must also indicate in writing his willingness to extend his present enlistment contracts or to accept discharge and reenlist for a three-year period in the event he is accepted for pilot training.

More Statistics

More than 44,000 persons, or approximately one out of every five employees in the aviation industry are veterans of the Army, Navy, Marines or Merchant Marine, the Aircraft Industries Association has revealed.

The 44,000-veteran figure taken from a recent survey of fourteen major aircraft companies, includes more than 1,400 disabled or physically handicapped veterans who are now working in the industry.

Many job openings for non-working veterans, particularly certain skilled workers, are still available, the AIA survey indicates. Nine of the fourteen companies participating in the survey state that there is still a need for engineers, engineering graduates, skilled or semi-skilled machinists, tool designers, aircraft engine mechanics, milling machine operators, pattern workers, fabrication specialists, aircraft assemblers, sheet metal workers, and other skills dealing with aircraft production jobs.

To enable both able-bodied and handicapped veterans to better handle their jobs, most of the companies have instituted orientation and rehabilitation programs where the need has arisen. In the case of the disabled veteran, individual handling includes special medical attention, personal counsel, and the necessary adjustments to enable the vet to perform a particular job.

Special four- and six-hour shifts have been inaugurated by two of the aircraft companies to accommodate veterans attending schools and colleges. Veterans working the six-hour shift, staggered from 8 a.m. to 1 p.m., are paid full wages by one of the companies. Several disabled vets taking special eight-day in-plant training, receive full pay for beginners.

In spite of the severe industry-wide personnel reductions following VE and VJ days, every effort is being made to place veterans with employment rights under the Selective Training and Service Act. The industry is cooperating with federal agencies to employ veterans wherever possible.

To offset the loss of the 16,000 vets who are no longer with the industry since returning from war services, the industry has employed more than 16,000 new employees who are veterans, bringing the total of veteran employees to 44,000.

The AIA survey also shows that of the 1,400 disabled vets reemployed, only six were unemployable after they had been given special training and rehabilitation.

Diggin'

Anyone who questions that the Public Relations Officer is the hardest working man on the base needs only read the following release from the Middletown Air Matériel Area to have his doubts dispelled: "Middletown, Pa.—Olmsted Field, home of the Middletown Air Matériel Area here, claims the doubtful honor of having its name misspelled more often than any other Army Air field in the United States.

Mitchel Field, N. Y., and Eglin Field, Fla., may rise to challenge this claim, but Olmsted stands firm. (It does refuse, however, to compete with Apalachicola Field, Fla.)

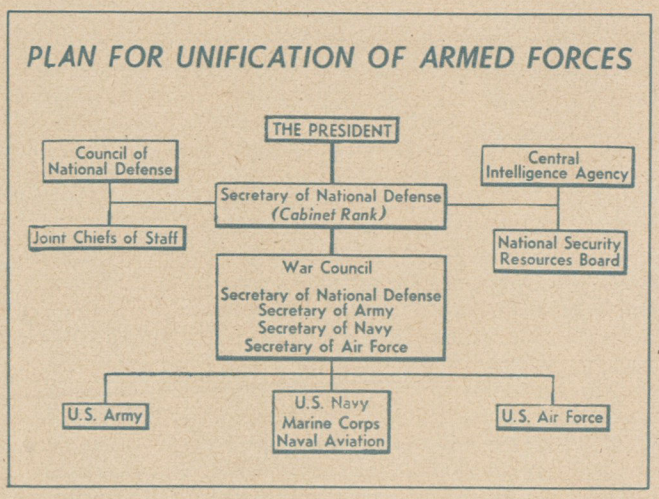
Even though it is Pennsylvania's largest military installation and therefore should be well known, Olmsted has been referred to as Almsted, Ohmsted, Homestead, Olmstead, and other variations. Even functionaries at AAF headquarters in Washington and at the Air Matériel Command, OLMSTED's parent organization at Wright Field, misspell it.

Things are much simpler, Olmsted muses, at Dow Field, Me., or Key Field, Miss., shortest names on the AAF roster. It envies other fields, too, whose names are easy to spell, like Kelly and Brooks in Texas, Maxwell in Alabama, and Andrews, D. C.

Meanwhile, Olmsted will probably continue to be called everything but Olmsted, Eglin will still be referred to as 'Elgin,' and people will spell Mitchel with two 'ells.'"

Honestly now, how hard can a poor guy dig?

Above: Enthralled by pretty songstress Betty Rhodes' recording, "Rumors Are Flying," a Lockheed P-80 pilot named his ship "Flying Rumor." Here Miss Rhodes adds the finishing touches. The P-80 is part of a fighter squadron stationed at Van Nuys, Cal.



Right: The end of a bitter twenty-five year struggle for a co-equal Air Force was brought a step closer in January when the Army and Navy agreed on a National Defense Department set up on these lines. Both sides made major concessions in reaching agreement and both concede that there is still much to be done before unification becomes something more than a blueprint. The plan is more evolutionary than revolutionary, but nonetheless is greatest advance since Billy Mitchell first brought the subject up after World War I.

JEEPS IN THE SKY

BY LT. COL. ANDREW TEN EYCK

Condensed from the book, "Jeeps in the Sky," by permission of the publisher, Commonwealth Books, Inc.

By the time the Japanese high command decided to call it quits, armies would no more have done without light liaison planes than they would have written off rifles or recon cars. The "grasshopper" of the sky "belonged"—it was an integral part of the running of military machines. Like its underdog ground counterpart, the jeep of the sky hauled the sick and the well, the pilot and the cook, the general on inspection and the prisoner moving rearward for interrogation.

The liaison airplane was introduced to the U S when Ernst Udet brought a Fielser Storch here in 1938. Beslotted and beflapped, it could take off from virtually a standing position and land almost like a helicopter. It started military planners in the U S to thinking. Udet's aerial ballet at Wright Field was followed by the letting of limited contracts. Stinson sold his O-49, and Bellanca his YO-50. A few Ryan 0-51 Dragonflies were also procured. But these were $25,000 airplanes, and their performance, remarkable as it was, did not exceed by too great a margin, the commercial lightplanes of the era.

During the brief breathing spell before Pearl Harbor, while our citizen-army was maneuvering to get into some kind of fighting trim, William T. Piper, the lightplane builder, sent a letter to the Secretary of War outlining the

Artillery spotting, one of the airplane's earliest roles in war, has been assigned to grasshoppers like the Piper L-4, top. First post-war sky-jeep is the all-metal Stinson L-13, above. Successor to the L-5, it can fold wings for road towing, carry two litter patients, in addition to pilot and attendant, lay wire, carry cargo. With minimum of fuss, wheels can be replaced by floats or skis.

Taxicab, ambulance, messenger and wire-layer in turn, the little planes accomplished a man-sized mission in the last war. They became as indispensable as any craft with guns

uses to which the light airplane could be put in modern combat. They could be used to control the movement of troops in unfamiliar country, he said. They could evacuate the wounded, carry messages when ordinary channels were interrupted, ferry personnel between important points, scout for enemy aircraft, and patrol industrial or supply centers for a "bird's-eye view" of the facilities. They could even drop bombs from low altitudes and be used as expendable aerial torpedoes.

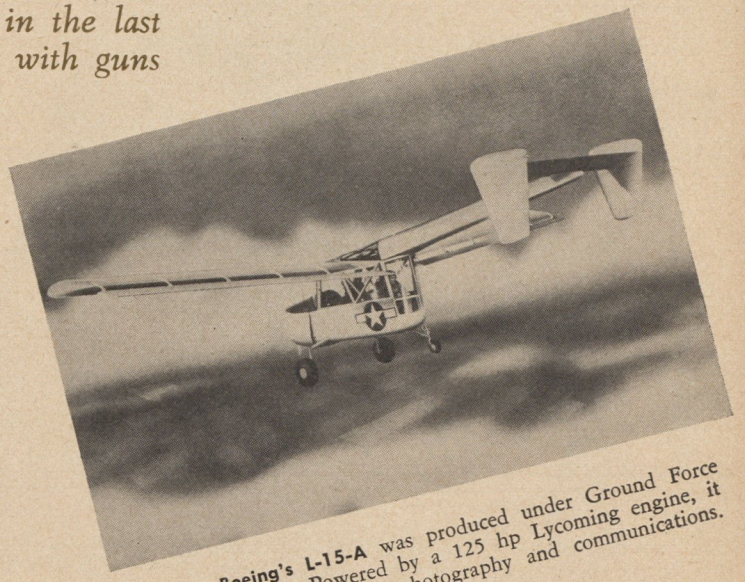
The Army thought the idea had possibilities, and gave Major Benjamin W. Chidlaw (later Major General) the job of getting a program started. In the absence of funds for testing, Chidlaw invited the lightplane manufacturers to provide aircraft and pilots at their own expense to participate in the Second Army Maneuvers at Camp Forrest, Tenn. in June, 1941. Piper, Aeronca and Taylorcraft accepted. During this test and subsequent ones at El Paso, Beauregard, La., and in the Carolinas, the light aircraft not only demonstrated its ability to act as an integral part of an Army in the field but also sold the airplane to a lot of top officials who ordinarily were not "air conditioned." During these exercises, nearly 500 colonels and 13 generals flew in light aircraft, including General Patton, who had his own plane.

In the immediate prewar era, the AAF procured aircraft of the newly created L for Liaison classification. The L-1 was the O-49, the 295 hp Stinson. The next three were off-the-shelf lightplanes, L-2 for Taylorcraft, L-3 for Aeronca and L-4 for Piper. All of these were 65 hp airplanes. To these were added the L-5, a totally new design by Stinson developed from their Voyager. It was powered by a 185 hp engine. Interstate developed the L-6, a 115 hp job. In order to simplify maintenance, the Piper L-4 and Stinson L-5 were standardized and procured in large numbers.

Heroes Without Standing

Less than a month before the first Jap bomb fell, H. H. Arnold, then Major General in command of air, wrote Director of Civilian Defense F. H. LaGuardia that the organization of existing private flying facilities for civil patrol and protection was "highly desirable from the national standpoint."

By March, 1942, when Nazi submarines were virtually sniffing our coast, two experimental bases were authorized for the Civil Air Patrol by the AAF, at Atlantic City, N. J.



Boeing's L-15-A was produced under Ground Force contract. Powered by a 125 hp Lycoming engine, it can be used for photography and communications.

and a third at West Palm Beach, Fla. During the ninety-day trial run, unarmed civil airplanes, many of them light aircraft, patrolled the coast. The enemy in these areas fled quickly and so the flights were extended. From this early start, a chain of twenty-one bases was established from which continuous daylight patrol was conducted on the Atlantic and Gulf coasts.

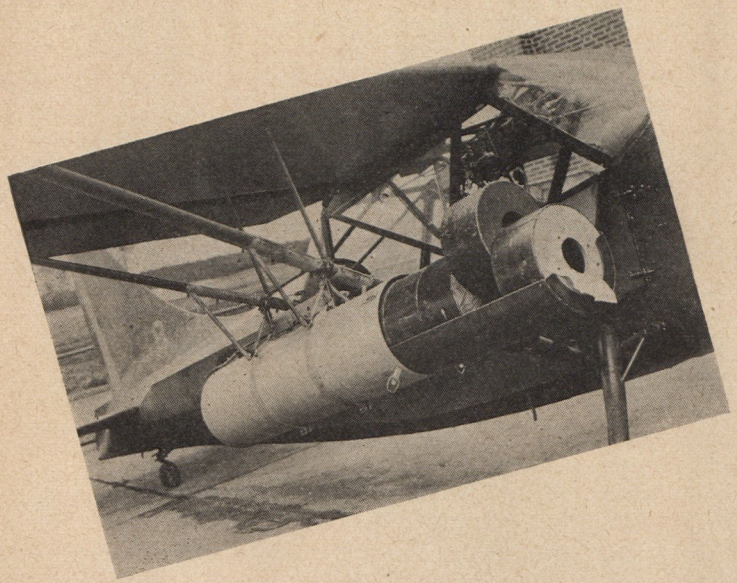
While the defeat of the coastal sub menace was a joint enterprise, with CAP, Army and Navy participating, control over it arrived in direct proportion to CAP activity. The position of the CAP crews was truly precarious. They usually flew overloaded with radio and signal equipment. If a sub chose to surface and shoot it out with the little fellows, the CAP members who had no legal status under international law, might have been shot as freebooters. Nevertheless, the puddlejumpers continued to patrol the water inspecting every floating orange crate that might have been a periscope. Originally, they flew totally unarmed. One plane forced a sub to crash-dive and get stuck in the mud. It called frantically for help but by the time the bombers came, the sub escaped. After that, the CAP was ordered to carry bombs even if they simply threw them out the window.

The over-all record of the CAP between its inception in 1942 and its absorption into the AAF as an auxiliary a year later included some 86,685 missions or 244,660 flying hours. Bombs were dropped on fifty-seven submarines, two of which were positively proven sunk. These were in addition to those damaged and finally dispatched by the regular services. During the work ninety aircraft went down and twenty-six members lost their lives.

Wings For The Cannoneer

Observation was the airplane's original military job. But the committee of civilian pilots who sold the sky-grasshoppers to the army for general liaison purposes proved that they were better for artillery spotting than the cumbersome O-planes previously assigned to the job. By June, 1942, the Army assigned two airplanes to every field artillery battalion and to each higher headquarters. Initially, L-2s and L-3s and L-4s were procured, but later, the L-4 (Piper) was

Spot combat crews had been carried by liaison planes during initial 1941 maneuvers. This emergency carriage of combat personnel proved to have advantages over gliders and paratroops.



In impassable country the tiny L-5, equipped with special spools, could lay telephone wire as fast as it could fly. This was only one of many odd tasks performed by liaison type planes.

standardized and it alone went overseas with combat units.

The war was still young when the artillerymen discovered that the grasshopper was more than just an elevated observation post. This was proven to such an extent that late in 1945, preparations were afoot to attach them to tank destroyer, armored cavalry, infantry and engineering units.

The Cubs, according to the general report, performed their primary task of spotting so well that the Nazi High Command, in calculating a score for eligibility for decoration, gave two points for a liaison plane as compared to three for a four-engined bomber and one for a fighter. As a side product, they performed "Sandman" duty. In areas where troops were unable to get even momentary rest because of enemy artillery fire, grasshoppers were sent out to patrol the area. Even if they failed to spot the enemy battery, they would silence them, as the enemy gunners would cease firing so as not to give away their position.

Among the most famous scouting feats was the find that a Cub pilot made during the Ruhr push. Lt. Elias Jennings of the 8th Armored Division spotted a huge German truck convoy moving virtually bumper-to-bumper. He radioed back for fire and soon an entire battalion of 155s were concentrated on the column. There wasn't much left by the time the artillery ceased firing.

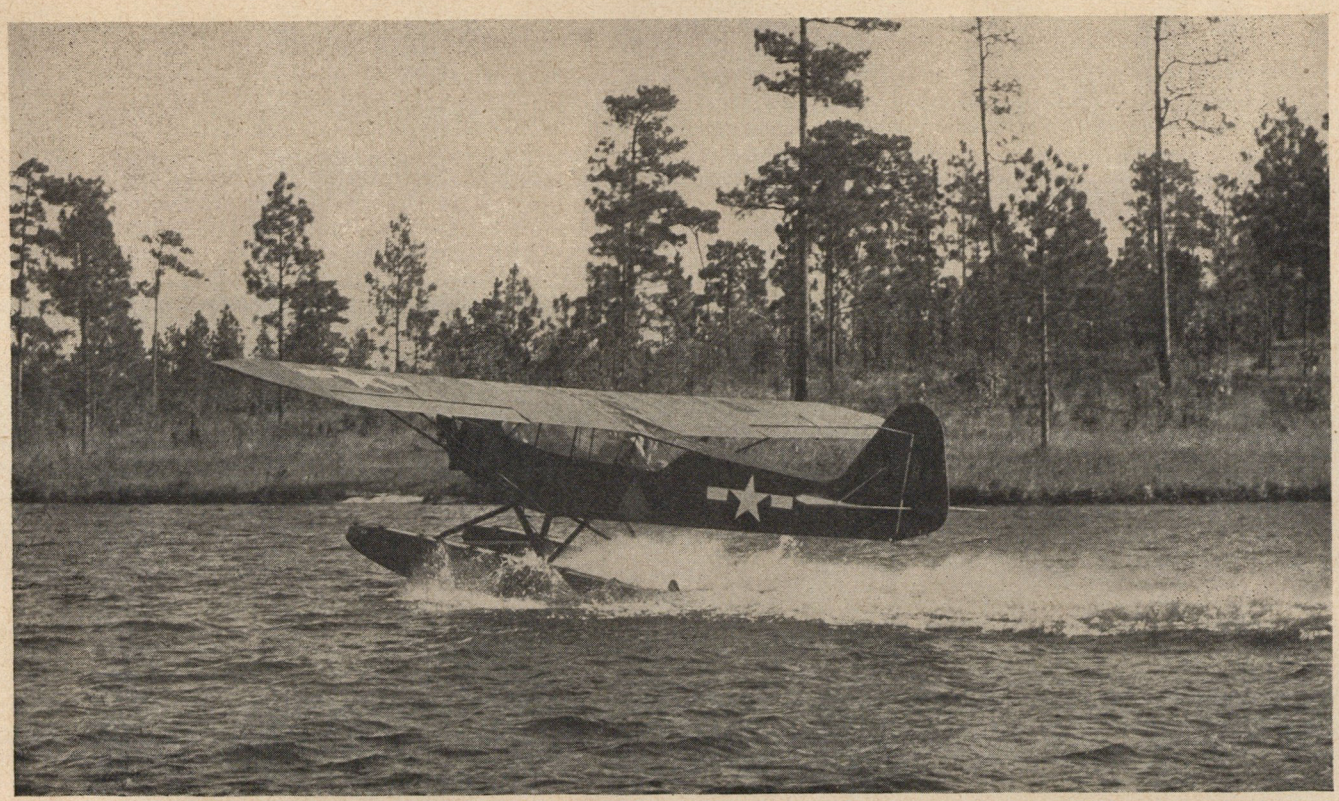
Artillery grasshoppers did a lot of plain hauling. During the Battle of the Bulge, for instance, they dropped supplies, food, ammunition, maps, pigeons and anything else they could carry. Among the L-plane heroes was Lt. Ken Schley of Far Hills, N. J., who flew penicillin to the 500 casualties in besieged Bastogne in the face of darkness, intense enemy fire, a possibly non-existent landing strip and official orders not to take off. Having safely delivered the drug, he hid in cellars while the Germans pounded the town with artillery. The following morning, he flew back through similar hazards, to his home strip.

Air Force Jeeps

The Air Force, of course, did not have to be sold on the grasshopper. By the spring of 1943, the first liaison outfit went into the CBI theater. By VJ Day there were upward of two dozen of them, operating wherever the AAF moved. Their original assignment was that of messenger and taxicab. They did this and virtually every other job they got their props into. Typical of the liaison group records is that of the 71st Liaison Squadron, which appeared in India during the North Burma Offensive. While their most publicized exploit was rescuing the late Vinegar Joe Stilwell's famed Stetson Campaign Hat (capital letters for that chapeau) its operation was important in that it established the place and versatility of the liaison plane.

When the 71st's L-4s and L-5s originally put in an ap-

Air Transport Command operated Piper L-4s on floats as auxiliary equipment where landing fields were not available. Picture below was taken in Labrador, where grasshoppers were used for rescue.



pearance in the Ledo Road area, no one thought much of them. For their particular use, a narrow 800-foot strip was hacked out of the jungle, several miles away from the Combat Troops Headquarters. Up to that point, no operational plan for the L-planes had been set up. Col. Jasper N. Bell was assigned as CO of the outfit and the combat mission was defined in the most general terms possible; that of rendering whatever service possible to the ground troops, both American and Chinese.

The 71st's initial job was carrying engineers and ranking ground personnel over the Ledo Road area. Later, they supplied outposts of Chinese troops. Also, as the forward defensive screen expanded in size, communications channels became so clogged that messages were sometimes deferred for days. So the L-planes set up a message service that allowed radio to be used exclusively for priority communication.

It was during this phase of the operation that the sky jeeps were put to work on ambulance duty at the direction of the famed Burma Surgeon, Dr. Gordon Seagrave. Chinese casualties were brought in by porter to the field hospital at Shingbwiyang. After dressing, they were flown out, eighty-five miles over the mountains to the base hospital at Ledo. Only four L-4s were converted to litter carrying, and these planes made as many as four round trips daily during favorable weather.

The 71st was just one of the units that achieved fame in the CBI. There were liaison units connected with the American phase of General Wingate's famed campaign. Even before the Commando operations, the sky jeeps went to the aid of British ground forces. A large group had been trapped in the Arakan section and there were many wounded. Seven liaison planes and nine noncommissioned pilots were sent down. In fifteen days, they evacuated 700 wounded.

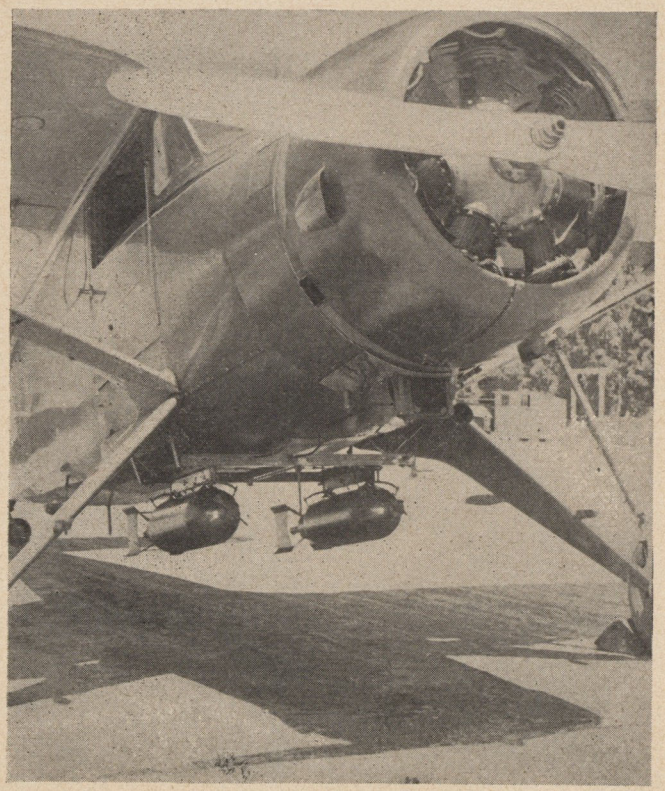
During the organized phases of the Burma campaign, the pattern of supply was for the C-47s to fly matériel into advanced strips. Here the loads were broken down and put aboard the liaison planes and dispersed to forward ground positions, frequently in the heart of enemy territory. Take-offs and landings were frequently made over the heads of the enemy. It was not uncommon for an L-4 to pick up twenty or more rifle bullet holes on a single trip.

The L-plane was used as a bomber more frequently than is popularly known. L-5s sometimes carried 100 pounders under the wings and the L-1 slung 250 pounders under the fuselage. On one occasion, Jap troops took cover under a bridge and were fighting a strong delaying action from that position. A couple of noncoms took off in an L-5 and cleaned them out by heaving grenades at them through the open window.

Probably the most spectacular use of the sky jeep was the "horsefly" missions, which got relatively little publicity. Just as the liaison plane was used initially to control troop movements for the infantry and spot hits for the ordnance, the "horseflies" played bird dog for the fighter bombers. Traveling close to the ground too fast for accurate observation, targets of opportunity frequently got by bigger planes. So the horseflies would locate the target and lead the fighter-bomber to it. The bulk of the missions were over "pre-briefed targets" where the "horsefly" would come in as low as thirty feet if necessary, identify the target with a smoke bomb and then get out of the fighter-bomber's way.

This was only part of the story. On flights where no particular target was set up, the "horseflies" went out looking for trouble. When the liaison located such targets as road blocks, antitank emplacements or the like, they would relay the message by radio to the Ground Force Controller with which it worked. Quickly, the Controller would direct the next flight of fighter-bombers reporting in to rendezvous with the "horsefly," which would then take over from the Controller to direct the attack.

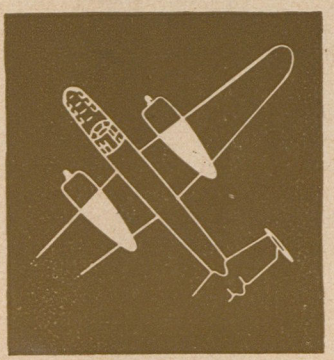
After an unarmed Civil Air Patrol plane missed an opportunity to sink a Nazi U-boat, bombs were added. Below, installation of two 100 pounders under fuselage of CAP-operated Warner-Fairchild 24.



Lt. Gen. Mark W. Clark kept his own L-4 which he used wherever possible in Italy. Below, landing after front-line tour in December, 1943. His pilot was Major J. T. Walker, Fifth Army Air O.P.

Footnotes on the technical achievements of the month and the people who made them possible

tech topics



Hunting Ice Storms

A specially equipped C-46 with a crack crew is now operating in the Northwest Pacific area doing one of the most unenviable jobs in aviation, hunting ice storms, then deliberately flying through them. The Ames Laboratory of the NACA, working with the AAF, the Weather Bureau and United Air Lines have undertaken the task of robbing the icing problem of some of its danger.

The Army C-46 Curtiss Commando carries the latest in NACA-designed thermal de-icing equipment which makes use of the exhaust heat to keep ice from forming on the wings, windshield, tail surfaces and propeller, thus allowing the plane to operate under the most severe icing conditions.

An airfoil section has been erected vertically atop of the fuselage, and equipped with controlled electric heating units, which will allow exact observations as to the exact amount of heat required to prevent icing under a variety of conditions.

The information thus obtained will also be used to aid in the design of suitable heat exchangers and ducts systems. One of the other features of the special storm seeker is a set of electrically heated shoes installed on the propeller blades. One of the propellers is equipped with a device to measure the loss in efficiency due to icing. Another interesting instrument carried is a device for determining the amount of free water and the size of water droplets in clouds. This setup was designed by Ames Laboratory especially for this expedition.

School Link Trainer

The famed Link Trainer, the earth-bound flying machine in which most of the AAF pilots took their instrument time is going back to school, according to an announcement made at the Iowa-Nebraska Air Age Institute at Omaha, where the newest product of Link Aviation, Inc., the School Link, was exhibited for the first time.

The School Link has been created from the ground up as a training device, designed to fit into such studies as general aviation, physics and social studies. It bears a general resemblance to the complex wartime instrument trainer, in that it too, is a mid-wing monoplane, equipped with conventional controls. Like all Links, it is free to pitch, bank and turn in response to stick and rudder. Basic instruments are incorporated into the panel which react to changes in flight attitude and throttle setting. An added feature of the new trainer is a device to simulate stall and rough air. Radio and intercom equipment are also provided.

Navy Catches Up

Ryan Aeronautical Company announces completion of flight tests on the XF2R-1, an improved version of the Fireball fighter, which was the first jet-carrying airplane to fly from U.S. Flattops. The earlier Fireball was powered by a conventional radial engine turning a tractor propeller, and a jet-turbine in the tail. The newer version substitutes a prop-jet for the old reciprocating power plant.

The new power team consists of a General Electric TG-100 in front plus an I-16 behind. In the front, 75% of the power is absorbed by the propeller, the remainder going to reactive power jetted through troughs on either side of the fuselage just below the cockpit. This setup is similar to the one used by the Army's P-81 which flew successfully about a year ago.

Lightplane Race Announced

The Contest Board of the National Aeronautic Association has announced the creation of a new event for the National Air Races to be held, probably in Cleveland, on Labor Day. The race will be for prizes totalling $25,000, put up by Goodyear Tire and Rubber Co. The event will be 15 laps of a 5-mile course for aircraft powered by engines of not over 190 cubic inches. The ships must carry CAA Approved Type Certificates and cannot be altered structurally except with the manufacturer's approval.

Admiral Luis de Florez, chairman of the Contest Board of NAA stated that every possible safety precaution would be taken in drawing up specifications. Parachutes, safety belts, shoulder straps and crash helmets will be mandatory. Non-retractable landing gear and nose-over protection will also be required. Pilots must have a minimum of 200 hours of solo time, plus 10 hours of certified time on the plane entered for every 100 hours short of 500 logged time.

Rate-of-climb contests will also feature this fall's race. Specifications for this event are being set by Dr. W. G. Brombacher, chief of the Instrument Section of the Bureau of Standards.

Wright Acquires Swedish Patents

G. W. Vaughan, President of the Curtiss Wright Corporation announces that his company has acquired exclusive rights to certain patents and applications on gas turbines from the Ljungstroms Steam Turbine of Sweden. The agreement covers a number of patents which have already been issued, some of which are currently pending, together with rights to additional inventions which may be acquired by the Swedish firm during the life of the agreement.

Wright Aeronautical entered the gas turbine field three years ago as an outgrowth of work that started as far back as 1936. The Ljungstroms firm has been in the turbine business for thirty years, and pioneered many of the problems of gas turbines both for aviation and marine use.

New Flight Recorder

A system for the automatic recording of flight data in transport aircraft, a requirement proposed by the Civil Aeronautics Board, has been developed by the Apparatus Division of General Electric. The unit is designed to record variable inputs, such as acceleration, air speed, and compass heading. It can also keep track of routine on-off functions like switches, etc. Standard aircraft instruments are used as the sensing heads for the recorder. A tiny low-torque transmitter selsyn is installed in each instrument, and its rotors are driven by the instrument pointer. The selsyn transmits to a remotely located, master recording instrument, the pointer position of each head. Metal inkless styli record these impulses in the form of a continuous trace marked on special

paper, which moves through the instrument at the speed of 2 inches per hour. The carriage holds a 260-hour supply of tape. The record is made on a process paper which can be submerged in salt water for several days without destroying the impression.

The new recorder will enable the airline operator to collect data on operational efficiency, and will aid the CAB in accident analysis.

AAF to Install GCA Units

The Commanding General of Airways and Air Communication Service, Maj. Gen. Harold M. McClelland, announced recently that 56 radar Ground Control Approach units would be in operation at major bases here and overseas. It was further announced that most of the major foreign and domestic bases could be similarly equipped if trained personnel could be located to operate them. Some 190 Mark II units were manufactured during the war. In 1946, a number of the Mark IIIs were delivered to the AAF, and some have been turned over to CAA for use by airlines in Washington, New York and Chicago.

The AAF has in storage, 130 Mark II units. This is sufficient to provide one for every major AAF installation. Experience gained from about 20,000 GCA landings made during the war shows that a team of three to five men are required per eight-hour shift to keep the equipment going. This means that a total of 1,170 trained controllers would be required to activate the stored machines, providing that they were able to do the maximum work, that they were never sick and never took a day off. This number does not include the personnel required for servicing. It takes about six months to train a qualified GCA operator.

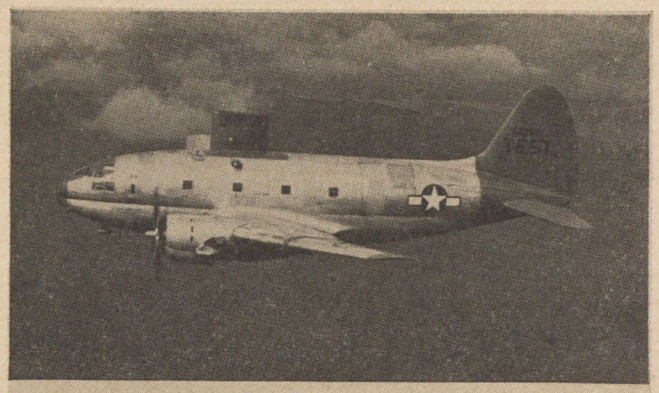
Mark III and IV models of the GCA require only one operator per shift. However, the present high cost of production and the scarcity of parts have slowed down deliveries of the new equipment. It would cost some $40,000 per unit to incorporate the most modern features into the wartime sets. Up to the beginning of the current program, 21 GCA units were in operation, 27 more may be added to the announced list if personnel and appropriations are made available.

Wind Tunnel Improvement

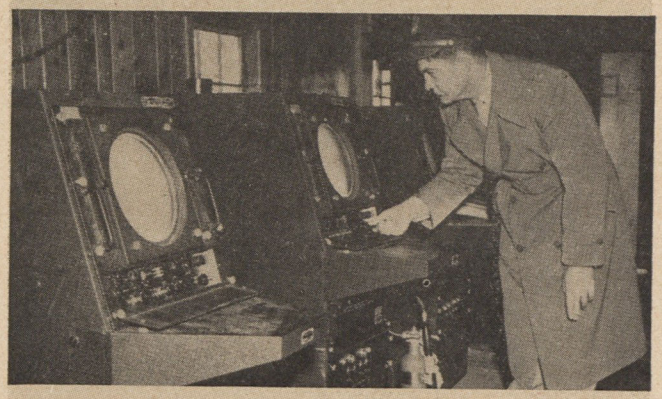
One of the major problems in the operation of the prime tool in aerodynamic research, the wind tunnel, is turbulence. Air, being driven through a reducing cone-shaped tunnel at high speeds, develops a fine pattern of eddies, caused by contact with solid objects, such as walls, guide vanes, etc. Research conducted by the National Bureau of Standards under Drs. Hugh L. Dryden and G. S. Schubauer indicates that the use of dampening screens can reduce this turbulence to a level where still air can actually be simulated. Thus conditions paralleling those of aircraft in free flight can be reproduced in the tunnel.

While the use of dampening screens to reduce turbulence is of recent origin, the first known observations were made in the NBS's 4.5-foot tunnel back in 1934, and in the national Advisory Committee on Aeronautics Smoke tunnel in 1938. For reasons allied to work then being conducted, a cloth screen had been fitted over the tunnel entrance. It was ordinary procedure to place a coarse screen into the tunnel work required turbulence to be created under controlled conditions. It was observed however, that turbulence decays rapidly beyond the fine screen. The best analogy is that of "smoothing" a piece of metal, first with a coarse file to remove major roughness, then with a finer file and possibly emery paper, to obtain a final smooth finish.

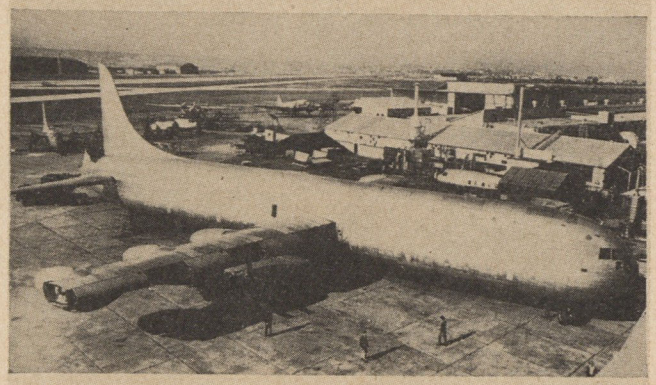
The currently used dampening screens were developed at the Bureau with the cooperation and financial assistance of NACA.



In an effort to wrest icing secrets from the elements, Ames Laboratory of NACA sent this specially equipped C-46 into the Pacific northwest to hunt ice storms. Atop is an electric-heated airfoil.



Lt. Henry W. Hester of the AAF All-Weather Flying Division checks the scopes on radar Ground Control Approach equipment recently installed in Washington as part of the AAF's GCA program.



First official view of the world's largest landplane, the double-decked Army XC-99, transport version of the B-35. It can carry 400 armed soldiers, 335 litter patients or 100,000 lbs. of air freight.

After two years, AAF released this view of test pilot Harry Crosby, standing "through" Northrop's rocket-powered prone-position all-wing fighter. Lack of a rocket engine caused change to turbos.

Mixmaster in MUFTI

AFTER nearly three decades of strictly military and transport airplane building, Douglas Aircraft Company has entered the private-executive transport field with an unconventional five-place aircraft which may revolutionize the entire "higher bracket" personal plane field. The new craft, bearing the name of the original 1920 Douglas product, the Cloudster, employs the center-line thrust principle which gave the B-42 "Mixmaster" its phenomenal performance.

The Cloudster is a five-place low-wing monoplane with a span of 39 feet 9⅜ inches, over-all length of 35 feet 4½ inches and a standing height of 12 feet.

Production Cloudsters will be powered by two 250 hp opposed-type Continental engines, situated behind the sound-proofed passenger compartment. Both plants feed power into a unitwin arrangement, so that either engine may be cut in or out without affecting flight control. The common power box then delivers the power to an eight-foot shaft, which transmits it to propeller, aft of the tail surfaces.

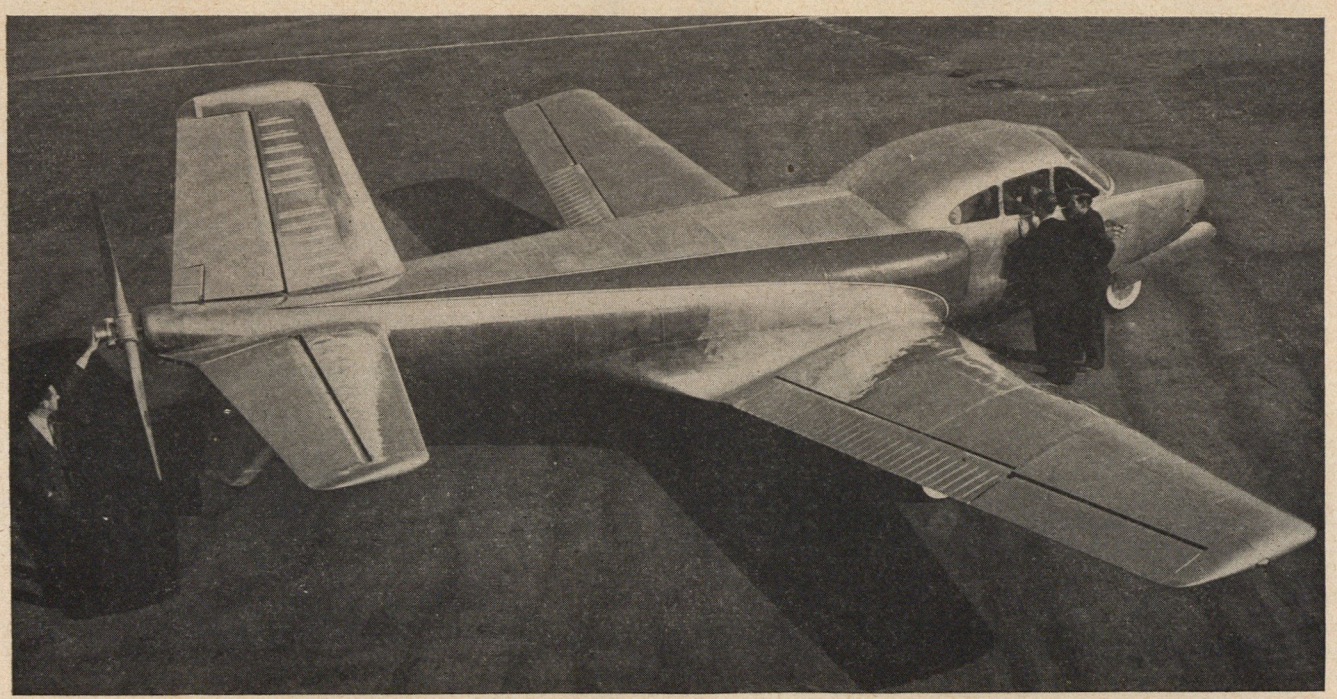
This center-line drive increases wing efficiency to a surprising degree, eliminates propeller turbulence and reduces cabin noises.

The low center of gravity, plus a wheel tread of fifteen feet three inches, makes the Cloudster extremely stable on ground. The nose wheel is fully steerable, making taxiing much like driving an automobile. The entire passenger cabin is forward of the wing's leading edge, giving all passengers exceptional visibility. Three passengers sit in the rear seat of the Cloudster, and one beside the pilot. Cruising speed is calculated to exceed 200 mph for 950-1100 miles with 250 lbs. of baggage. Rate of climb with both engines will be 1500 feet, 600 feet per minute with one. Service ceiling is computed at 22,200 feet on full power and 11,800 on one engine.

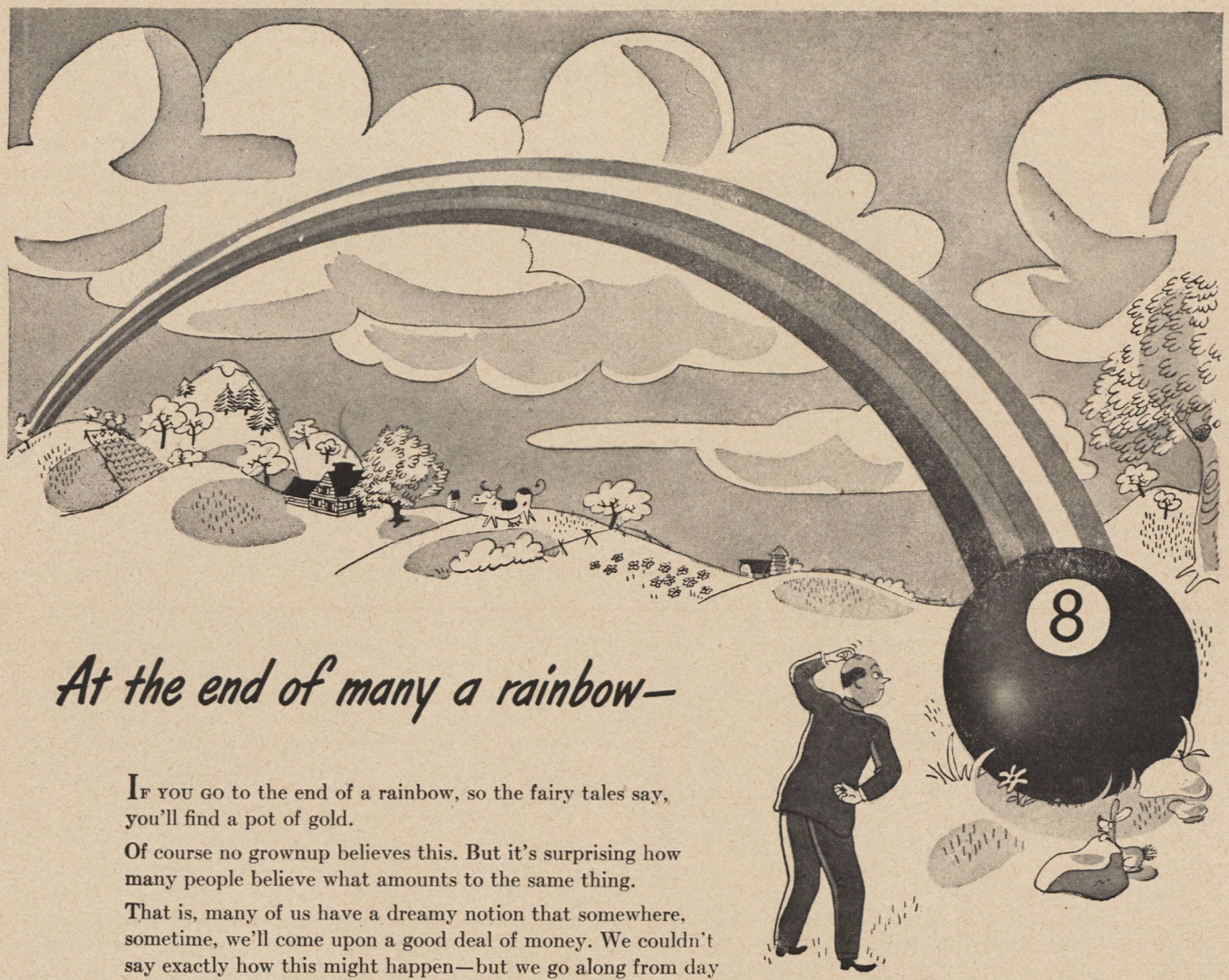
Standard equipment includes electric starters, a cabin temperature control system, dual controls, a transport type instrument panel, hydraulic landing gear, flaps and brakes, two-way radio with broadcast receiver, night-flying instruments and navigation lights.

General view of the new five-place Douglas Cloudster, showing the unconventional prop placement which increases wing efficiency.

Above, project engineer C. S. Glasgow (left) checks Cloudster's aft-of-tail propeller with preliminary project chief, Carlos Wood.



New Douglas design using the XB-42's center-line thrust principle offers pilots twin-engined safety with single-engined ease of operation



At the end of many a rainbow—

IF YOU GO to the end of a rainbow, so the fairy tales say, you'll find a pot of gold.

Of course no grownup believes this. But it's surprising how many people believe what amounts to the same thing.

That is, many of us have a dreamy notion that somewhere, sometime, we'll come upon a good deal of money. We couldn't say exactly how this might happen—but we go along from day to day, spending nearly all we make, and believing that *somehow* our financial future will take care of itself.

Unfortunately, this sort of rainbow-chasing is much more apt to make you wind up behind the eight ball than with a pot of gold.

When you come right down to it, the only sure-fire way the average man can plan financial security for himself and his family is through saving—*and saving regularly.*

One of the soundest, most convenient ways to save is by buying U. S. Savings Bonds through the Payroll Plan.

These bonds are the safest in the world. When you buy 'em through the Payroll Plan, they mount up fast. And in just 10 years, they pay you $4 back for every $3 you put in. They'll come in mighty, mighty handy when the time comes to send your kids to college, to buy a house, or to weather a rainy day.

So isn't it just plain common sense to buy every U. S. Savings Bond you can possibly afford? You bet it is!

P. S. You can buy U. S. Savings Bonds at any bank or post office, as well as at your place of business.

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THE STATIONARY 'COPTER OF SGT. STANKEWICH

BY PFC. ARTHUR BERGMAN, AAF

IN ONE OF the buildings at Sheppard Field, Texas is a device that looks like a plexiglas-nosed projectile with a man in it. At first glance it might be another jet plane or a mock-up. But a sign on the instrument's side states that it is a "helicopter ground trainer." It was invented by S/Sgt. Edward M. Stankèwich of Jamaica, N. Y. Sgt. Stankewich has long since slipped his "duck" into a non-GI lapel, but his trainer remains behind as a monument to his perseverance and ingenuity.

The trainer's story started in 1945 at the AAF's rotating wing school at Chanute Field. It was here that the Army undertook the king-sized job of converting the thinking and reactive processes of fixed-wing pilots to a wholly new set of "egg-beater" ideas and actions.

The idea of a ground helicopter trainer floated around, but was not given too much serious consideration. The need for such a contrivance was granted, but everybody was too busy flying real 'copters . . . everybody, that is, except Sgt. Stankewich.

Stankewich had quite a reputation as a trouble shooter. He had worked on the original flying wing prototype, he had tinkered with gyro instruments and Link Trainers. He had also been sent on overseas special problem assignments in Alaska and the Caribbean. On one occasion he helped solve one of the numerous problems that dogged the very earliest roto-wings. So it was sort of natural for him to inherit the job of building a trainer.

First Stankewich read all available literature dealing with the rotating wing. Then he traveled to Floyd Bennett Field in New York, where the U. S. Coast Guard had operated a helicopter base. Here he found a roto-wing ground trainer of a kind. It was a crane-like affair that raised a seat a few feet into the air and gave it some azimuth motion. It occupied an entire hangar, and simulated flight in the crudest fashion. This proved unsatisfactory from the trouble shooter's point of view.

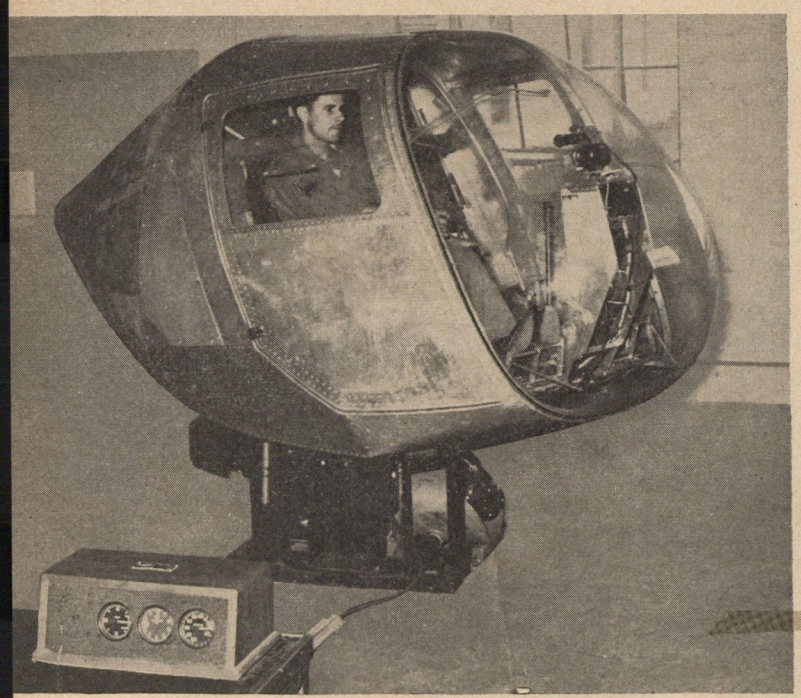
To build a more practical trainer, Stankewich reasoned that even he needed to learn more about helicopter characteristics. So he hung around Operations in his spare time, chiseling helicopter rides as often as possible, even getting a little flying time—unofficially, of course.

After considerable study and deliberation Stankewich determined that the standard Link trainer, usually used for instrument training, might well and easily be redesigned as a helicopter trainer. Construction, however, was a long, arduous job, for orders assigning him to the project provided for no assistance in any form.

During the work, the project was moved from Chanute to Sheppard. The sergeant's discharge came due, but he elected to stay in the Army until his trainer was finished.

In June, after months of toil, the task was completed. The trainer simulates everything a helicoper does, including the disconcerting "slipping effect." All one has to do now is to plug Sgt. Stankewich's device into any 110-volt socket and "take off." Igor Sikorsky, dean of American rotating wing research, inspected the trainer on a recent visit, and waxed enthusiastic about its performance. Best of all, the Army got the development and the prototype for what it costs to hire a staff sergeant. Commercial estimates on such trainers are about $75,000.

S/Sgt. Stankewich, seated in his helicopter trainer, a basic modification of the Link setup. At the time the inventor was separated from service, it was the most practical roto-wing substitute.



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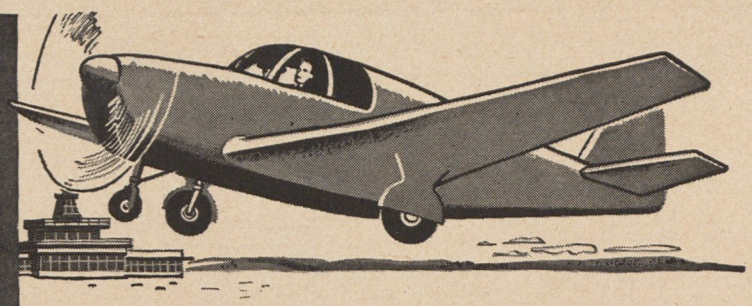


A page of service tips for private flyers and fixed-base operators

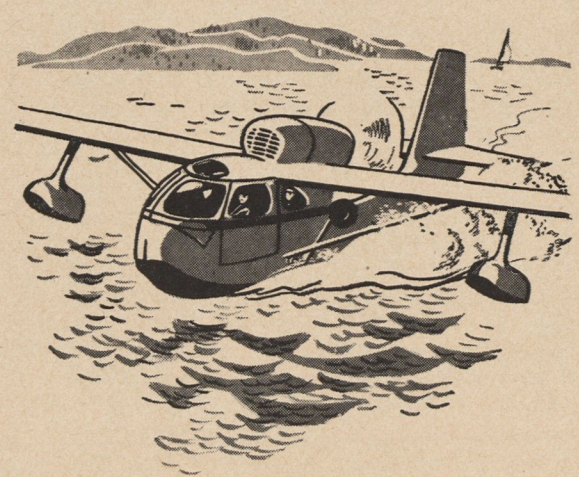
Avoid condensation in fuel for safer flying

Water in your aviation gasoline can interrupt your flying career just as effectively as a lighted match in the fuel tank. And, even after it's in the tank, condensation may still create a water hazard. Elaborate precautions are taken to see that Chevron Aviation Gasoline reaches you as pure as it was the instant it left the refinery. You can help keep it that way by filling your tanks (as airlines do) just *after landing* so that minimum air space is left for condensation during storage.

Operator extends time between overhauls

The manager of Western Aircraft Sales, Inc., of Oakland, California, W. J. Thompson, writes "After 670 hours of operation using RPM Aviation Oil we overhauled a 65 hp Continental engine in an Aeronca Champion student training plane. We found all rings free with slight deposits on the ring grooves. Valves, valve guides and stems were in excellent condition with the exception of slightly worn seats. This indicates that valve action was normal without sticking. The appearance of this engine was so outstanding we plan to extend the time between our next overhauls considerably beyond 670 hours."

How to protect your plane parts from rust damage



Aircraft parts, particularly on seaplanes, are exposed to water spray and, unless protected, frequently rust. RPM Aviation Rustproof Oil is an excellent rust preventive for engines, fire walls and engine mounts. Spare engines going into storage can be protected, up to two months, by running them on RPM Aviation Rustproof Oil before shutdown or by spraying this oil through spark plug holes with each piston, in turn, on bottom center.

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"quote"

"By necessity, by proclivity—and by delight—we all quote. Next to the originator of a good sentence is the quoter of it"

RALPH WALDO EMERSON.

"We live in a world in which strength on the part of peace-loving nations is still the greatest deterrent to aggression. World stability can be destroyed when nations with great responsibilities neglect to maintain the means of discharging those responsibilities.

This is an age when unforeseen attack could come with unprecedented speed. We must be strong enough to defeat, and thus to forestall, any such attack. In our steady progress toward a more rational world order the need for large armed forces is progressively declining, but the stabilizing force of American military strength must not be weakened until our hopes are fully realized. When a system of collective security under the United Nations has been established we shall be willing to lead in collective disarmament, but, until such a system becomes a reality, we must not again allow ourselves to become weak and invite attack. For these reasons we need well-equipped, well-trained armed forces and we must be able to mobilize rapidly our resources in men and material for our own defense, should the need arise."

President Harry Truman, addressing the 80th Congress.

"Our State Department must be an organization which will entice and offer an ample career to the best brains we can produce in this country. We must always remember that where the diplomat leaves off, the soldier must take up the burden.

We must have a central intelligence agency which will tell us what is brewing in every corner of the earth.

We must have a force in being, ready to move on a moment's notice to destroy the discovered war chest of the enemy before it is launched.

We must keep our weapons modern. It may well be that we were given a preview of the weapons which will dominate the next war in the robot bomb, German rocket V-2 or our atomic bomb."

General Carl A. Spaatz, Commanding General of the AAF, at a businessmen's dinner in New York City.

"Today there exists a system of hodge-podge, overlapping, wasteful expenditure of defense funds which no one would tolerate in business or personal matters. The Army and the Navy, for example, are both conducting extremely costly scientific experiments, all seeking and ultimately finding the same advancements. During recent months the papers have told about the Army Air Forces research and development in the field of rockets and guided missiles. Then, on 27 December, the Navy, from its one hundred million dollar research center in the California desert, revealed that during the past three years it had been conducting the same kind of experiments, and announced similar results in the same field."

Lieut. General George E. Stratemeyer, addressing Dallas Texas Chamber of Commerce.

"The road is not clear to our goal of 'understanding' among the peoples of the world. Years will ensue before the physical and mental scars are healed; before those affected can be expected to form logical conclusions based on 'truth.' We cannot assume that war will never come again. We know by experience that disarmament does not prevent war. Military weakness will endanger the security of our country and invite attack upon us.'

Brig. General Leon W. Johnson, Deputy Assistant Chief of Air Staff-Personnel, before the Maryland Farm Bureau Convention, Baltimore.

"We must adopt as a working hypothesis that if war comes there will be no time for new research—this work must be done *before* war, not during the turmoil of conflict! We have demonstrated that the U. S. can produce an armed force extremely rapidly; but the last war demonstrated beyond refutation that we cannot produce research over night. Not one new plane designed after Pearl Harbor flew in this war despite the terrible urgency of conflict. All of our fighting planes were conceived and designed *before* this war."

Brigadier General Malcom C. Grow, The Air Surgeon, in a speech before the American Association for the Advancement of Science in Washington.

"It's good to look ahead and we are intensely exploring the fields of rocket propulsion, pilotless aircraft and guided missiles, but this does not mean we believe the products now in production, particularly for commercial transport, are obsolete or likely to become so very quickly. Every bit of progress on the road to supersonic achievement will come at the price of time, effort, and the wherewithal to accomplish the objectives."

G. W. Vaughn, President of Curtiss Wright Corp. in a statement issued in New York City.

"If America, the richest prize in the world, were known to be lacking in the ability to back up its principles and to defend itself quickly and effectively, this very knowledge of our weakness would invite war—would today be almost a guarantee that peace would not prevail in the world. Nor could we expect peace if a strong America should permit impositions on itself or on smaller nations in the hope—so clearly proven to be a vain hope—that each aggressive step is a minor matter; that each world problem is remote."

The Honorable Kenneth C. Royall, Under Secretary of War, before the Army Navy Union in Washington, D. C.

"We must always have in mind that our modern warfare is not only total and global, but it moves in new realms of science and technology. There must be ample funds for technological research and development in the future years. The American people will not be willing to take from those funds merely to perpetuate wasteful practices in our traditional organization of a separate Army and Navy."

The Honorable Robert P. Patterson, testifying for unification.

"I'm very much afraid that we're going to be given a pair of eyebrow tweezers with which to hunt elephants . . . a second-best defense is only as good as a second-best poker hand."

Lieutenant General Ira C. Eaker, Deputy Commander of the AAF, speaking to the Wings Club in New York on the subject of adequate defense.


REMEMBER ME?
GIVE USO
...it still means a lot to him!
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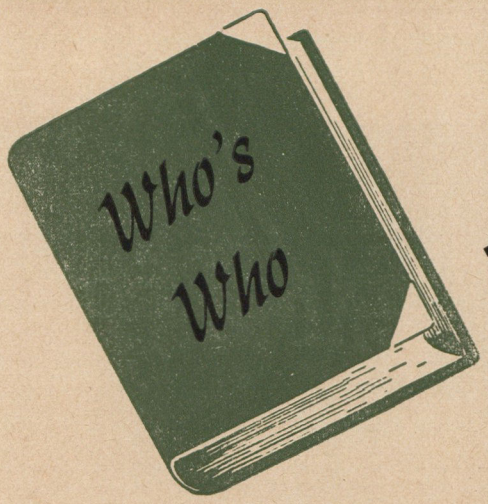

in the AFA

INTRODUCING Willis S. Fitch

SELECTION of Colonel Willis S. Fitch as executive director of the Air Force Association was a "natural" for that group of men who wanted to be certain the key man in the national organization of former AAF men was both an air enthusiast and super-salesman. The test which proved his complete faith in the future of the association for which he was to be executive director was the Colonel's willingness to relinquish a partnership in a successful Boston investment business for an organization which had no office, no staff and no members.

Like its president, General James H. Doolittle, the AFA's director has been air-minded since flying in World War I. He talked and wrote aviation in the interim years of peace, and then jumped in with both feet when the planes started warming up in World War II.

He regards his present assignment as a challenge to obtain for the AAF, its properly deserved recognition as the major offensive and defensive military arm of the nation.

Colonel Fitch left college to earn his wings in 1917. In his case, the college was Dartmouth.

But rather than the progression of primary, basic, and advanced flying schools of World War II, Colonel Fitch, as a young cadet, had eight weeks of ground school at MIT. From there he went to Foggia, Italy, for a coveted assignment in flight training overseas. His group, which flew with the Royal Italian Flying Corps, was commanded by Major Fiorello H. LaGuardia.

Acting both as first pilot and bombardier, Colonel Fitch arrived on the Austrian front for action in June, 1918, and began missions over the Alps, bombing along the Piave River. Of several close escapes, Colonel Fitch's favorite is one which happened on his first solo night flight in training. With an inaccurate altimeter the only instrument to assist flight, the horizon was the only help in keeping level.

For that reason, night flights were made only from half moon to half moon. But even with a portion of moon, the horizon was only a slight gradation between the deep gray of sky and black of earth. And only by this faint horizon could any pilot determine whether or not he was flying level. It was on one of these darker nights that Colonel Fitch was on his first solo flight.

He thought something was queer. Struts were banging and whistling; wind was blasting against his face. So he began looking anxiously up for some indication of the horizon. All the time, he had been pulling the wheel of the Caproni back against his chest. Then he looked up, and there it was.

The hangar lights seemed to be hanging right over his head. As he continued to strain back on the controls, the ground began to slide slowly before his bewildered eyes. He was terrified as he watched those lights move to a 45-degree position, then out in front, and finally, beneath his wings just where any normal hangar illumination should be.

Not only had he been flying upside down in the heaviest bomber used in World War I, and hadn't known it, but also had looped the air monster, a feat the most polished fliers wouldn't even attempt in daylight.

For his combat service, he was awarded the Italian War Cross, the Medal of Valor and later, was made a Cavalier Officer of the Order of the Crown by the King of Italy.

While keeping up his reserve training, Colonel Fitch returned to the land of Bulls and Bears, in the Boston investment banking business.

His interest in 1938 quickly shifted to the need for national defense as a result of a pleasure trip to Europe. There the unmistakable signs of approaching war were written everywhere. Thoroughly alarmed, he returned to the United States to combat the pacificism which seemed to be causing people everywhere to ignore repeated warnings from many sources.

Turning to the most direct means of affecting public opinion, he resorted to speaking and writing. And in the

(Continued on page 58)

Col. Willis S. Fitch, Executive Director of AFA, is veteran of both wars, fought first one as a night bomber pilot.

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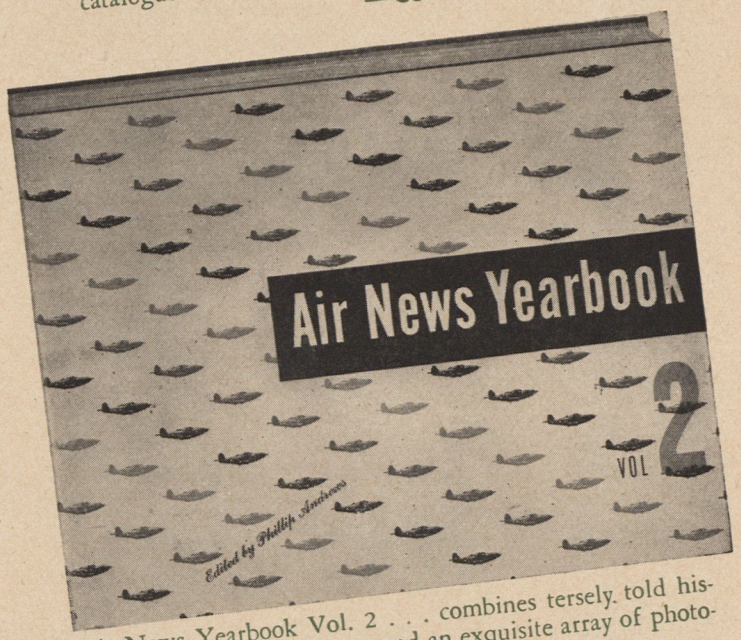
—Columbus (Ohio) Citizen.



Air News Yearbook Vol. 2 . . . combines tersely told histories of aviation by nations and an exquisite array of photographs that stand out like finished portraits.
—Montgomery (Ala.) Register.

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Book

Blaze of Noon. *By Ernest K. Gann. Henry Holt and Company, New York. $2.75.*

Blaze of Noon is the second novel by this pilot-turned-novelist. It deals with that exciting period when barnstormers turned airline pilots and most of them didn't like it. Its characters are four barnstorming brothers named MacDonald who used to fly a Hisso Standard and a Travel-Aire at state fairs to pick up an honest buck where they could. They came to Newark in the middle twenties to fly pioneer mail in the days when pilots wore helmets and the major flying instrument was the sharp seat of a good airman's britches.

The romantic interest is a gal named Lucille, who was the flight surgeon's nurse, and got jockeyed into the position of marrying one of the four, not realizing that she darned near married all four of them. Some of them crack up, some don't. They fly the pioneer lines in the Pitcairns over routes that sound not too unlike the old Colonial runs. Their enemies are ice, fog, technical unreliability and human frailty.

The old-timers who lived through the 1925 to '29 period when the airline business stopped crawling and started toddling can see connections between some of the characters in the book and some of the people who actually made airlines a reality. It can't be helped. Ernie Gann flew for American before the war and lived in the lore that was the airline business. This book has the makings of a good movie.

Cargo Aircraft Design and Operation. *By W. W. Davies. Pitman Publishing Company, New York. $6.00.*

This is the book someone should have written during the war to aid those Army airmen who dreamed of running aerial cargo lines when the Army let them loose. Had they been able to get an inside slant on the problem during the planning stage of their ventures, there might have been less hard-earned GI money gone down the drain, and more of these miniature ventures solvent.

The author is the superintendent of the aircraft planning division of United Air Lines. In his book, he presents the fundamental design and operational consideration in cargo aircraft. The work starts with the genesis of cargo operation, outlining its progress from stunt cargo flights in Jennies and World War I Handley-Page bombers through the first practical use for air cargo—bush flying.

The author settles down to the problem at hand by studying the business involved in converting war surplus planes to profitable cargo use. The conversion factors and possibilities of lucrative application are examined, not in theoretical figures but in actual work on the planes that are being offered by W.A.A.

Such valuable information as market studies, characteristics of air cargo and the actual design considerations for the building of cargo airplanes gets a "to-the-pilot" examination.

This is probably the first presentation of the philosophy as well as the technique of cargo operation. Should be required reading for all operators who think they want to try this kind of flying.

Aerodynamics. *By A. Wiley Sherwood. McGraw-Hill Book Company, New York. $2.75.*

The professor of aerodynamics at the newly established Glenn L. Martin College of Engineering and Aeronautical Sciences at the University of Maryland has emerged with a new aeronautical engineer's primer. Like all active sciences,

Reviews

aerodynamics is changing at its roots. Out of the war-won research has come knowledge that makes what was previously accepted as gospel, subject to doubt. To start new engineering students off on their postwar right foot, this work is ideal.

Designed strictly as a text, it starts off at the conventional point of departure in the air and its properties, studies the basic principles of fluid dynamics and the other classic concepts. From this point on, the book makes the assumption that the student trained today will have to live his engineering life in the transonic and supersonic zone, so that much of the material presented studies modern problems like compressibility and boundary layer control. Rotating wing and reactive propulsion are not neglected, although their fuller exposition is left to later studies.

The importance of Prof. Sherwood's book is that it starts the engineering neophyte off with a view of aerodynamic problems, not only as they existed in the established past, but as they will exist in the future in which their work will be done.

Aircraft Woodwork. *By Col. Rollen H. Drake. The Macmillan Company, New York. $3.50.*

During the war, when it looked like dural might become a scarce item, great stress was laid on the return to wood as an aircraft material. Acceleration of aluminum production and the introduction of magnesium, combined with the fact that aircraft woods were as scarce as aircraft metals, if not scarcer, minimized the design of non-metal airplanes. Nevertheless, the revived interest in lumber as a primary airframe material has resulted in the production of wood airplanes in the private flying field, and has made the study of forest products, their characteristics and use, essential for both the well informed designer and the practicing aircraft mechanic.

Col. Drake's book presents first, a study of wood as a structural material. It deals with its virtues and its weaknesses, as well as the methods by which it is selected and processed into an aircraft material..

Specific details are also given on such subjects as wood glues, woodworking techniques, joining and lamination. Along with this goes an examination of the tools in common use and the skills required. Over half of the book is devoted to actual working problems common to construction and maintenance of wooden airframes, and the fabric and plywood coverings that are still widely used as aircraft skin.

Casey Jones Cyclopedia of Aviation Terms. *Compiled by Henry Lionel Williams. McGraw-Hill Book Company, New York. $5.00.*

Aviation Research Associates, offshoot of Casey Jones's fabulous aviation structure, has produced the first postwar aviation dictionary and one worthy of its trademark. It differs from previous such efforts in two respects. With the usual definitions it embodies a certain encyclopedic flavor. Also, it groups material by subject, such as heavier-than-air, engines, etc., rather than merely alphabetically. Illustrations are profuse and hairline accurate, in many cases simplifications and clarifications of standard perspective drawings.

The most important contribution of this new book is its collection and definition of many terms developed and adopted during the war. It is probably the first opportunity the industry has had to catch up on what has happened to aeronautical language since the first bomb fell.

BATTLE OF MIDWAY

(Continued from page 26)

"My navigator took me back to the cruiser and we got the sun at our backs for the bomb run. We dropped a salvo right on the Jap ship with probably one or two hits."

With this attack, Colonel Allen led his planes back to Midway and, as events determined, out of the battle.

Thus ended the Seventh Air Force's participation in the Battle of Midway.

Reporting on the Seventh's participation in the entire Midway operation, General Howard C. Davidson wrote to General Arnold on June 13:

"A total of fifty-five B-17 plane missions were flown, and 314 five-hundred- or six-hundred-pound bombs were dropped from altitudes varying from 3,600 to 25,000 feet. These bombs were dropped on an accumulated total of seven battleships or cruisers, seven aircraft carriers, one destroyer, and two transports.

"Twenty-two direct hits, six probable hits and forty-six near misses were reported.

"Ten Zeroes were shot down and two damaged.

"Two B-17s were lost at sea and two were damaged.

"Four B-26 plane missions were flown with four torpedoes, scoring three hits on two carriers.

"Two B-26s were lost at sea and two made crash landings at Midway, badly damaged.

"Very heavy AA fire was reported throughout."

WHO'S WHO

(Continued from page 54)

years prior to Pearl Harbor, spent half his time speaking before groups of every type. He also wrote his well-known book, "Wings in the Night" at this time. Of this book, the critics said: "It ought to be required reading for all those who fought in the last war and for those who may have to fight in the next one."

He was also invited by Governor Saltonstall, of Massachusetts, to act as honorary military aide of the state.

After Pearl Harbor, it was only a logical development that Colonel Fitch volunteered at once for active duty and was ultimately assigned as chief of the aviation cadet branch of the AAF.

Through an intensive promotional campaign to stimulate interest in the cadet training program, training fields began to fill so far ahead of anticipations, all the men could not be accommodated. The program had to be stopped twice in order not to deluge fields with cadets.

But the citation from the Legion of Merit awarded to Colonel Fitch in November of 1945 tells the story pretty concisely: "By his foresight, intensive enthusiasm for aviation, initiative and intelligent planning, this officer was largely responsible for the procurement of more than 1,200,000 highly qualified young men as air crew training volunteers, of whom almost 700,000 successfully qualified. This noteworthy achievement played a great part in the overwhelming success of the Army Air Forces."

Then, shortly before returning again to the investment banking business, his eye was caught by an organization which had long since captured his fancy. It was the Air Force Association.

Nine days after leaving active duty, he was sitting as executive director of the AFA, and in the first year, this now well-known air organization has wings in every state and squadrons springing up in towns and cities throughout the nation.

★ SPECIAL MESSAGE to Members of THE AIR FORCE ASSOCIATION ★

THE Air Force Association announces its wholehearted endorsement of the Army's current recruiting campaign.

At the request of the War Department, the Association has pledged its support to the Army Recruiting Service in the vitally important task of building and maintaining a peacetime Regular Army.

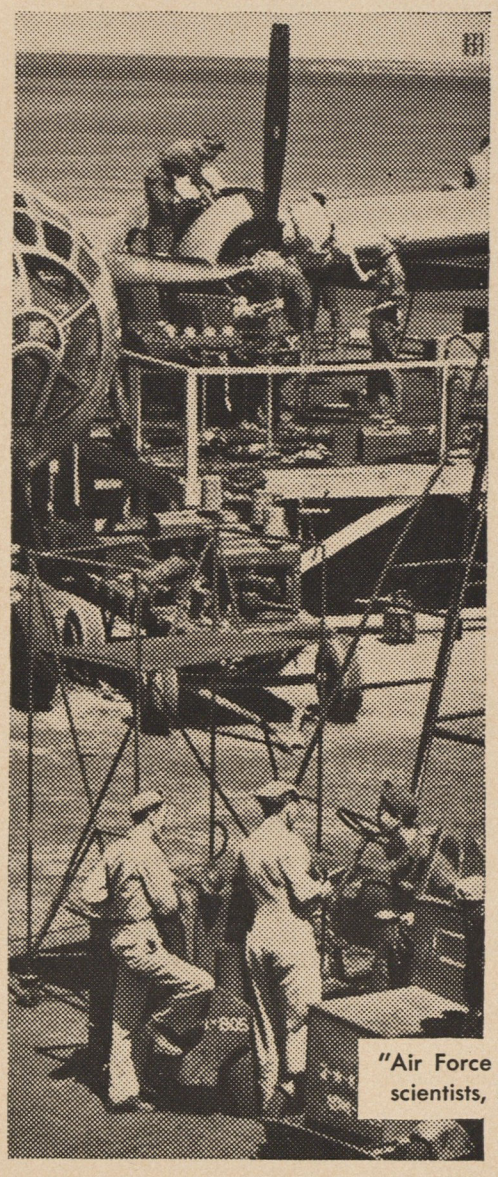
We are sure that all Wings and Squadrons of the Association will do all they can to help in this work, in co-operation with recruiting services in their areas and localities.

All A.F.A. members are strongly urged to make every effort to explain Army enlistment opportunities to young Americans, and to place prospective applicants in touch with local recruiting stations.

This is a mission of vital and urgent necessity to national security and world peace. The Air Force Association can and should give all possible co-operation toward its successful accomplishment.

J. H. Doolittle

Lieutenant General, A.U.S.



"Air Force men are soldiers who also are technicians, scientists, scholars and diplomats."

Major General FRED L. ANDERSON, Jr.
Asst. Chief of Air Staff—Personnel

U. S. ARMY RECRUITING SERVICE

Air Mail

In Col. Kearby's Behalf

Gentlemen:

Upon reading the Dec. issue of AIR FORCE Magazine I feel it necessary to write to you in behalf of a great pilot, a wonderful leader and a true man, Col. Neil E. Kearby. Your article on the P-47 included pictures of the P-47 aces of the war with no picture or mention of the achievements of Col. Kearby who received the Congressional Medal, shot down over twenty-five Jap planes and sacrificed his life. I also resent the insinuation that the 348th Group did milk runs over Moresby, Lye, Salamoa, etc. Our primary mission was not escort out of Brisbane and our missions to Wewak over the mountains on New Guinea weren't exactly milk runs.

Here's hoping you'll pay Col. Kearby his due respect and tribute.

J. E. Knellinger
Ex Pilot in Col.
Kearby's 348th.
620 Zane Highway
Martins Ferry, Ohio.

Col. Kearby was every bit as fine a soldier and airman as ex-pilot Knellinger indicates. In selecting pictures to illustrate the P-47 article AIR FORCE *found it necessary, because of space limitations, to include only those Thunderbolt aces who are still living. We are sorry if we seem to have indicated that the 348th concerned itself only with milk runs in the Pacific. Such was certainly not the case.*

Martin Booster

Gentlemen:

Your feature, Great Planes of the War, is a very interesting article and is appealing to both flying and non-flying personnel alike. Being an ex AAF pilot, your article holds quite a bit of interest for me.

I sincerely hope that you will include the Martin B-26 in your series, as never before in the history of the AAF has there been a plane with a career more colorful or dramatic than that of the B-26. She was brought into being by military necessity, later frowned upon as a killer and a "widow-maker," but through the untiring efforts of one Colonel Carl Storrie, she later became one of the heroines of the war with the lowest combat loss rate of any first line tactical ship, Allied or Axis.

The other ex-B-26 pilots all over the country will join me in asking you to include the Martin B-26 in your Great Planes of the War series.

C. B. Holland, Jr.
Beaumont, Texas.

Enthusiast Holland is referred to the article "Box Kites to Bombers," a history of the Martin Company in this month's issue.

At such time as the "Great Planes of the War" series gets to medium bombers, the B-26 will certainly be included.

Browned Off F/O

Gentlemen:

I would like to know why former Flight Officers of the Air Corps have such a hard time getting into the Air Corps Reserve. Why after serving in the Air Corps for over two years as a pilot can I not be given a 2nd. Lt. in the Reserve Corps? Maybe I will be given a Commission in the Air Reserve but it's been almost three months since I applied and haven't heard a word. It seems to me as far as officers go the Flight Officer took quite a rooking in the Air Forces. How many ever got above that rank; and how many were so far above many Lieutenants who graduated in the same class, as far as grades and ability go?

Why should an Airplane Commander in charge of a Crew of men be kept at the rank of a Flight Officer while men of lesser responsibility such as navigators, bombardiers or radar men be given Commissions. Even most navigators, bombardiers and other commissioned officers will agree that the Flight Officer act was very unfair to all who were made Flight Officers.

Edward S. Cooper, Jr.

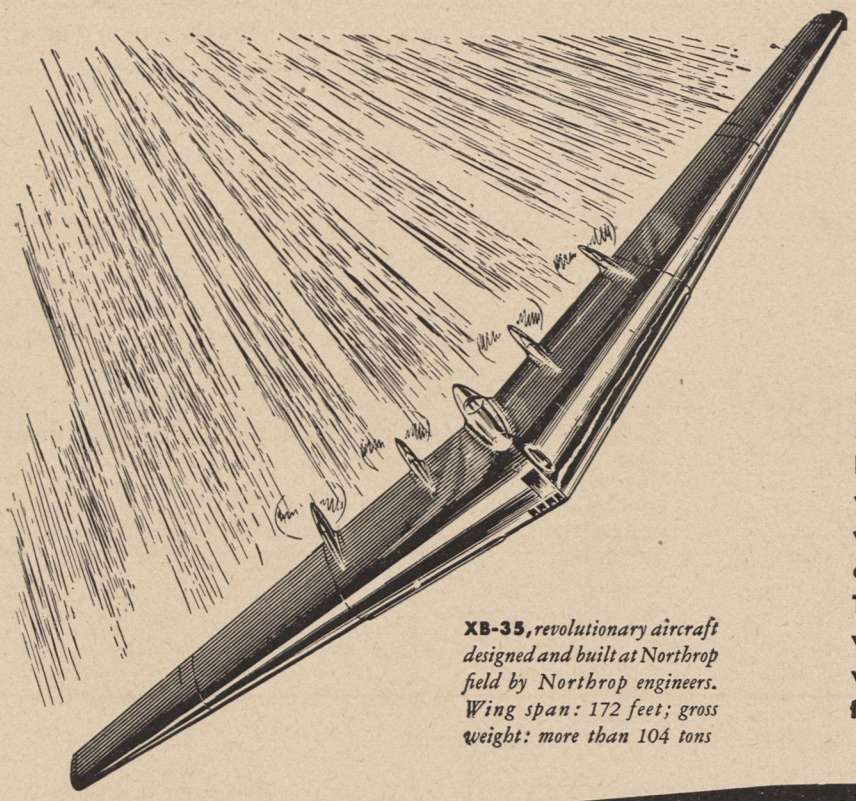
Since June 1st, 1946 it has been possible for wartime Flight Officers to get commissions as Second Lieutenants in the Air Corps Reserve. More than 2,050 former Flight Officers have already received commissions. Full details can be obtained from the Adjutant General in Washington.

Finest Writing

Gentlemen:

Imperative to tell you that the chapter you printed in your December issue from "One Damned Island After Another" goes down with me, as the finest writing I've seen come out of World War II, and that includes the much-flaunted Hersey "Hiroshima," too. Maybe I still think there's nothing like the Air Force and the friends I made in it, but I'd still like to see anyone do better writing than ex-S/Sgts. Howard and Whitley.

Edward H. Buckman
ex-Sgt. 4th Motion
Picture Unit, 16 mm. AAF.



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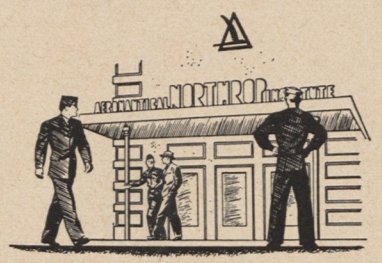

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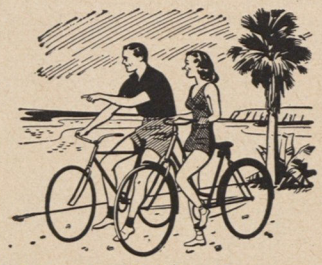

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WINGS

AFA Wing groups have now been organized in all states, and intensive squadron organization programs are getting under way. If there isn't a squadron chartered or organizing in your community, get in touch with the leader or organization Secretary for your state and offer your cooperation. Here are their names. You'll find you have plenty of enthusiastic fellow members anxious to get together with you to start the squadron rolling, and both state wing and national headquarters are ready to give you all possible cooperation in the formation of your community AFA squadron.

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Mr. Amzi G. Barber, Watts Bldg., Birmingham 3, Ala.

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Lt. Col. F. S. Gabreski, P-47 vet., now heads Calif. Wing of AFA.

THE MELODY LINGERS ON

(Continued from page 22)

ever trespassed on the sanctity of the historic old house. Hit tune of the evening, it was later reported, was "It Must Be Jelly Cause Jam Don't Shake Like That."

After that fateful December fifteenth, Captain Haynes took over the executive reins. Arranger Jerry Gray directed, and the band toured until August of 1945 when it was ordered back to the US.

It gave its last performance as a military group at the Washington Press Club dinner in Washington. President Truman, General Eisenhower and General Arnold were in attendance.

A month later, in December, the unit was given its honorable discharge, and as soon as the boys could make a quick change of costume, it became the "Glenn Miller Band with Tex Beneke." Tex, who served during the war with the Navy, accepted the job of directing at the personal request of Mrs. Helen Miller, Glenn's wife. Both Mrs. Miller and the boys figured that was the way the Major would have wanted it.

The personnel in the band today isn't quite the same as it was in the army. For one thing the string section has been reduced from twenty-one to thirteen. Then too, some of the men like Ray McKinley and Jerry Gray have branched out with orchestras of their own. Jerry, though, still arranges for Miller in his "spare" moments. Some, like Trigger Alpert, have taken jobs with studio orchestras so they can stay in one spot with their families. Still others, like Mel Powell, have accepted featured spots with other orchestras. But for the most part it's still the same bunch, and they're busting records wherever they go. *Metronome*, the leading musical publication, said in a recent issue: "This Miller band is definitely an improvement over his civilian band and almost in a class with his sensational AAF group, the best all-round popular music unit ever assembled. . . ."

Incidentally, Don Haynes, who is still the business manager, says that no matter what happens the outfit will remain 100 per cent veteran. "Glenn always used to insist on the boys 'getting along' and behaving themselves like gentlemen" he explains, "and even in the brief time since the war we have already discovered that the guys who were in the service display less 'temperament' than those who weren't. The managers of the houses and theaters where the band has appeared put it a different way. Without exception they report that the Miller band is the most orderly, gentlemanly and dependable group they ever worked with. "That's the way the Major would have wanted it," Haynes says.

CREDITS

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PLANE BONERS

Analyzed by Veteran Pilots

BOCA RATON, FLA.—An instructor pilot, with two other pilots, a crew chief, and two passengers, was approaching for a night landing in a B-17 when the tower told him to land short because of activity on the field. The pilot entered the pattern at 1000 ft., made his base leg close, and was estimated to be at 40 ft. when he crossed the end of the runway. The B-17 landed past the one-third mark and the pilot applied brakes immediately. Thinking he could not stop in time, the pilot called for assistance on the brakes from the copilot. When the copilot stepped on the brakes too, the plane swerved sharply to the left. The Fort rolled off the side of the runway about 200 feet from the end, bogged down in soft sand, and nosed up. The pilot did not try to control direction with the throttles. All four propellers were damaged and the nose section of the B-17 was smashed. The runway was wet at the time of the crash.

Comment: A combination of errors teamed up to cause this crash. First, the pilot was told to land short and, instead, he overshot. This, in itself, called for a go-around. Second, throttles are very handy on four-engine airplanes to help maintain directional control, but no attempt was made to use power. Third, it is unnecessary for more than one person to exert pressure to get maximum braking effect. And last, a long landing is always risky, but worse on a wet runway. Many pilots are reluctant to go around once they've made up their minds to land, but a little trouble and a few more minutes in the air saves a lot of wear and tear on AAF planes and airmen.

SCOTT FIELD, ILL.—While attempting to join formation with two other AT-6s, the pilot of the third plane misjudged the speed of the formation and overshot. When he passed under the lead plane, its propeller chewed off the top of the rudder of the AT-6 underneath. Both planes made safe landings.

Comment: It might be well for this menace to skyways to pay quite a bit more attention to formation flying and rates of closure. A whirling prop can chew through a canopy just as easily as a rudder.

LA GUARDIA FIELD, NEW YORK—A liaison pilot with the Army Ground Forces taxied his L-5G behind a commercial airlines DC-4 while the airline pilot was running up No. 4 engine. Prop wash spun the liaison plane around on its right wing tip.

Comment: Here's a case where both an Army and civilian pilot combined forces to cause an accident. The commercial pilot was running up his engines with the DC-4's tail pointed toward the ramp and did not employ a runup guard as required by La Guardia. The Army pilot didn't use very good judgment when he taxied behind the big airliner which had four fans turning. Some accidents are practically unavoidable, but there's no use asking for one.

MIDDLETOWN, PA.—While receiving transition in an AT-6, a reserve pilot was taxiing out for another takeoff. He checked the cockpit, looked up suddenly, and saw another airplane very close to him. He hit the brakes hard and nosed the trainer up on its propeller.

Comment: An excellent example of head down and locked. This flying ostrich not only caused himself a lot of embarrassment, but cost the AAF time and money for repairs. It's too bad pilots are not equipped with two heads for peering in and out of the cockpit at the same time, but they aren't. Look around, bub.

PREPARED BY THE FLYING SAFETY DIVISION, FIELD OFFICE OF THE AIR INSPECTOR, LANGLEY FIELD, VA.

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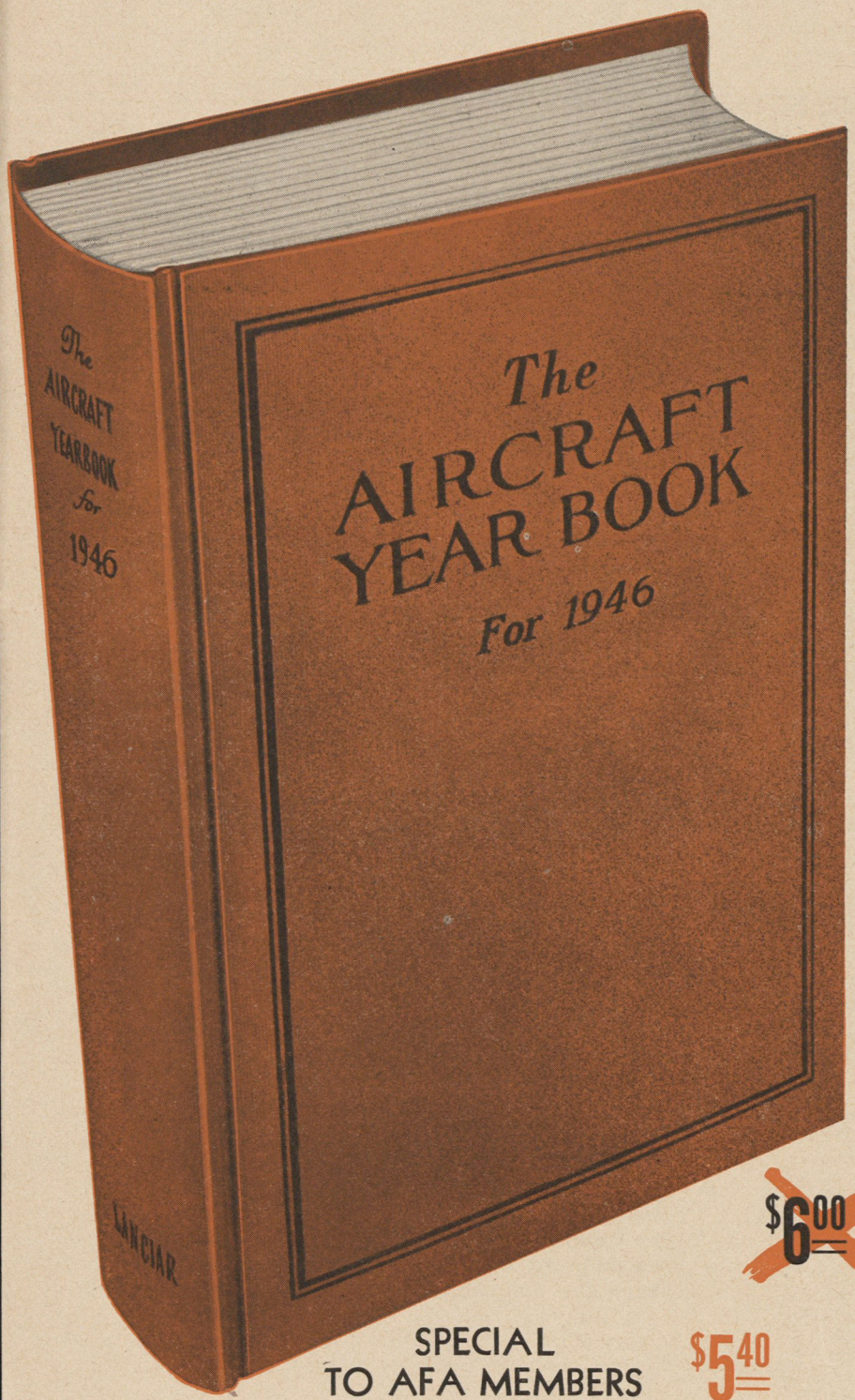

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To All Veteran P-38 pilots:

The war against Germany and Japan is over, but the kind of peace you and your companions fought for has not been won. Every day's headlines tell of trouble, tension and unrest throughout the world. We who were a part of that great team, the Army Air Forces, are well aware that this is no time to relax our vigilance.

And yet, today we are as vulnerable to surprise attack as we were in the years preceding Pearl Harbor. General Spaatz has said "we are an Air Force in memory only." General Stratemeyer, who is charged with responsibility for our national air defense, has stated, "The present AAF couldn't punch itself out of a paper bag." Relegated to a secondary rôle, the AAF this year received less than $1 ¼ billion out of the $12 billion appropriated by the Congress for national defense. As a consequence, air research and the air reserve training program have been seriously hampered.

I'm sure that you will want to help remedy this situation, and you can help by joining the Air Force Association today. In addition to the personal satisfaction of participating in the program to achieve for the Air Forces equal status with the ground and sea forces, you will receive:

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3. A distinctive lapel insignia that marks you as a former member of the Army Air Forces and as a member of the Air Force Association.

4. The opportunity, through participation in state Wings and local Squadrons, to continue service friendships, perpetuate AAF traditions, and commemorate those who did not return. (If you would like to help organize a Squadron in your own community, just drop us a line and we'll send you further details.)

We'll be proud to have you with us in the one big organization restricted to present and former members of the AAF. Annual dues are $3.00, so won't you fill in and return the form today—or if you're already a member, pass it along to a friend. There will be no additional national dues assessed and no military obligation is involved. *Let's keep the gang together.*

As ever,

J. H. DOOLITTLE.

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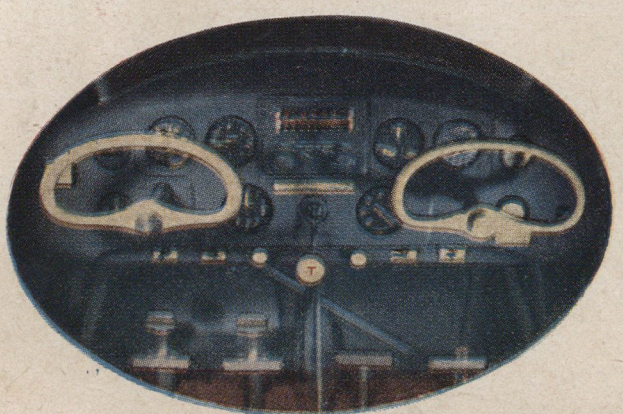

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