

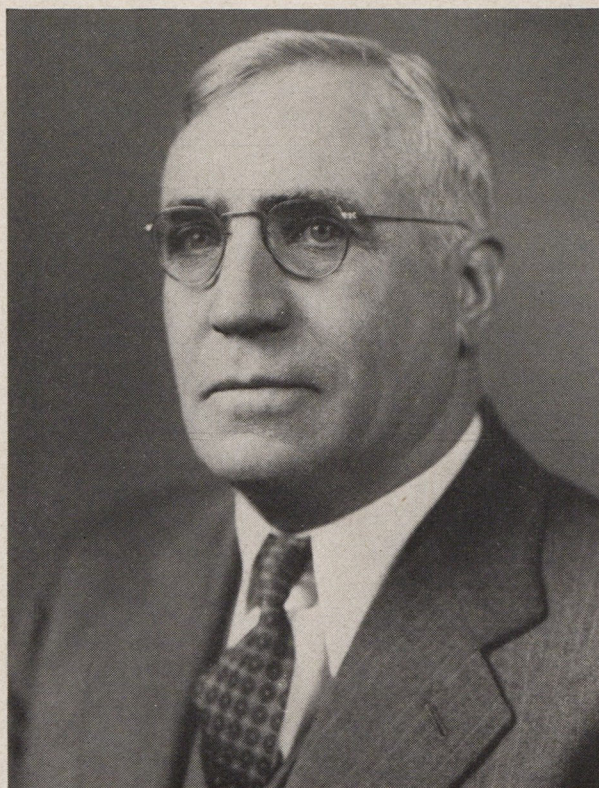
AIR FORCE

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



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VOL. 30 NO. 4

APRIL, 1947

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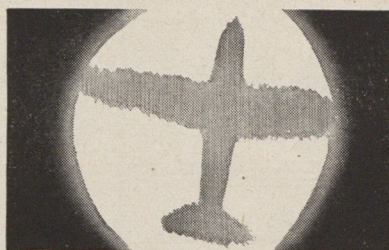
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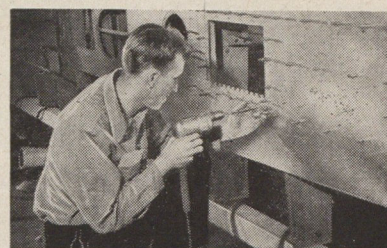
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Here's How

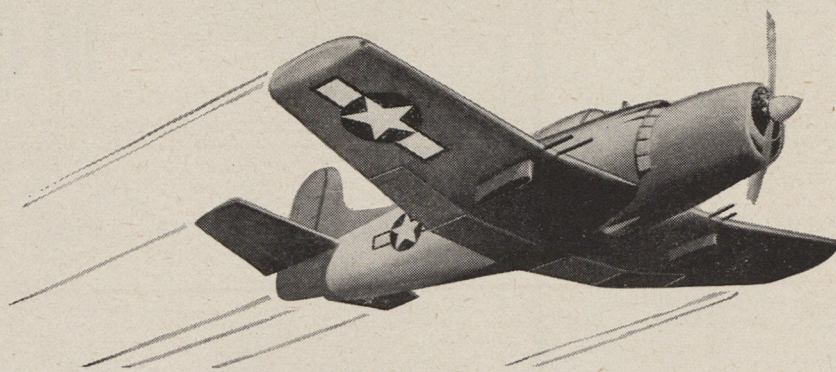
IDEAS GROW WINGS



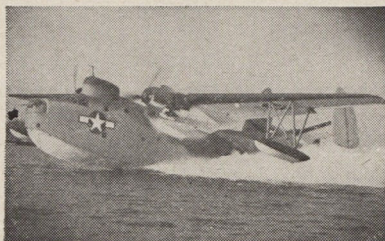
NAVY'S NEWEST reconnaissance plane, the Martin XP4M-1 has 4 engines tandem-mounted in 2 nacelles. Two reciprocating engines, two jet, provide fighter plane speeds when needed.



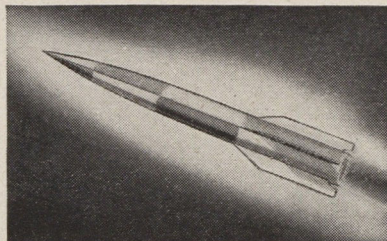
ARMY'S PRIDE, the new XB-48 bomber, is powered by six jet engines—will fly at exceptionally high speeds. Details of this advanced Martin bomber are currently restricted.



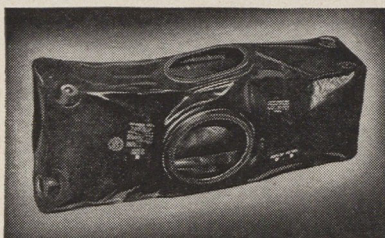
WICKED WALLOP is packed by the Navy's new AM-1 Martin Mauler carrier-based, dive torpedo-bomber. Heavy bomb-load is carried at an unprecedented speed for this type of aircraft.



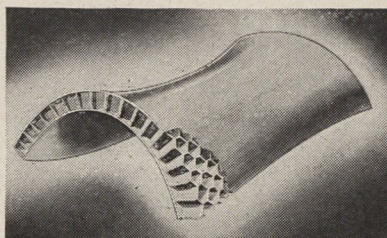
WORLD'S LARGEST amphibian, this 30-ton version of the Navy's Mariner patrol bomber is at home on land, in the water or in the air. New PBM-5A is now in production for the Navy.



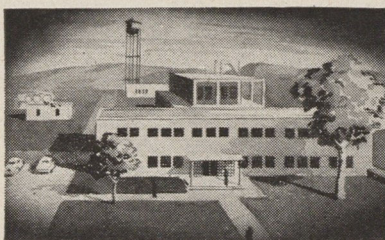
FIRST IN RESEARCH, Martin engineers are now working on new forms of propulsion, electronics, new materials, alloys, trans-sonic speeds, pilotless aircraft, guided missiles and other projects.



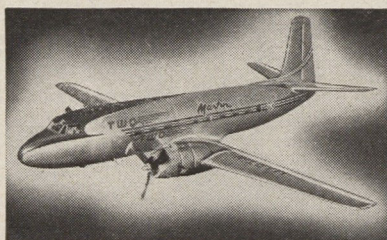
EXCLUSIVE DEVELOPMENT is the Mareng fuel cell—big, flexible "bag" that increases safety, reduces maintenance. From this, Martin developed the self-sealing fuel tank for military planes.



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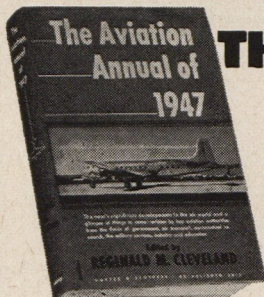
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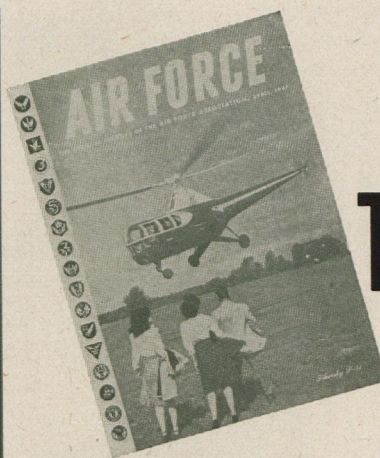
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This Month

The Cover

The Sikorsky S-51, four-place transport type helicopter, shown on this month's front cover, is the largest licensed rotating wing aircraft in current production. In actual trail-breaking airline service with Helicopter Air Transport, it is beginning to prove the place of the 'copter in the general transport picture. Recently, United Air Lines announced that an S-51 would be acquired by the company and operated around the Chicago area to test such things as air-mail delivery, spot pick-up service, and to do pioneer inquiry into the possible use of this vehicle as an airport-terminal carrier.

Extensive use of the S-51's military relative, the R-5, was made by the AAF during Operation Frigid, the military exercise recently held in Alaska. Here, the helicopter proved that it could be operated in the Arctic with no more difficulty than conventional aircraft, and that it might well become the major rescue and ambulance carrier in an area where speed is the only hope of the sick or injured.

Another interesting helicopter development is the proposed use of a competing machine, the Bell helicopter, for geological exploration. An electronic locating device, which operates somewhat like the wartime mine detector, will be affixed to a mast in front of the machine, after which it will be flown slowly over inaccessible terrain, seeking out the minerals hidden in the earth. Think what the 49ers could have done with such a contrivance.

Plenty to Do

AFAers who are willing to roll up their sleeves and go to work will find plenty to do this month in answering two separate appeals from Association President James H. Doolittle. On page 11, General Doolittle, in a special editorial, strikes hard at the proposal to cut military budgets to about one half of the minimum amount which our senior military commanders, General Eisenhower, Admiral Nimitz and General Spaatz, have determined is necessary to assure national security. "In the present condition of world unrest and insecurity, it is fundamentally unsound for us to reduce our military budget and, in so doing, weaken our military establishment," the General points out. What can you and I do about it? It is our duty, Doolittle concludes, to make the financial sacrifice necessary to permit the US to fulfill her obligations and further, it is our duty to make known our desires to our duly elected representatives in Washington. In plain language, that means we should sit down and write our congressmen a letter—now!

The AFA President's second appeal on pages 34 and 35 is made to all original Association members to assume it as their personal responsibility to get two new members by convention time in September. In a "yearly" report, he recounts the progress we have made in a year's time and fore-

casts that the next twelve months will witness even greater strides forward. Our ambition is to have 150,000 members by September, but the goal can only be reached with the enthusiastic assistance of all present members.

Number One Veteran

It was exactly eight months ago that AIR FORCE editors began assembling material for "The Eagle's Nest," the story of General Hap Arnold and his newly acquired California hacienda which appears on page 16. Our first attempts to find someone to visit the general and follow him around for a week or so for "background" proved fruitless and we were forced to put what little material we had in the "hold" file. Then shortly before Christmas, Fourth Air Force Headquarters at Hamilton Field volunteered to pick up the ball and carry the project through. Captain L. D. Snell and a Fourth Air Force staff photographer visited the Arnolds for several days during which time they tagged after the Old Man with pencil, pad and camera from six A.M. on. It wasn't an easy assignment. Hap Arnold still has more energy than a half a dozen ordinary men and the job of keeping pace with him even for a short time requires a great amount of determination and stamina. But Snell managed to stick it out and came up with a fine yarn. His photographer did equally well in the picture department.

Operation Frigid

When Major Bud Huber of the Public Relations Office, HQ AAF returned from a two-week trip to Alaska where he had served as conducting officer for a group of roaming American correspondents, he was a little reluctant to give us a report on what he had seen of AAF activities in the far North. "How can I?" he asked. "I didn't take any notes; first, because it was too cold, and secondly I had another job to do." But we finally persuaded him to attempt a narrative from memory and, as it turned out, Huber has an excellent memory. His story offers an extremely interesting insight into the problems of waging war in a country where the thermometer cavorts at fifty below.

Huber's tour got underway in January with fourteen news, picture and radio men participating. The party left Washington's National Airport in an ATC C-54 and, two days later, after stops at Great Falls, Montana, and Edmonton, Alberta, Canada, arrived at Fairbanks, Alaska. In Alaska, the men observed the Army Ground Forces "Task Force Frigid," at Fairbanks, and "Task Force Williwaw" at Adak. AAF operations at both Ladd and Elmendorf Fields were inspected. Except for some near cases of frostbite, Huber reports that the trip was without incident—a rare thing in any press tour.



Sikorsky helicopter flown by Tenth Rescue Squadron picks up a GI suffering from frozen feet during the recent Operation Frigid in Alaska. AAF aided helicopter development since early 1920's.

APRIL, 1947

the 9th AIR FORCE

service command

PICTORIAL REVIEW

The Ninth Air Force Service Command in England . . . the Normandy invasion . . . the fight for France . . . and the battle for Germany. The whole exciting story is told in text and hun-



dreds of exclusive photographs, including personalities, action shots, and the scenery which you knew as ETO. Written by, about, and for the Ninth's enlisted men and officers this book is a lasting record of victory. Use the coupon for ordering either the \$1.50 or the \$2.50 edition.

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So if you've lost your original, or if you want one or two extras for your sports jacket or your overcoat, you can obtain them merely by writing to the Air Force Association, 1603 K Street, Northwest, Washington, D. C. Enclose fifty cents for each pin.

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Air Force Association

1603 K St., N.W.,

Washington, D. C.

Air Mail

Perfidious Sin

Gentlemen:

A raw, dead fish to you for a half-told story in your January issue. Page 19, lower left, is the most beautiful pin-up picture of all time—and you dismiss it with a mumbled blurb for Miami! Not even her name!

Hasten to correct this perfidious sin of omission—let's have her complete 201, plus plenty of pix.

Dale Jeffers (Capt. A.C.)

203 University St.

W. Lafayette, Ind.

Miami Chamber of Commerce informs us that the gal in question (see cut) is Miss Joyce Shabat, 17, of 720 West 50th St., Miami Beach.



"The most beautiful pin-up picture of all time" says reader Captain Dale Jeffers.

Wet Blanket

Gentlemen:

I have read with great interest your excerpt from "One Damned Island After Another" in the December issue of AIR FORCE. It is indeed an excellent report of some of the many trying experiences men had that day.

In gathering material for such a tale it is of course impossible for authors to attain absolute accuracy. However, one point stands out as a rather glaring error, at least from my point of view. I refer to the statement that "Charlie was dead. There was a Jap bullet in his head."

The rest of that passage about the conversation Max and Charlie had is told very much as it occurred but I happen to be that "Charlie Judd" and I didn't get a scratch during the whole war.

Several months after the "7th," I returned to the States to attend A.A. F.O.C.S. and later, flying school. On completion of training I was sent to England and assigned to the 838th

Bomb. Sq., 487th Bomb. Gp. as 1st pilot of a B-17G.

So, you see, I am very much alive, if the authors don't mind too much.

Charles M. Judd

1st Lt. Air Corps Res.

Golf Avenue

Pittsford, N. Y.

Well, all right, but you're spoiling a good story.

Photo Exchange

Gentlemen:

I was very much inspired by the article in this month's AIR FORCE—"The Last Bomb," it was grand!

As a former member of the 6th Bomb Group, of the 20th and stationed on Tinian during the whole stay of that group, I really enjoyed reading the article and looking at the pictures.

I am compiling a scrapbook of my days in the service and have a question for you. Would anyone in the Association have extra photos of 29s in action that they might like to swap for some Kodachrome shots of Tinian?

Howard E. Hadley

34 Bradford Street

Needham 92, Mass.

Pacific Sweep

Gentlemen:

I was a member of the 403rd Bomb Squadron, 43rd Bomb Group, during the period of 1942 and 1943 while they were in New Guinea. I have since heard that there was either a Group book or 5th Air Force book published in Australia which covered in detail the activities of the 43rd Group.

I would appreciate any information you could give me as to where and how I could purchase a copy of this book.

William L. Welch
Major, AC

The book in question is "Pacific Sweep" published by F. H. Johnston Publishing Co., PTY, Ltd., 34 Jamieson, Sidney, Australia in 1946. The price is \$4.50 and copies can be obtained from the publisher.

Slight Error

Gentlemen:

In a recent issue you stated that the Handley Page bomber had a wingspread of "over a hundred feet." I believe in reality you will find that it was ninety-nine feet.

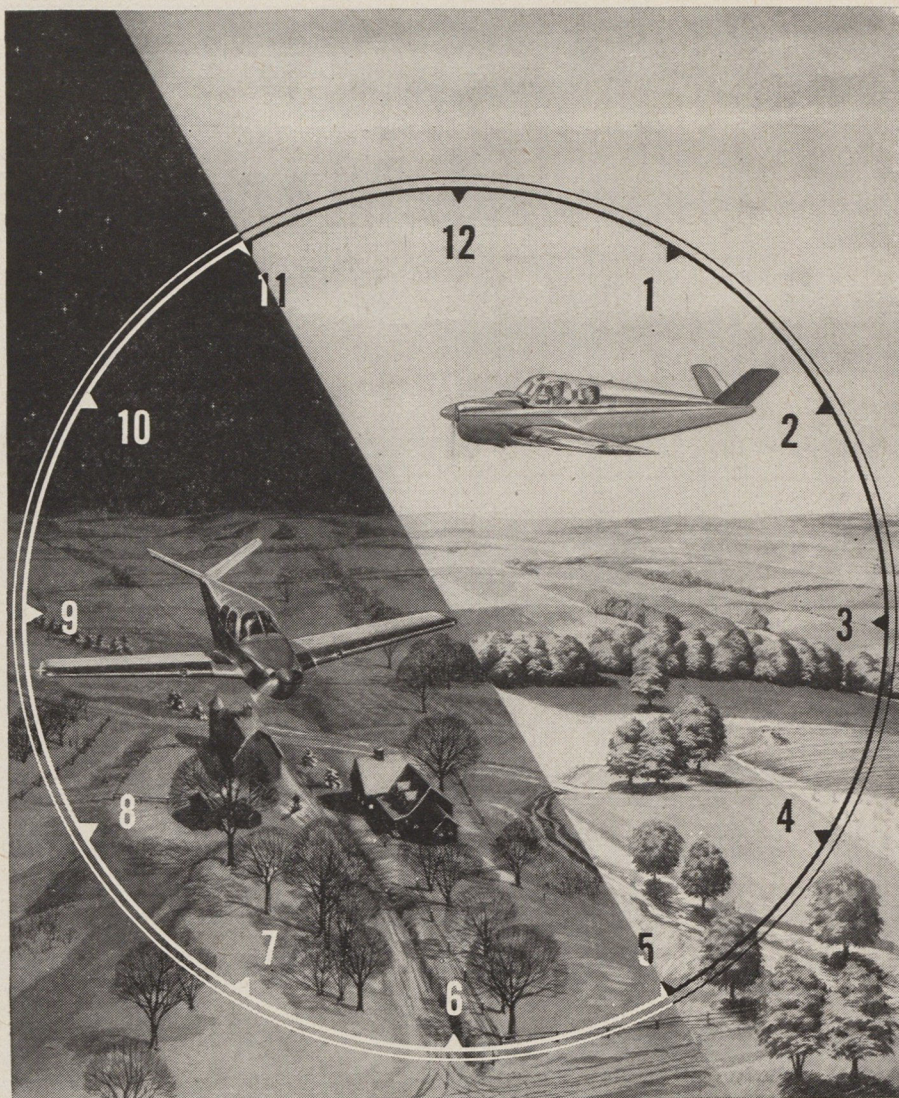
Earl W. Grant
Brunswick, Georgia

During the World War I, the plane in question did have a wingspread of slightly over one hundred feet. After the war some were clipped to ninety-nine.

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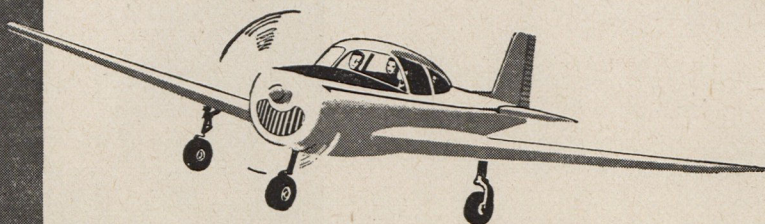
There is a Beechcraft distributor near you, ready with additional facts, figures and a Bonanza. We are now delivering Bonanzas on the large backlog of firm orders created by the heavy demand for this airplane. Additional orders will be filled in the sequence received. Beech Aircraft Corporation, Wichita, Kansas, U. S. A.

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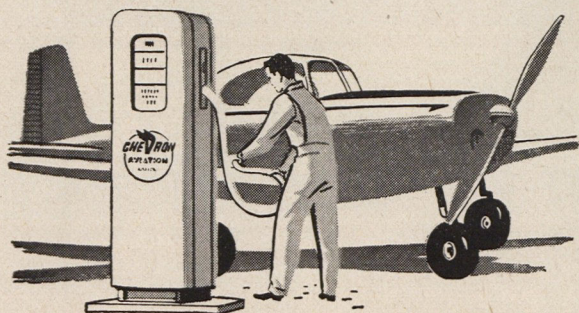
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PLANE FAX



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

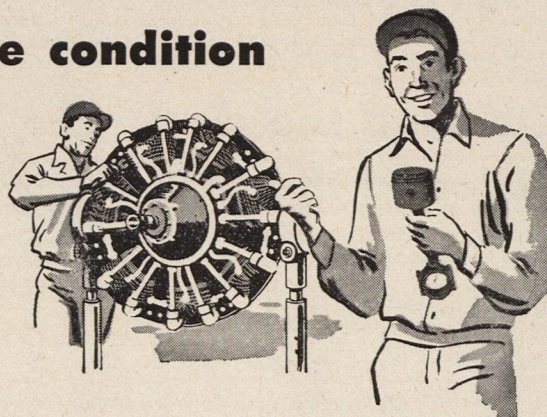
High-altitude flying increases light-plane efficiency



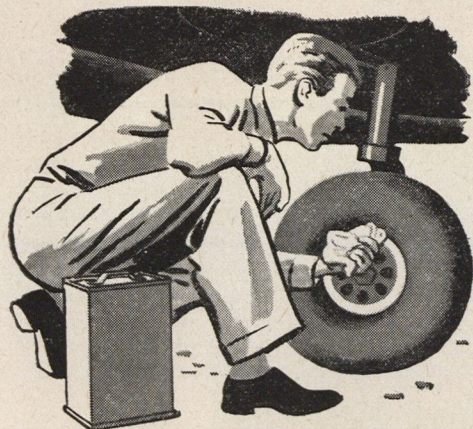
You'll get higher cruising speed, better fuel economy, and longer range by cruising a light plane at 6,000 to 9,000 feet. This is due to less drag with the decrease in air density at higher levels. However, improper handling of mixture controls can cause loss of range. When flying above 5,000 feet the carburetor mixture should be leaned until r.p.m. decreases, then enriched enough to recover loss of r.p.m. Maximum economy can be obtained with CHEVRON Aviation Gasoline.

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Use care when selecting hydraulic fluids



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Some planes are equipped with natural rubber hydraulic tubing and seals, others with synthetic rubber. Natural rubber is damaged by petroleum. It is therefore important to know which kind of tubing your plane is equipped with, and use the proper type of hydraulic fluid. If your plane is equipped with natural rubber tubing use Atlas Brake Fluid, if synthetic rubber, RPM Aviation Hydraulic Oil should be used. For easy identification, this petroleum base fluid is colored red.



April, 1947

SHALL WE COURT CALAMITY?

BY GENERAL JAMES H. DOOLITTLE

TO reduce military appropriations at this time would be to court—if not invite—calamity, for such cuts would weaken most our strongest agency of defense—air power.

A billion dollar reduction in the US Army military appropriation and a 750 million dollar cut in the US Navy appropriation reduces the Army and Navy Air Force budgets to about one-half of the minimum amount which our senior military commanders, General Eisenhower, Admiral Nimitz, and General Spaatz, have determined is necessary to assure our national security. This is because first priority on funds must rightfully be given to the requirements of already bare-minimum occupation armies in Germany and Japan. Thus unable to further reduce the cost of our occupation forces, the brunt of any appropriation cuts must of necessity fall upon other Army and Navy activities, including the Air Forces. A 500 million dollar cut in the food budget for the occupation countries would cause starvation and make the job of our occupational armies practically impossible of accomplishment.

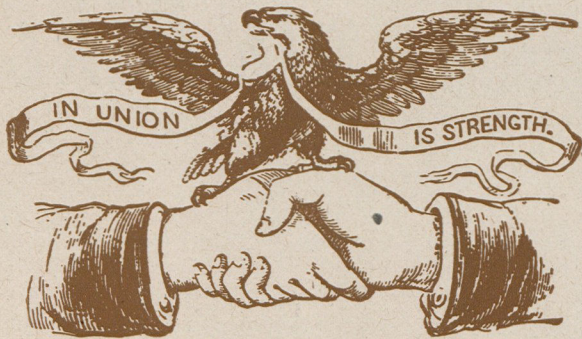
We cannot—and we must not—forget the lessons of the past: The fact is that through military unpreparedness and disinterest in international affairs we have in less than three decades been drawn into two costly and devastating wars that were not ours. Had we been militarily strong, these wars might not have been started, and certainly had we become involved our losses in men, money, and materials would have been much less and world disruption greatly reduced.

There can be no compromise with American security or with America's solemn obligation to the rest of the world to maintain world peace. We are not an aggressor nation. We never have been nor will we ever be one. The peace-loving nations of the world realize that fact and look to us to maintain the peace. Until such time as there is a world organization in which all nations can live in complete understanding, accord, and fellowship, and which will have an international police force sufficiently strong to maintain peace, it is necessary that we have a military organization adequate to our national security and potent enough to impose our will for peace upon any unthinking nation that chooses to start a war in which we might become involved. The maintenance of a strong military establishment now is both assurance and insurance that we will not be plunged into another war—a war which surely would lead our nation and the world to moral and financial bankruptcy.

We want peace, but we have learned the hard way that wanting peace is not enough. We must plan and strive for peace—and if necessary sacrifice for it.

In the present condition of world unrest and insecurity, it is fundamentally unsound for us to reduce our military budget and in so doing weaken our military establishment. Therefore it is the duty of every citizen who desires peace on earth to make the financial sacrifice necessary to permit the United States of America to fulfill her obligations to herself and to the world, and furthermore, it is his duty to make known his desires to his duly elected representatives in Washington.

**THE PRESIDENT OF AIR FORCE ASSOCIATION URGES ALL AFA MEMBERS TO TAKE
ACTION IN THE FIGHT AGAINST FURTHER MILITARY APPROPRIATION CUTS**



BY GEORGE H. HADDOCK, Lt. Col. AC Res.

BIRD IN THE HAND

It may develop that the kind of unification the Air Force really wants is still in the bush. But the compromise proposal is a bird in the hand and far better than nothing

A MERICAN airmen have their fingers crossed. Rabbits feet are being rubbed from coast to coast, and in all Air Force posts, camps and stations, as the Air Force appears to be on the final approach to the position it has sought for years.

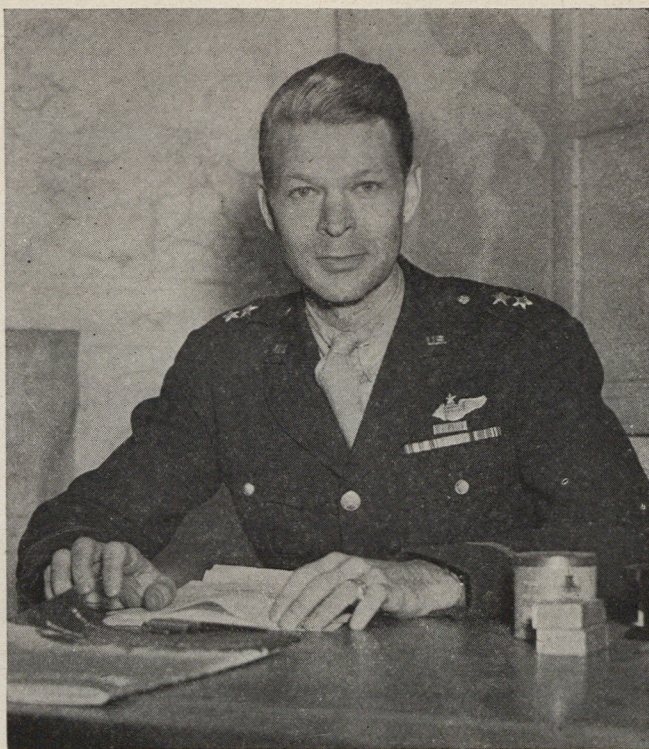
A position of parity for the Air Force with the Army and Navy has been one of the major provisions of nearly every armed forces unification proposal of recent years, and the potential of air power and the need for its recognition has been emphasized by airmen ever since the demonstration by General Billy Mitchell's bombers off the Virginia Capes.

Attainment of this goal is in the legislation now before the

Congress of the United States. In the last week of February, 1947, President Truman sent to Congress a draft of a proposed bill, which he entitled the "National Security Act of 1947," and which represents the final Air Force-Army-Navy compromise plan on the subject of unification of the armed forces. The Legislation based on the President's proposed bill is somewhat different from the compromise agreement reached by the three services in January, but is generally regarded by the supporters of the theory of a single department of common defense with equal status for air, land and sea branches as a step in the right direction.

Basically, the legislation provides for the establishment of

Army and Navy had to give and take till it hurt in arriving at a unification proposal which was acceptable to all. The two men who labored longest over job, and who are primarily responsible for final document are Vice Admiral Forrest Sherman (left) and Major General Lauris Norstad.



a National Defense Establishment to be headed by a Secretary of National Defense who would "exercise direction, authority and control" over separate units to be known as the Department of the Air Force, the Department of the Army and the Department of the Navy. Also within the National Defense Establishment, and under the Secretary of National Defense would be the War Council composed of a civilian chairman, the separate Department Secretaries and the Chiefs of Staff of the three services, which would concern itself with broad policy relating to the Armed Forces; the Joint Chiefs of Staff, which thus would become a unit provided for by law with specific assignments, instead of the wartime voluntary group which could act only where the chiefs were in unanimous agreement; the Munitions Board composed of a civilian chairman and representatives from each of the three services, to coordinate procurement, production and distribution, plan military aspects of industrial mobilization, recommend which service procures what equipment, recommended standardization and combining where possible, and determine relative priorities of military procurement; and the Research and Development Board composed of a civilian chairman and two members each from the Air Force, Army and Navy, to advise the Secretary of National Defense on the status of scientific research relative to National security.

The legislation also would provide for a National Security Council, with a Central Intelligence Agency subordinate to it, and a National Security Resources Board, all responsible to the President and coordinating the activities and policies of the National Defense Establishment with other government agencies and with civilian resources and activities.

So, for the first time, and after many years of struggling by forward-thinking airmen, soldiers and sailors, Congress has an opportunity to take positive action on a measure with which the Air Force, the Army and the Navy are in official agreement and which would represent the greatest step forward in national preparedness since the founding of the military establishment.

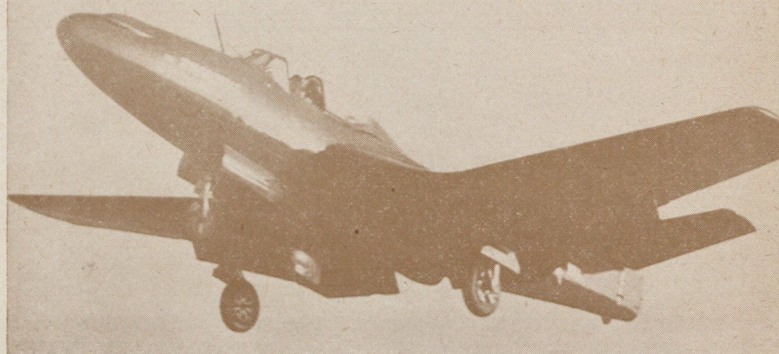
Whether the Nation benefits from the plan depends, of course, on whether Congress passes a bill at all, and, if a bill is passed, what changes will be made from its original form. As it was introduced, the bill was a strong measure, giving the Secretary of National Defense real authority to coordinate service programs and activities, although it was provided that the Secretaries of the Air Force, Army and Navy could go over the head of the Secretary of National Defense to give the President any reports or recommendations they thought they should. If Congress gives the Secretary of National Defense the powers it is proposed he be given, a lot will then depend on the ability and stature of the man appointed to that position.

Any hope of economies to come out of the proposed unification rests pretty much on the power and responsibilities given by Congress to the Secretary of National Defense, for on the face of it the plan seems to provide for unification by dividing the existing establishment. But the structure for substantial savings in the long run is there and supporters of the unification plan hope that Congress will give weight to this consideration.

In its deliberations on the problem, the Congress will not be in virgin territory, for the problem of unification dates far back in the history of the Nation. When the Constitution of the United States was adopted, the War Department was the only agency for the common defense of the country. It wasn't until 1789 that the Navy Department was created as a separate agency, and since then there is a good deal of evidence that America's leaders have given serious consideration many times to reverting to a single department of common defense.

In the last 25 years, for example, there have been at least

Lt. Com. J. J. Davidson made first US jet carrier take-off from the deck of the *Franklin D. Roosevelt* in the McDonnell Phantom. Jet research highlighted the expensive duplication which characterized disunified US air power.



sixty measures introduced into Congress concerning the subject of unification of the Armed Forces, and in nearly every one, separate status has been asked for the Air Force. The Secretary of the Navy in President Wilson's cabinet strongly urged the establishment of a single department of national defense in 1919. Thousands of words of testimony have been taken before Congressional committees considering the subject, and special groups have made studies to contribute their findings to the sum total of knowledge of the problem.

In 1934 one of these groups considered unification of the armed forces, but concluded that unity of command of the Army and Navy was not required. That group was known as the Baker Board, of which former Secretary of War Newton D. Baker was the chairman, and one of its members was J. H. Doolittle, now president of the Air Force Association. General Doolittle filed a minority report, and in it urged the development of a separate air arm.

In the last session of Congress several bills were introduced, proposing varying measures of unification along with parity for the Air Force, but none was passed before Congress adjourned. The 80th Congress, now in session, is considering a bill which not only represents the official agreement between the three military services, but embodies the thinking of Americans in general, judging from nation-wide polls conducted in recent months.

The text of the President's proposed legislation provides for an autonomous Air Force as follows:

"Sec. 107 (a) Within the National Defense Establishment there is hereby established an executive department to be known as the Department of the Air Force, and a Secretary of the Air Force, who shall be the head thereof. The Secretary of the Air Force shall be appointed from civilian life by the President, by and with the advice and consent of the Senate.

"(b) Section 158 of the Revised Statutes is amended to include the Department of the Air Force and the provisions of so much of Title IV of the Revised Statutes as now or hereafter amended as is not inconsistent with this Act, shall be applicable to the Department of the Air Force.

"(c) The term 'Department of the Air Force' as used in this Act shall be construed to mean the Department of the Air Force at the seat of Government and all field headquarters, forces, Reserve components, installations, activities, and functions under the control or supervision of the Department of the Air Force.

"(d) There shall be in the Department of the Air Force an Under Secretary of the Air Force and two Assistant Secretaries of the Air Force, who shall be appointed from civilian



life by the President by and with the advice and consent of the Senate.

"(e) The several officers of the Department of the Air Force shall perform such functions as the Secretary of the Air Force may prescribe.

"(f) So much of the functions as the Secretary of the Army and of the Department of the Army, including those of any officer of such Department, as are assigned to or under the control of the Commanding General, Army Air Forces, or as are deemed by the Secretary of National Defense to be necessary or desirable for the operations of the Department of the Air Force or the United States Air Force, shall be transferred to and vested in the Secretary of the Air Force and the Department of the Air Force: PROVIDED, That in order to permit an orderly transfer, the Secretary of National Defense may direct that the Department of the Army shall continue for appropriate periods to exercise any of such functions, insofar as they relate to the Department of the Air Force, or the United States Air Force or their property and personnel. Such of the property, personnel, and records of the Department of the Army used in the exercise of functions transferred under this subsection as the Secretary of National Defense shall determine, shall be transferred or assigned to the Department of the Air Force.

"(g) The Secretary of the Air Force shall cause a seal of office to be made for the Department of the Air Force, of such device as the President shall approve, and judicial notice shall be taken thereof.

"Sec. 108. (a) The United States Air Force is hereby established under the Department of the Air Force. The Army Air Forces, the Air Corps, the United States Army, and the General Headquarters Air Force (Air Force Combat



The original champion of autonomy for Air was Brig. Gen. William Mitchell, left, who fought for the cause for nearly seven years after World War I without success. The extravagance of separate Army-Navy research programs is epitomized in the picture above. A group of highly skilled and highly paid experts, who in this case happen to be Navy, study blueprints for new guided missiles without reference to Army men engaged in the same type of program. In this regard the Army has been just as guilty as the Navy.

Command), shall be transferred to the United States Air Force.

"(b) There shall be a Chief of Staff, United States Air Force, who shall be appointed by the President, by and with the advice and consent of the Senate for a term of four years from among the officers of general rank who are assigned to or commissioned in the United States Air Force. Under the direction of the Secretary of the Air Force, the Chief of Staff, United States Air Force, shall exercise command over the United States Air Force and shall be charged with the duty of carrying into execution all lawful orders and directions which may be transmitted to him. The functions of the Commanding General, General Headquarters Air Force (Air Force Combat Command), and of the Chief of the Air Corps and of the Commanding General, Army Air Forces, shall be transferred to the Chief of Staff, United States Air Force. When such transfer becomes effective, the offices of the Chief of the Air Corps, United States Army, and Assistants to the Chief of the Air Corps, United States Army, provided for by the Act of June 4, 1920, as amended (41 Stat. 768) and Commanding General, General Headquarters Air Force, provided for by section 5 of the Act of June 16, 1936 (49 Stat. 1525), shall cease to exist. While holding office as Chief of Staff, United States Air Force, the incumbent shall hold a grade and receive allowances equivalent to those prescribed by law for the Chief of Staff, United States Army. The Chief of Staff, United States Army, the Chief of Naval Operations, and the Chief of Staff, United States Air Force, shall take rank between themselves according to their relative dates of appointment as such, and shall each take rank above all other officers on the active list of the Army, Navy and Air Force: PROVIDED, That nothing in this Act shall have the effect of changing the relative rank of the present Chief of Staff, United States Army, and the Chief of Naval Operations.

"(c) All commissioned officers, warrant officers, and enlisted men, commissioned, holding warrants, or enlisted in the Air Corps, United States Army, or the Army Air Forces, shall be transferred in branch to the United States Air Force. All other commissioned officers, warrant officers, and enlisted men, who are commissioned, hold warrants, or are enlisted in any components of the Army of the United States and who are under the authority or command of the Commanding General, Army Air Forces, shall be continued under the authority or command of the Chief of Staff, United States

Air Force, and under the jurisdiction of the Department of the Air Force. Personnel whose status is affected by this subsection shall retain their existing commissions, warrants, or enlisted status in existing components of the armed forces unless otherwise altered or terminated in accordance with the existing law; and they shall not be deemed to have been appointed to a new or different office or grade, or to have vacated their permanent or temporary appointments in an existing component of the armed forces, solely by virtue of any change in status under this subsection. No such change in status shall alter or prejudice the status of any individual so assigned, so as to deprive him of any right, benefit, or privilege to which he may be entitled under existing law.

"(d) Except as otherwise directed by the Secretary of the Air Force, all property, records, installations, agencies, activities, projects, and civilian personnel under the jurisdiction, control, authority, or command of the Commanding General, Army Air Forces, shall be continued to the same extent under the jurisdiction, control, authority, or command, respectively, of the Chief of Staff, United States Air Force, in the Department of the Air Force.

"(e) For a period of two years from the date of enactment of this Act, personnel (both military and civilian), property records, installations, agencies, activities, and projects may be transferred between the Department of the Army and the Department of the Air Force by direction of the Secretary of National Defense.

"Sec. 109. Each transfer, assignment, or change in status under section 107 or section 108 shall take effect upon such date or dates as may be prescribed by the Secretary of National Defense."

Thus, airmen hope, the Air Force approaches autonomy and equal status with the Army and Navy. And, suppose it gains autonomy. What Then?

First of all, the initials "AAF," which became a symbol of the deeds of Army Air Force men and women during the war, will disappear, and instead officially, it will be USAF.



An excellent example of duplication of effort as it has existed without unification is pictured here. Above an Air Force Flying Fortress launches a GB-1 Glide Bomb which finds its target by means of a pre-set mechanism. At right three sailors affix a similar missile to wing of a Navy plane. The development of these and many other missiles of parallel mission was done without benefit of inter-service cooperation.

The function of an autonomous Air Force will have to be spelled out after Congress acts on unification. Under the compromise agreement outlined by the President in January the Air Force, the Army and the Navy would have been assigned functions which were specific in some details but which left rather vague, certain aerial functions and responsibilities, such as operation of all phases of land-based aircraft, which question may yet generate some heated discussions at the Capitol. If this and other points are left unsettled by Congress, the decisions may be left to the Secretary of National Defense.

In the past, the Air Force has always had to endure one more pruning of its fiscal branches than either the Army or the Navy, and its programs have suffered accordingly. As part of the War Department, the Air Forces always has had to watch its budget being cut and fitted into the War Department budget. Under the President's proposed bill all three services would go through the same procedure:—submittal of budgets to the Secretary of National Defense who then would make up the budget for the National Defense Establishment and submit it to the Bureau of the Budget.

What the Air Force does, if it gains autonomy, depends indeed to a considerable extent on how its budget needs are satisfied. The Air Force is bound to get for the next fiscal year a sum of money considerably smaller than that which Air Force planners say they must have to provide for air power adequate to defend the country.

When he retired, General Henry H. Arnold said the Air Force should have 70 groups and 400,000 men to properly defend the Nation. Under the budget presented by the President, money would have been provided for only about 55 groups; and Congressional cuts may reduce this amount to a point where provision could be made for only 35 groups, only 3 of which would be in the United States; for 500 instead of 900 tactical airplanes, and for a decreased total manpower force. Under money available during this fiscal year, the air reserve program has reached only about 40 per cent of its originally planned effectiveness, and reductions for the coming year may emasculate it.

The hot stove league, meanwhile, has gossiped endlessly about changes in insignia, of grade and rank, changes from Army grades and rank nomenclature and changes in uniform if the Air Force gains autonomy. All of that has been considered, studied and reported upon in official Air Force circles, but thus far, the AAF declines to stimulate speculation until Congress acts.

We have it on good authority, however, that Kilroy says uniforms are going to be an admirable shade of wild blue yonder.



the agle's nest

BY CAPT. L. D. SNELL

The "Old Man" has swapped his wings for a pair of spurs, and has sworn to shoot the first plane that flies overhead



THE BELOVED boss of the AAF, the man who led the mightiest aerial team on earth, has hung up his flying boots. He has traded his star-studded blouse for a wool plaid shirt, his garrison cap for a Stetson. On a forty-acre ranch near Sonoma, California, General Hap Arnold has turned farmer, and here he and his wife live in semi-retirement.

El Rancho Feliz lies on a sunny slope overlooking Jack London's Valley of the Moon. Its Spanish name means "The Happy Ranch." A narrow, winding road leads to the unpretentious white ranch house. On a front-lawn flagpole the American flag waves in the soft mountain breeze. There is an orchard, a garden and grazing land. The Arnolds like it here. They have picked out three other hilltop sites on the



The dream of every harried businessman has come true for Hap Arnold. He has retired to his ranch where he can spend the rest of his life pampering his hobbies. Above left, General and Mrs. Arnold relax on the terrace overlooking California's Valley of the Moon. Right, Hap in his tool-littered workshop.

ranch where their three sons and one son-in-law might someday build.

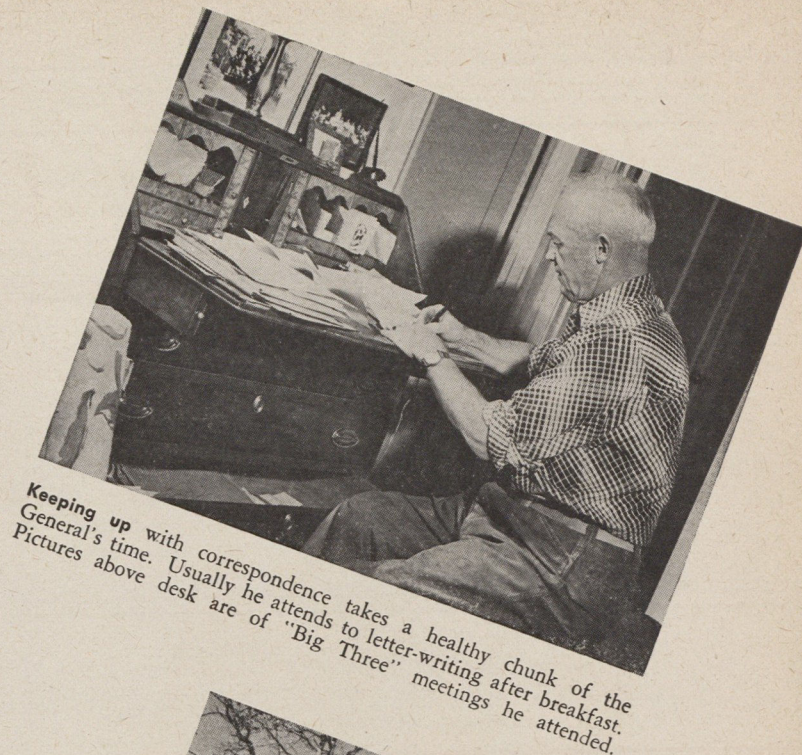
The design of the Arnolds' home was patterned after their own ideas. It was completed in the summer of 1946. The building of it took time, because the Arnolds encountered the common difficulties of getting materials. Flooring was especially hard to get. The patio still is not completely finished because of the scarcity of materials with which to finish the tiling job.

The Arnolds have turned out to be successful ranchers. More than a hobby, the ranch is a paying proposition. The garden not only supplies fresh vegetables for the table and for their friends, but much of its produce is marketed. Last summer Hap sold 600 pounds of melons in a single day. Their cows give enough extra milk to sell by the gallon. And there are four Hereford calves to be marketed in the spring, or to make baby beef for the Arnold table. They also have two horses, "Duke," a plow animal, and "Hap," a saddle horse. A flock of New Hampshire chickens and a couple of geese complete the barnyard picture.

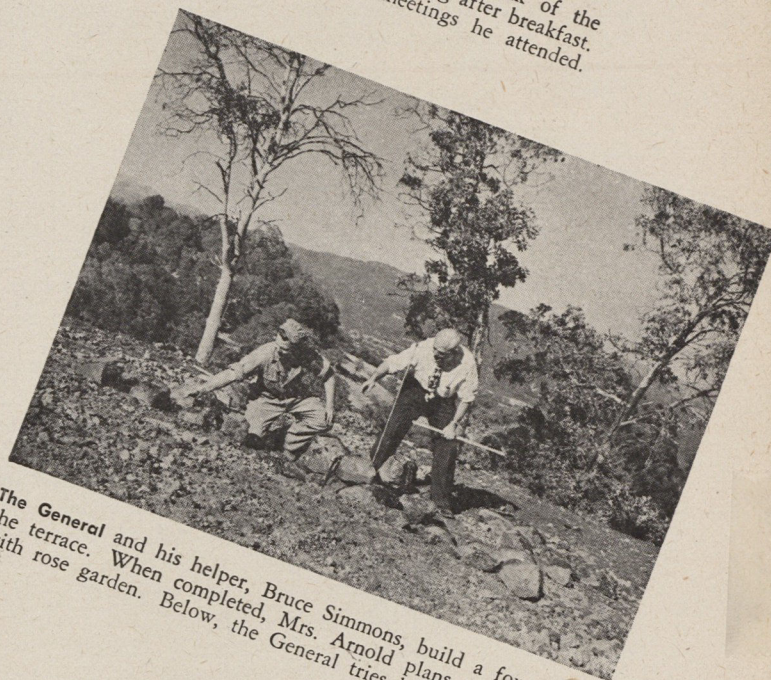
The handyman around the ranch is Master Sergeant Bruce L. Simmons, of Norfolk, Virginia. Simmons has been in the Army for twelve years and was General Arnold's driver in Washington. Now he keeps busy around the ranch, digging in the garden, driving or running errands. He takes this new assignment right in stride. "Driving or digging, I like it fine



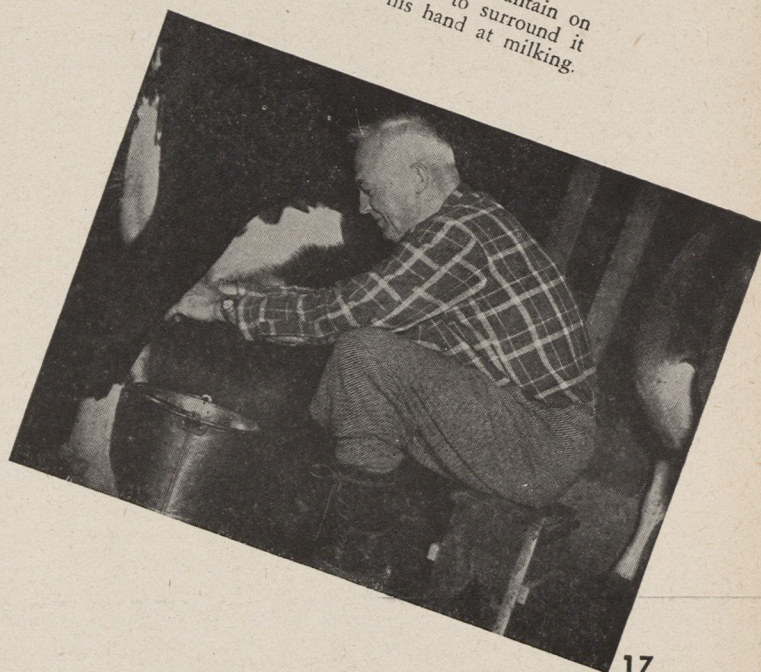
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Keeping up with correspondence takes a healthy chunk of the General's time. Usually he attends to letter-writing after breakfast. Pictures above desk are of "Big Three" meetings he attended.



The General and his helper, Bruce Simmons, build a fountain on the terrace. When completed, Mrs. Arnold plans to surround it with rose garden. Below, the General tries his hand at milking.



working for the General," Simmons confides, adding: "He treats me as though he were my father."

Around the ranch house Mrs. Arnold has started raising flowers. She favors hardy perennials to cover the terraces around the house, and the foundation planting is already finished. There will be a rose garden, too.

Farmer Arnold takes great pride in his vegetable garden. And rightly so. He likes to walk you through the garden, pointing out the plots of peas, carrots, onions, cabbages and lettuce. Then, wading knee-deep between the rows of dewy green turnip tops, the former AAF boss stops and muses:

"When I started this garden the neighbors told me I couldn't grow peas around here. So I planted peas, and I grew them anyway." One remembers that he "grew" an Air Force under similar circumstances not so long ago.

"Over there are the beets," he says. "Same way with the beets. They told me I couldn't grow beets. They said they wouldn't do well up here. So I planted beets and I grew good beets. Same way with the 'melons.' Everything they told me I couldn't grow I planted, and I showed them."

Not so with the fruit trees. Once a former hired man had pruned some of the young trees at the wrong time of the year. A nurseryman was called to look them over. The nurseryman happened to be an ex-AAF bombardier.

"The last time I saw you, General," said the young fly-boy, "you were giving me the orders. Now I'm going to tell you what to do about these fruit trees!" He did and the trees were saved.

The Arnolds already have made fast friends with neighboring ranch families. They can name all of them within miles. There are the Spreckels, the Tevis and the Jorgensens. And over the hill behind the ranch are the Webbs and the Griffins. And then there are the Pachecos and the Benedicts. As ranchers, they have common interests and they visit one another often. The general is Director of the Sonoma County Fair and is a member of the Far West Turkey Association.

As California state Fish and Game Commissioner, the former AAF Chief takes a special interest in the wildlife about the ranch. While he seldom hunts, he is keenly interested in game birds—the covey of quail that come down to feed in his garden, or the pair of wild mallards that often visit a water hole near the barnyard.

The personable General Arnold, while retired from military life, still cannot hide away completely on El Rancho Feliz. He still is constantly haled before the public on speaking engagements, personal appearances and numerous other events both on the west coast and in the east. When he is away on these trips, the General says that the things he likes most to get back to on the ranch are his workshop and his writing.

He finds time for a limited amount of writing now, but not as much as he would like to do. The retired five-star General confides that he hopes someday to write a history of the AAF in which he served for thirty-five years.

Adjoining the ranch house is the General's workshop—one which would catch the fancy of any honest woodworking hobbyist. The general is a good craftsman, and has turned out many well-made pieces of furniture for the patio.

Life on El Rancho Feliz has done the General a world of good. Ruddy-complexioned and white-thatched, he still looks a hundred per cent fit. Men half his age would feel that they've had a workout after following him around through a day's routine on the ranch. Around the corral he handles his horses like a "rough and ready" cowhand. He saddles the horses himself and mounts them spryly. Garbed in Western duds from his black Stetson to alligator cowboy boots, the General likes to take his horse "Hap" and "ride fence" around the ranch.

In the peaceful solitude of El Rancho Feliz the erstwhile

AAF head finds time to reminisce about the past, and to give thought to the domestic problems of today.

"The many domestic troubles which we now have following the past conflict will require a great amount of cooperative effort, and a lot of working together to correct them. It will require the same thought and effort to bring the United States back to normal as it did to win the war."

After commanding the world's mightiest air force, the General says he is just beginning to get rested up—getting back in shape both physically and mentally.

The Arnolds' favorite evening pastime is a game of gin rummy by the fireside. It is a novel contest. Beside the score pad is a china piggy-bank. The loser donates, and the proceeds go toward buying US Saving Bonds for their son David, who is at West Point. Father Arnold admits that he is responsible for a good share of the contributions.

At other times, in this living room richly studded with the General's mementos, they sit in a deep davenport before the log fire to spend a quiet evening. On a small table on one side of the hearth is a model of an early biplane, recalling the beginning of the general's career in military aviation. At the other side stand the colors and the General's five-star flag symbolizing the climax of his career as Chief of the Army Air Forces. These two symbols mark a span of thirty-five years as an Army flyer—thirty-five years of flying achievement, of courageous leadership, of blazing the trail for a bigger and better Army Air Force. By his strong personal convictions, by his faith in military aviation, he has done probably more than any living man to make the people of the United States air-conscious.

The genial General no doubt would like nothing better—if it were humanly possible—than to have every other AAF veteran in the United States drop in to pay him a visit at El Rancho Feliz, to look over the crops and the cattle, and to talk awhile. He would strike you as the kindest, the most understanding, and the most human man you ever met. And more than that, he is a mighty good farmer.



With ten-gallon Stetson in hand, the Air Force's No. 1 veteran pauses in flawless riding form after a canter around El Rancho Feliz.

Great Planes of the War

Third in a Series



Boeing B-17



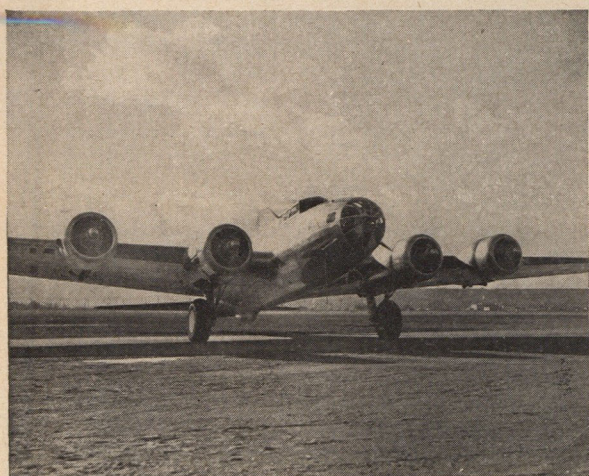
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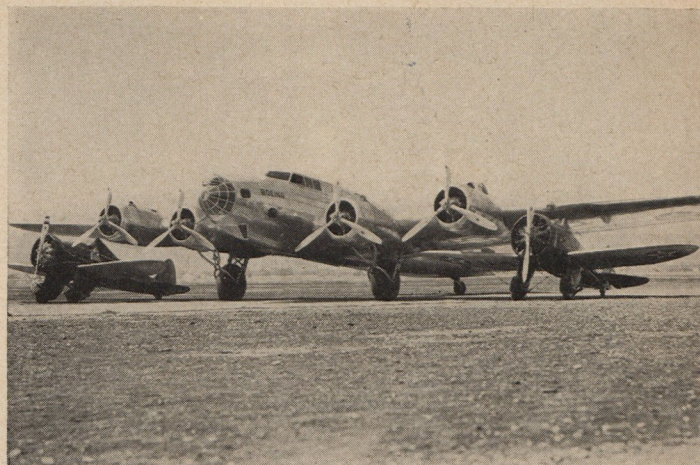
Boeing B-17 Flying Fortress



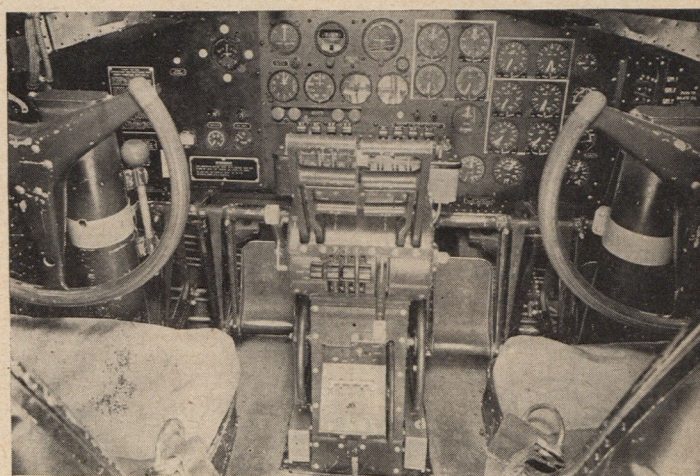
First Fortresses in action were supplied the RAF early in '41. Later they were used by their Coastal Command.



Simplified nose was the major change between C and D series shown above. Turrets came with later modification.



"Grandfather," the Boeing 299 which flew to Wright Field as the XB-17 shown with contemporary fighter type, the wire-braced 550 hp Boeing P-26.



Unlike many of its predecessors, the pilot's office on B-17s was designed to achieve a degree of comfort equalling that of contemporary airlines.

HISTORY is sometimes made in the most unlikely places. The gleam in the eye of Destiny from which the immortal Boeing Flying Fortress was conceived, occurred aboard a naval vessel during a conversation in 1930 between an admiral, who was sold on the invincibility of the battleship, and a vice president of Boeing Aircraft Company who was not so sure. The admiral was Joseph Mason Reeves. The vice president was Clairmont Egtvedt. The place was the bridge of the flattop *Langley* anchored in San Diego Harbor.

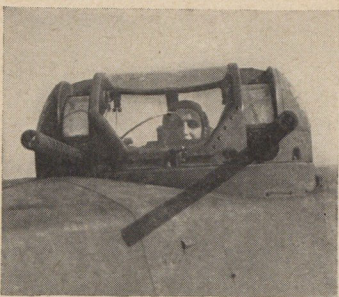
True to salt water tradition, the admiral contended that land-based aviation had nothing to match the battleship's striking power and that the big ships were the backbone of the nation's defense—the only thing that could stand and deliver a knockout blow to an enemy approaching our shores.

Seventeen years ago, the Admiral was right. The Air Force had, as its super-heavy, a scant few Curtiss Condor three-bay biplanes whose downhill speed was 133 mph. They whistled when they flew, their range was under 800 miles all told, and bomb load was all of 2,500 pounds. Clearly, the

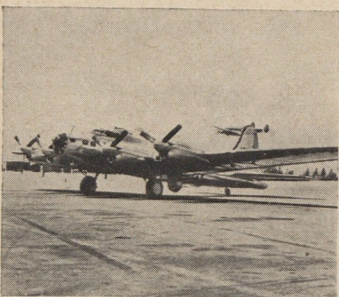
best plane of 1930 was no convincing threat to sea power. And just as clearly, the best weapon we had to meet and stop the enemy in midocean was the surface vessel. The airplane was a mere adjunct to the general defense setup.

The idea bothered Egtvedt. Like all aviation men, he thought of the airplane as the far-reaching vehicle that could whack the enemy far out at sea. Beyond doubt, the Air Corps sorely needed something that would be to the sky fleet what the battlewagon was to the surface armada, the core, the major striking vector. The problem was bandied about the Boeing shop at Seattle, but these were the days when airplanes, even for the government, were turned out on small contracts, and so, little progress was made.

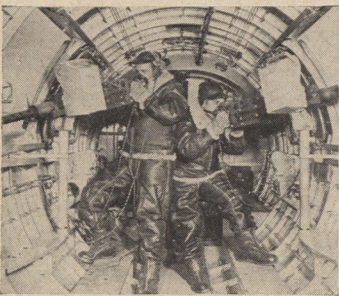
By 1934 the Army had a few fairly fast bombers. Fokker, Martin and Boeing had all built twin-engined jobs with retractable undercarriages that could keep abreast of the fighters of their time. However, in the thirties, the isolationist American mentality talked defense of the continent as if static warfare were still possible.



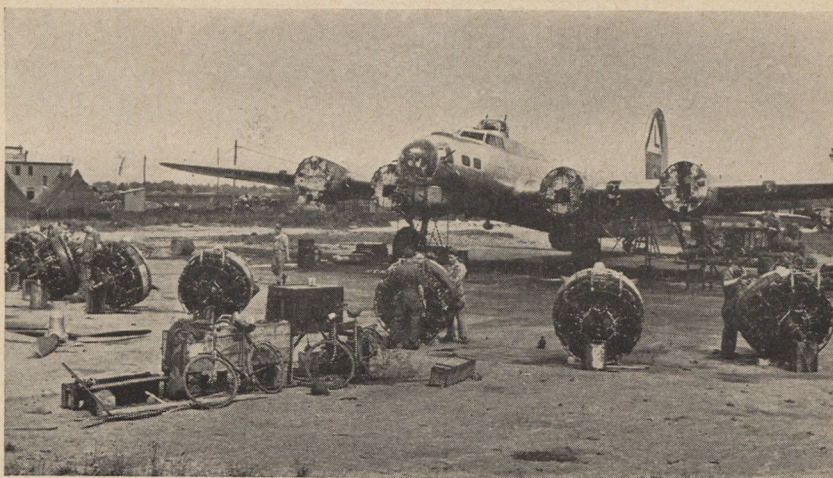
Twin fifty caliber machine guns on the upper local turret of the B-17 proved a most effective position.



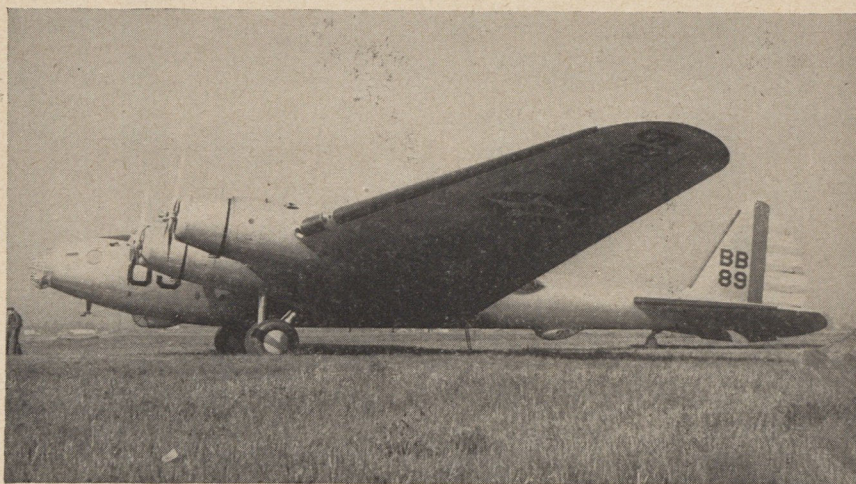
XB-38, fastest of the Fortresses, was an E, modified by Vega to carry liquid-cooled Allison engines.



Waist gunners fired from open positions in B-17s. Later, field modifications provided windows.



Changing engines on B-17Gs in England. Note chin turret, the major change from the Fs. Frontal attacks by German fighters caused this addition in armament.



Only one B-15 was ever built. Underpowered, its performance never came up to the modern bomber requirements. However, it was link between B-17 and Superfort.

Then suddenly, the Army announced open competition for a bomber whose load and range would permit it to meet an enemy fleet in midocean, carry sufficient bombload to dispatch the heaviest vessel afloat and fight its way back if necessary. It was a rather openly written bid that specified only a "multi-engined bomber." It was the opportunity Eggtvedt had been waiting for.

The job of master-minding the project at Boeing was given to a twenty-four-year-old recent honor graduate from Stanford, Edward C. Wells. The kid designer with the wild ideas came up with the first pursuit-clean bomber in the giant class. Known as Project 299, it brought every possible function "indoors" to make as little parasitic resistance as possible. The crew was provided with heated, sound-insulated quarters, a fair number of guns were installed, and adequate (for then) wind protection was given the gun positions.

During the summer of 1935, the 299 or the XB-17 was pushed outdoors.

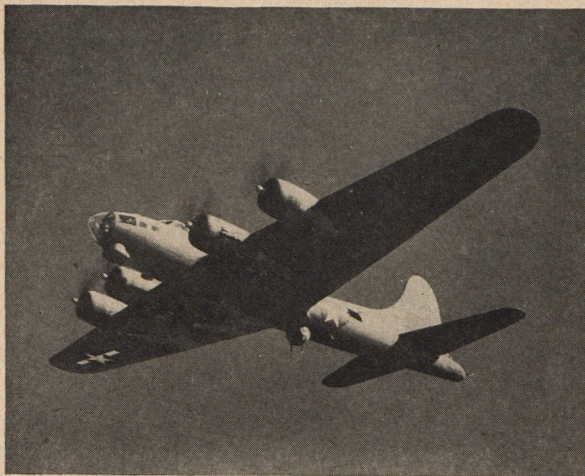
"She's the size of a fortress—" one of the awed workers

whispered. To this day, the B-17's godparent is unnamed, but the cognomen has remained. Late in July of '34, the taxi and ground tests were completed. The XB-17 was finished and Chief Test Pilot Leslie R. Tower and a picked crew flew her to Wright Field. There was little doubt about acceptance. Powered by only 750-hp unsupercharged engines, the 105-foot craft proved she could top 250 mph.

Tragedy overtook the grandfather of the fortresses though, during its acceptance test in October of that year. Someone forgot to remove the control locks. The accident cost the life of test pilot Tower and another member of the crew. However, even in the short time the XB-17 had been in the Army's possession, the design had proved itself. Thirteen more were ordered to become the YB-17, on which service tests were completed.

In 1937, a single YB-17 was produced. The major change from the thirteen that had preceded it was that it was powered by four 51 series Wright engines. They produced an even thousand horsepower instead of 930 like its predecessors.

Boeing B-17 Flying Fortress



Plastic-nose turret-chinned Gs made up the bulk of the AAF Boeing B-17s. Douglas and Lockheed built some of them.



The E-series was first to carry the revised tail, rear, top and belly turret. Over 500 of these were ordered.



Last of regular Fortresses was the B-17H, a G modified for air-sea rescue work. It carried long-range radio, radar and chute-dropped lifeboat.



The fighter-type B-40 Fortress carried an extra turret on top, double waist guns and an almost limitless supply of fifty caliber gun ammunition.

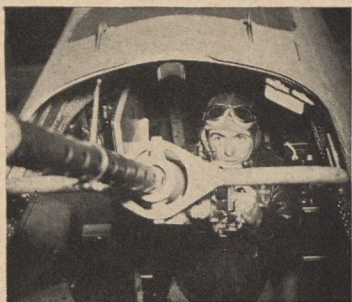
sors. The important difference was the addition of turbo-superchargers, and this alteration was historic.

As tactical considerations were made, it became more and more apparent that the Fortress was not as invulnerable as once was thought. The Civil War in Spain was proving that a bomber had to stand on its own feet defensively. Fighters were regaining the edge in speed. Another gun blister was added to the 17's side, and work continued on the nose and turret to allow it to be both a fighting and a bombardment station.

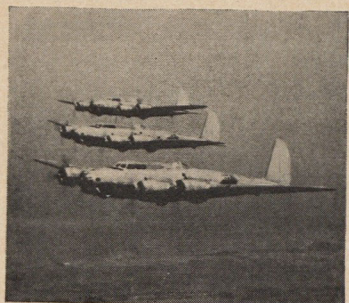
It was 1939 before the Fortresses began hitting their stride. Thirty-nine B-17Bs, which were identical with the YB-17A except for minor changes in the nose, were delivered to the AAF. During August of that year, Captain (now Colonel) C. S. Irvine hauled a payload of 11,023 lbs. over a 621-mile course at 259.396 mph, breaking a class speed record held by an Italian crew. He also took the class altitude record away from the Germans by lifting the same load to 34,025 feet—two international records in one day. The same day,

Col. Stan Umstead and Lt. Col. Leonard F. Harmon flew the first B-17B from Burbank, Calif. to New York in nine hours and fourteen minutes, an average speed of 221 mph. In November of that year, Maj. Gen. Delos Emmons led a flight of seven Fortresses from Langley Field, Va., to Rio de Janeiro. The big boys had paid off, but we were still an isolationist nation; Warsaw was laid waste and we ordered all of thirty-nine B-17Cs.

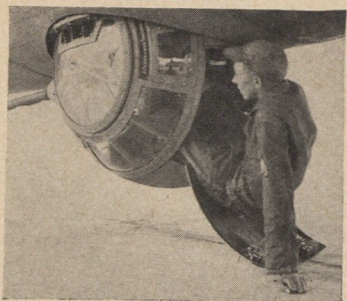
The C started the 17 on its way to being a realistic fighting machine. Power went up to 1200 hp. The side blisters had proved more drag than help and were eliminated. Side guns were folded inside and sliding windows installed. The fancy nose turret setup was dropped in favor of better streamlining, to be defended by a couple of free guns poking through the plastic. A bathtub-like gun emplacement was set below the fuselage to act as gun turret. By now, England was at war, and it was a group of RAF pilots who took the first Cs to battle over Europe. Two things were proven necessary by the British experience. One was the self-sealing tank, the other



Free gun at top of turtle back added upper fire power to F-series Boeing Flying Fortresses.



Original B-17s being delivered to Wright Field in 1937. Thirteen were ordered in that group.



The lower ball turret on B-17s had greatest possible field of fire covering the plane's entire belly.



The only visible difference between the B-17F, shown above, and its predecessor, the E, was elongated plexiglas nose, which allowed bombardier more vision and room.

was the need for more adequate armament. The new type tank was installed in the D-series which emerged during 1941.

It didn't take long for combat crews to start sticking improvised tailguns in old Ds. When the Es emerged, they had a lengthened fuselage, reshaped tail and power turrets on top, bottom and tail, besides the waist and nose guns.

The Boeing service crews followed the 17s into the field. Out of the service woes encountered in the Sahara, in Alaska, in India and in Europe, came the improved F series. This was the first block order for Fortresses; 2300 were procured.

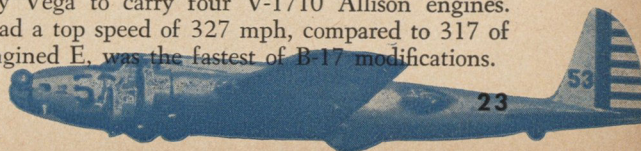
The first Fortress operation over Europe from England was the strike against Rouen on August 17, 1942, led by Brig. Gen. (at that time) Ira Eaker. They hit the rail yards, they met the enemy and Sergeant Kent L. West of Alabama got the first FW-190.

When their recognition documents were captured in France, the B-17 was labeled "four-motored fighter plane." The same poster indicated that the Boeing had a fire-power weakness forward and below. This resulted in those frontal

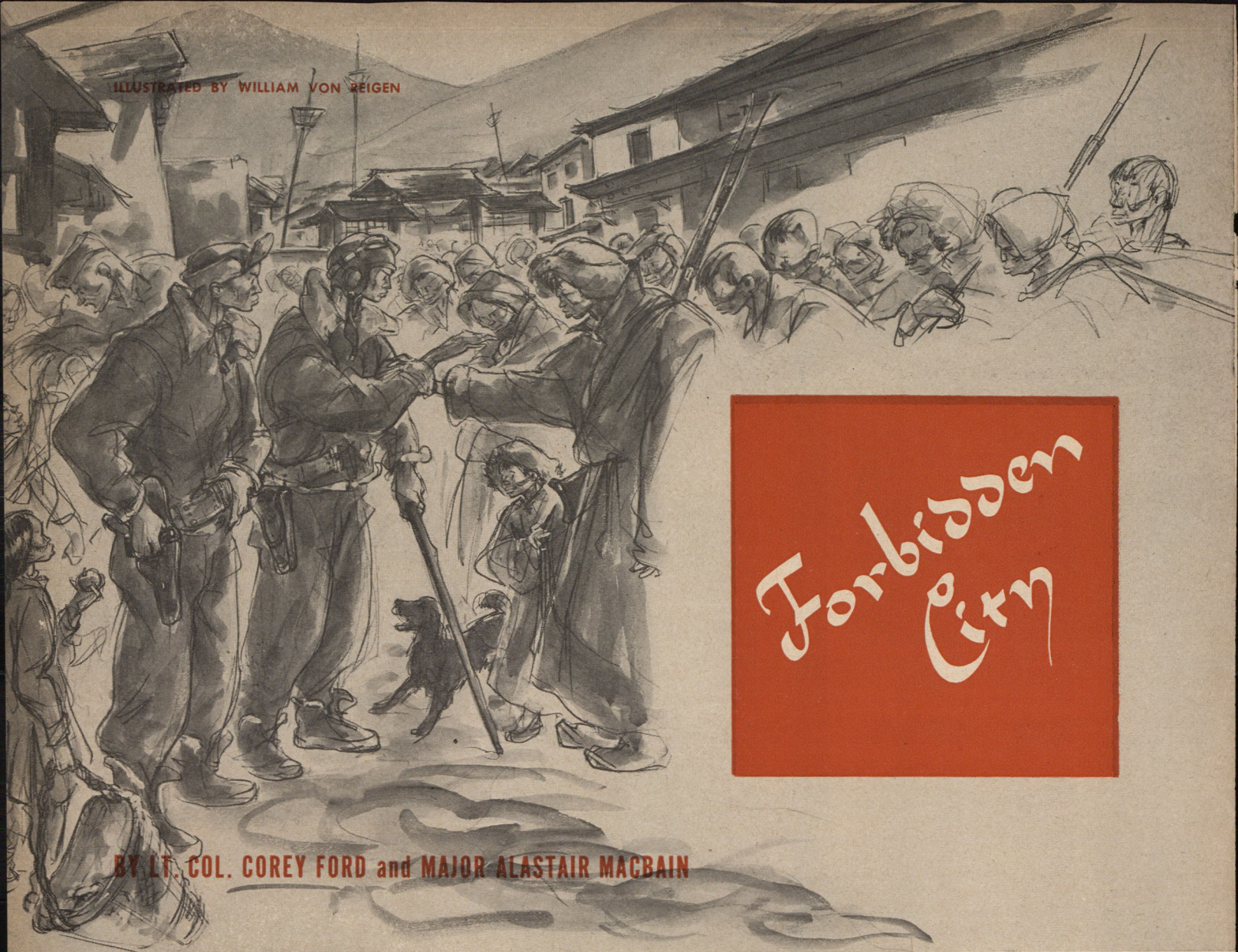
passes the FW 190s were making at Fortress formations, and in the chin turrets that were the main variant between the F and G series.

There were three other interesting variations on the B-17. The best known was the B-40. These were Vega-built B-17Fs, which were loaded up with extra guns and ammunition, used in a score of attempted dodges as escort fighters. The main disadvantage in escort duty appeared to be the fact that, while the bombers they were ramrodding lightened when they dropped their loads, the B-40s were still carrying great loads of 50 caliber ammunition, and could not keep up on the homeward leg. The establishment of long-range fighter escort by P-51s eliminated the need for these conversions.

The B-17H series was essentially a G, rigged for air-sea rescue. It carried radar and a parachute-drop lifeboat slung under the fuselage. Another variant was the XB-38, a B-17E, converted by Vega to carry four V-1710 Allison engines. This craft had a top speed of 327 mph, compared to 317 of the radial-engined E, was the fastest of B-17 modifications.



ILLUSTRATED BY WILLIAM VON REIGEN



BY LT. COL. COREY FORD and MAJOR ALASTAIR MACBAIN

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THEY saw the black thundercloud ahead of them, and then someone yelled, "There's rocks in it," and Lt. Crozier yanked the stick and they did a one-eighty just in time. They were at 25,000 feet, he said, and the mountain was several thousand feet higher: almost as high as Everest. All around them the peaks of the Himalayas were uncharted reefs in a solid grey ocean of cloud, and they did not know where they were. Once through a hole in the overcast they saw the lights of a town they thought was Chabua, and circled it, but they could not raise the tower. Their gas was gone now, and first Number One and then Number Two engine coughed and cut out, and Crozier set the automatic pilot and screwed down the key, and one by one the five airmen jumped into the black rushing night.

They did not know where they were when they landed. They made their way down the cliffs to the river, and still they thought they were in the Assam Valley: though the Brahmaputra seemed to run in the wrong direction, east instead of west. Even when the strange flat-featured natives surrounded them and plucked curiously at their clothes and jabbered in an unknown language as they gave them barley bread and bitter tea with butter and salt in it, they thought they were somewhere in India. But one native in a

black fur cap spoke a little Hindustani, and for the first time they learned they were in Tibet; that the lighted town they thought was Chabua was the fabulous Forbidden City of Lhasa; that their airplane had been the first in history to fly over its secret heart. They were the only Americans who had ever set foot in this far-off corner of Shangri-La.

Already, back again at their home base in India after forty-two tortuous days by horseback and on foot across the top of the Himalayan range, the whole adventure seemed unreal. Crozier opened his foot locker and took out a pair of black leather Tibetan boots, lined with wildcat fur and shapeless to fit either foot; but they were only curiosities now, and it was hard to believe he had actually worn them while climbing the 19,000-foot Gopa Pass in the bitter cold. Private Huffman had some 2000-year-old coins, or so the sad Bhutanese monk told him, and of course everybody had Tibetan bills pasted on their Short Snorter rolls; but the rest of it—the Holy City of Lhasa which only five other Americans in history had seen, the narrow streets where no wheels ever turned, the red and gold palace of the Dali Lama with great mastiffs chained to guard its gates, the chieftains with their maroon robes and shoulder-length earrings and glittering pagoda-shaped hats—was only a dream. A bad dream, Cor-

Lieutenant Crozier and his crew had flown their C-87 where no fliers had been before. But life in this Tibetan village was too incredible to believe. Maybe it was just a movie they had seen

poral Spencer felt. Corporal Spencer says there's nothing in Tibet that you wouldn't find twice as good in Rockville Center, L. I. Personally, Corporal Spencer is all through with adventure. "I want to go back to Rockville Center," he said, "and what's more, I want to go by train."

The thatched basha hut steamed in India's monsoon heat; they had peeled off their shirts, and sweat dripped off chins and trickled down naked chests as they sprawled on cots and talked. There were only four of the original crew now: Lt. R. E. Crozier of West, Tex., the pilot; the co-pilot, 2nd Lt. Harold McCallum of Quincy, Mass.; Cpl. Kenneth Spencer, the radio operator; and Pfc. John Huffman of Straughn, Ind., the assistant engineer. The fifth, Cpl. William Perram of Tulsa, Okla., had been killed in an airplane crash last week. They kept interrupting each other, and nobody paid any attention to rank; you forget differences like rank when you live through a wild adventure together, when you don't know if you'll get out alive or not. Bit by bit they pieced out the story, like remembering last night's distorted dream.

They all remembered the jumping; that part of it was real enough. Bailing out of a crippled plane is only too real to these Air Transport Command pilots who fly supplies over the Hump daily from India to China: the toughest unprotected combat flying in the world, General Chennault calls it. There are lurking Jap Zeros, and ice, and hundred-mile gales, and sometimes you fly the whole way through solid overcast, and if your radio reception goes sour and you lose your way, then the chances are you hit the silk. That was what had happened to their C-87 cargo plane, on its way back to India from Kunming: off its course, lacking radio contact, five hours overdue and out of gas. "I'm taking a train home," Corporal Spencer said firmly.

They pulled their ripcords the moment they hit the slip-stream; probably that saved their lives. McCallum dropped less than five hundred feet, and landed so hard he was knocked unconscious. Crozier's chute had barely blossomed as he hit the ground; he rolled toward a cliff, but the silk caught in a projecting ledge. Huffman's feet tangled in the shroud-lines, hanging him upside down, and he kicked himself free just in time to avert a broken back. The chest-buckle of Spencer's chute flipped up and slashed his chin clean to the bone: "See that scar?" Perram, dangling over a precipice, broke his shoulder as he swung against a canyon wall; somehow he managed to haul himself to safety with his good arm. Across the valley their careening plane struck a mountainside with a great burst of flame, and then there was silence.

They were scattered for a mile along the ridge, and in the darkness they knew it was not safe to start searching for each other. Crozier tried to make a fire out of some tough weeds, but they were too green to burn, so he rolled himself up in his chute and waited for daylight. "It was 17 below zero, and I just lay there with every muscle hopping." It was funny to think of the cold now, with sweat running off our foreheads in rivers. "I couldn't sleep because the air was so thin I had to gasp for breath." At dawn he started calling, and located McCallum and Spencer; Huffman and Perram, on the other side of the ridge, couldn't hear him. Bruised, skinned raw from head to foot, they worked their way painfully down the cliffs to the valley, and for two days wandered dazed along the river until they came to a village. The natives crowded around them, grabbing at their clothes, chattering excitedly; the three airmen mistook their curiosity and began to retreat in alarm, Crozier firing his pistol over the heads of the villagers once or twice to warn them back. "There were a lot of swastikas painted on the houses," he said, "and that

scared hell out of us, till we found out they were only religious symbols."

Fortunately, McCallum could speak some Hindustani; he tried a tentative "Salaam alicum" and a villager answered "Alicum salaam" and they realized they were friendly. "We were so tired we could hardly walk, and to make it worse the little kids had never seen a white man before, and they clung onto our hands and stared up into our faces." Dragging the eager Tibetan children on either arm, the three staggered into a house and sprawled onto padded mats and drank hot goat's milk and ate black unleavened bread. The room was heated by a small grate, with dried yak dung as fuel. Yak dung is a medium of exchange all over Tibet, Crozier said, even more valuable than money.

There in Sinow Ulla's house they were treated like children; the Tibetans could not believe anyone so young could be flying airplanes so far from home. In Tibet a boy isn't considered a man until his father dies, and sometimes a Tibetan boy will be forty years old. Spencer, who is only nineteen, was completely incredible to them; they petted and babied him until he was fighting mad, and threatened to beat up the next so-and-so who tried to tuck him into bed at night. Crowds of people followed them wherever they went; when they headed for a clump of trees for natural reasons, they said, the entire village tagged after them and stood watching them in an expectant circle. They tried sneaking out to the trees at night, but the whole town accompanied them, holding lighted lanterns so they could see.

Word of their presence spread: the headmen of the surrounding villages came to call, dressed in fur-lined maroon robes looped under their arms, long hair wound around a carved bone ornament and tied in a topknot, fantastic three-foot-high hats like inverted cones, a single gold earring in their left ear. "They figure that one earring is more noticeable than two," Crozier explained. Evidently the chiefs were dignitaries of considerable importance, for the villagers stepped off the sidewalks as they passed and sucked in their breath deferentially. They brought the airmen gifts of several dozen eggs—extremely rare in Tibet—and mutton and cigarettes; and they sat in a solemn circle and talked. Sinow Ulla translated: "They say they will send word to your government in India."

McCallum gasped: "India? Where the hell are we now?"

Sinow Ulla said "Tibet" and the three airmen looked at each other and Spencer said in a low voice, "Oh, my naked butt."

They persuaded the chiefs to send a messenger from village to village, in case Huffman and Perram were in the vicinity; there had been no word of them since they bailed out. Crozier scribbled a note: "We are in the village of Tsetang. Join us here. We are all in Tibet, God knows how. Keep your chin up."

"I got the note the next night," Huffman broke in eagerly. "I'd found their footprints along the river, and I tried to follow them, but I must have passed them in the dark. I met some natives who wanted my parachute shroud-lines to trim their robes with, so I swapped some pieces of line for tea and bread. I managed to make them understand I wanted a smoke, and they dug up an old pack of Guinea Golds. So help me. They were dry as dust and





Before the crack-up, Lt. Crozier assumed he was flying over Assam Valley. It was some time before he learned how wrong he was.

must have been brought into that town twenty years ago. I gave them my jungle knife to show we were friends, but that night when I went to bed I found the knife under my pillow. I guess they wanted to show they trusted me, too."

"Tell about the girl," Spencer said.

Huffman looked embarrassed. "Oh, that."

"Tell them," Spencer said.

"It wasn't anything, just that one old man kept staring at me after I'd gotten into bed, and he said something to the other villagers, and then he grabbed this young girl by the arm, and brought her to the bed, and sort of motioned me to move over, that was all." He scowled at the toes of his GI shoes. "Tibet people are very hospitable," he said.

"You can do twice as good in Rockville Center," Spencer said.

"Anyway, as soon as I got the note, the natives gave me a horse and some money, and guided me to Tsetang village where the rest were, and it was sure good to see them. We all made a dive for each other. I said to Lt. Crozier, 'It's sure good to see you, sir' and he said 'Forget the sir, we'll probably all be calling each other worse than that before we get out of here.'"

Their prospects of getting out did not look any too bright. Parram joined them that same night, his broken arm swollen and paining him considerably; now they were doubly anxious to be on their way. They appealed to the local Commissioner, a vast amiable Buddha in a bright yellow silk robe who looked like something sitting on something, Spencer said, and who served them tea and tinned English biscuits; but he was politely discouraging about their chances. A morose Bhutanese monk who spoke English came a hundred miles to console them, but he only added to their gloom; the hills were full of bandits, he told them sadly, the trade routes were snowed under, they would need a whole company of soldiers to protect them if they hoped to reach the border alive. And then one night a little Nepalese doctor from the British Political Office named Sahib Ra Bo appeared in Tsetang, as mys-

teriously as though he had materialized out of a bottle, and promptly took charge of their affairs. Evidently, Doc Bo wielded vast influence in the countryside: he ranted and pounded his silver-topped cane, he ordered the local chieftains to give their American guests the best of food and wine. Within two days he had assembled horses and guides. Smiling and polishing his hands, he announced that he personally was going to lead them over Gopa Pass to the city of Lhasa.

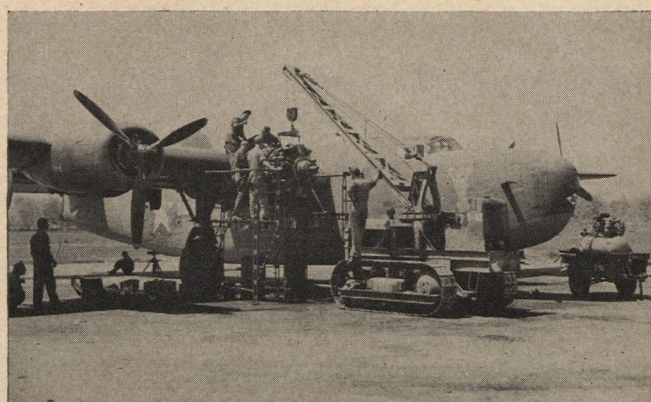
The whole village turned out to see them off. The chiefs gave their parting guests thick fur robes, fur-lined boots, and wool blankets—made in Japan, they were a little startled to observe—and a good-luck scarf for each to wear, woven of wood fiber but soft and smooth as silk. As they followed the trail out of town, they passed a file of Tibetans moving up and down the mountainside like ants, carrying off the remains of their wrecked plane. They could see the broken fuselage lying in a clearing, almost completely stripped by now. One engine had been hurled clear and was frozen solid in a pond; fifteen natives were trying in vain to pry a propeller out of the ice, unaware that a ton of motor was attached to the other end. Spencer saw one native dragging away the plane's radio; as he watched the native took an axe and chopped it in half so he could carry it more easily.

Hour after hour they climbed the narrow path toward the divide; the ancient stone steps had been hacked out of an almost vertical ledge, and the horses stumbled uncertainly along the very edge of space. Sometimes a rock would be dislodged, and drop a sheer mile straight down. They had to rest the horses every few minutes, due to the lack of oxygen and the extreme cold. When they stopped for a lunch of cold goat's meat, it took three men to help McCallum back into the saddle. Little Doc Bo kept urging them on—"Only one more mile to go"—and at last, at 18,000 feet, they reached the summit, and below them in the valley they saw a winding river and beyond the river, in the distance, the fabulous domes and turrets of the Forbidden City glinted in the thin white sunlight.

Somehow Doc Bo had sent word ahead of their coming; they never knew how. A huge silk refreshment tent was pitched on the river bank, and inside it was a scene out of the Arabian Nights: rich Persian carpets on the floor, a long banquet table laden with silver and exquisite china, exotic cakes and sweetmeats, barrels of a strong Tibetan barley beer called *chung*, bottles of brandy, and a Chinese *saki* wine that had the potency of 100-octane gas at that altitude. They filled silver flagons and drank a *gambai*—bottoms up—to their hosts, and they filled the flagons again and they gambailed Doc Bo, and they gambailed Tibet, and they gambailed America, and they gambailed the Dali Lama, and they gambailed President Roosevelt, and Spencer gambailed Rockville Center, L. I., and about that time they noticed that the tent was revolving

(Continued on page 58)

It takes a derrick to lift a C-87's engine, but Tibetan natives had tried to lift one out of a frozen pond with bare hands.





DOWN TO EARTH WITH VHF

BY T. P. WRIGHT, *Administrator of Civil Aeronautics*

AN airway to anywhere for all fliers, will be one result of the change now under way from low to very high frequency of all airways aids.

This is the outstanding feature of today's program of the Civil Aeronautics Administration, begun a year ago and now well under way with signals and communications on 40,000 miles of airways in the continental United States ready for changing to the new, static-free very high frequency band. Eventually, through the use of omni-directional VHF radio ranges, any pilot will have radio guidance in the cockpit of his plane between any two points in the United States. At the same time, the pilots of the scheduled air carriers and as well the other pilots who fly planes equipped with the latest instruments, will have their paths through the skies marked still better than they are now.

The change-over program marks the 20th Anniversary of the CAA. Since 1926 the CAA and its predecessor organizations have invented, developed and applied the best available flying aids. Inevitably, these aids first have been aimed at providing "trunk line" routes across the country. Emer-

gence of private flying as a sizable portion of our aviation activity now makes necessary the kind of aids which the pilot in the trainer and the pilot in the transport can both use safely.

The history of the development of our 40,000 miles of airways rests mainly upon the collaboration of practical pilots and engineers. The first night flying aid, the revolving beacon, came from just such a combination. Pilots of the Post Office Department and engineers trained in the science of optics and light stood in an open field near Washington and swung the beam of a strong searchlight back and forth and arrived at the fundamental and practical truth that this kind of a light was the most effective method of guiding pilots in the air. From another branch of government, the Coast and Geodetic Survey, they obtained the first beacons for this aid to air travelers.

Since that time, radio has emerged as the most effective means of giving signals to the pilot in flight, communicating with him from the ground and assisting him in the problem of landing in bad weather. The extent to which radio can

We already know how to take off and fly on instruments, but landing is different. CAA is out to hurry the day when the job of getting a plane on the ground will be as easy as getting it off

WITH VHF

go in the future is fantastic, even viewed from the present point in our knowledge. We are assured, for example, of a development by which a pilot can see on a screen in front of him, an accurate picture of the airport he is approaching, all the planes which are in the air around him, and all the obstructions along his approach path. This involves radar and television, and the development work is under way now.

But more immediately, we are concerned with making all air travel safe, and scheduled air travel both safe and completely regular. It must be regular if it is to compete successfully with surface forms of travel. Regularity of schedules today means the ability to land in the worst weather conditions. We already know how to take off and fly on instruments with zero-zero visibility.

On the subject of instrument landing aids, the CAA is following a policy very well established in the United States, and one which has recently been adopted for international standard use. The Radio Technical Commission for Aeronautics, consisting of representatives of the airlines, airline pilots, radio manufacturers, CAA, Army and Navy has recommended the CAA's instrument landing system for standard use nationally. The Air Coordinating Committee, composed of the Assistant Secretaries of Commerce, Navy and War, adopted the same standard. The Committee of Technicians of the PICAQ, meeting in Montreal, adopted the CAA's landing system with GCA radar as auxiliary equipment, for international standard use.

The same landing system was installed during the war in scores of places about the world by the Army which designated it as SCS-51. A similar system was standard also with the Navy throughout most of the war, radar having come into general use during 1944. The airlines have adopted the CAA's system and have given the CAA a list of 110 cities at which they think it should be installed, indicating the priority of each city in the construction program.

In view of this well-established policy, the proposal that the CAA drop everything and install nothing but GCA for instrument landing has served only to confuse the public. The CAA recognizes the place of GCA in instrument landing and intends to use it in accordance with the established policy. A practical fact of great importance is that skilled instrument pilots almost unanimously prefer the indi-

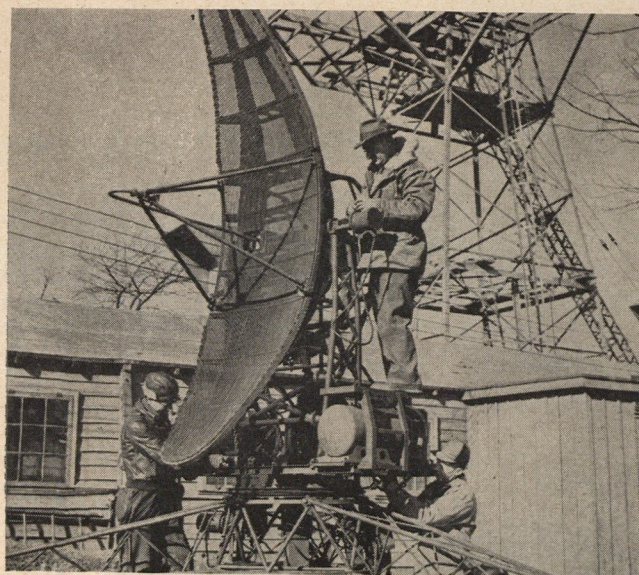
cations given by ILS in the cockpit of the plane for their use in making instrument approaches. Pilots less skilled in instrument flying prefer to be aided from the ground by the operator of a GCA set. It is for the use of the airline pilot—a highly skilled instrument pilot—that the CAA is providing instrument aids for approach and landing.

Another practical fact about bad weather landings is that very few landings are made only by instruments. Reporting on 700 landings which he made during the war in the Aleutians, Lt. Col. Patrick R. Arnold emphasized that he had made only approaches on instruments, and that the last few feet of descent and the actual touchdown are made with the pilot having clear sight of the ground and the runway. Even in the Aleutians, which are famous for their bad weather, he said, there is always 25 to 75 feet of ceiling permitting vision during the last stages of the landing.

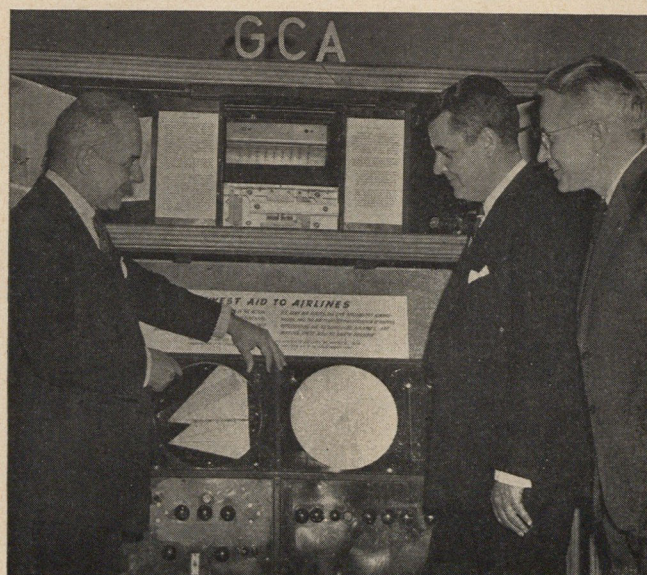
The CAA is ready now for the beginning of instrument landing by scheduled air services. More than 70 instrument landing systems will be installed at strategic points about the airways for bringing airliners in on instruments by April 1, and the CAA has been informed that airline planes will have the last piece of the necessary airborne equipment installed in all planes by early Spring, and all pilots trained in its use.

The system is the CAA's three-element instrument landing system which was adopted as standard by the Army during the war and approved by the airlines. This system was ready for use when the war started, but military needs pre-empted all the available equipment.

War has accelerated the development of radar and has interjected that development into the civilian aviation picture. The CAA has been operating on very low appropriations for development work in radio and radar, only about \$150,000 for fiscal 1946, and \$300,000 for fiscal 1947. The CAA has been loaned three sets of Ground Control Approach equipment by the Army, and hopes to obtain \$500,000 in next year's budget to purchase these sets. They are being installed at Washington, La Guardia, and Chicago where the CAA will conduct service tests. The Air Transport Association is paying for the installation, and the CAA is detailing 21 men for operation and maintenance from other sections of the Airways organization. A request for \$1,600,000 has been made to install 20 more GCA sets.



Workmen at National Airport in Washington install big radar scanning system, part of a million dollars worth of equipment to chart and control approach of planes from 200 miles distance.



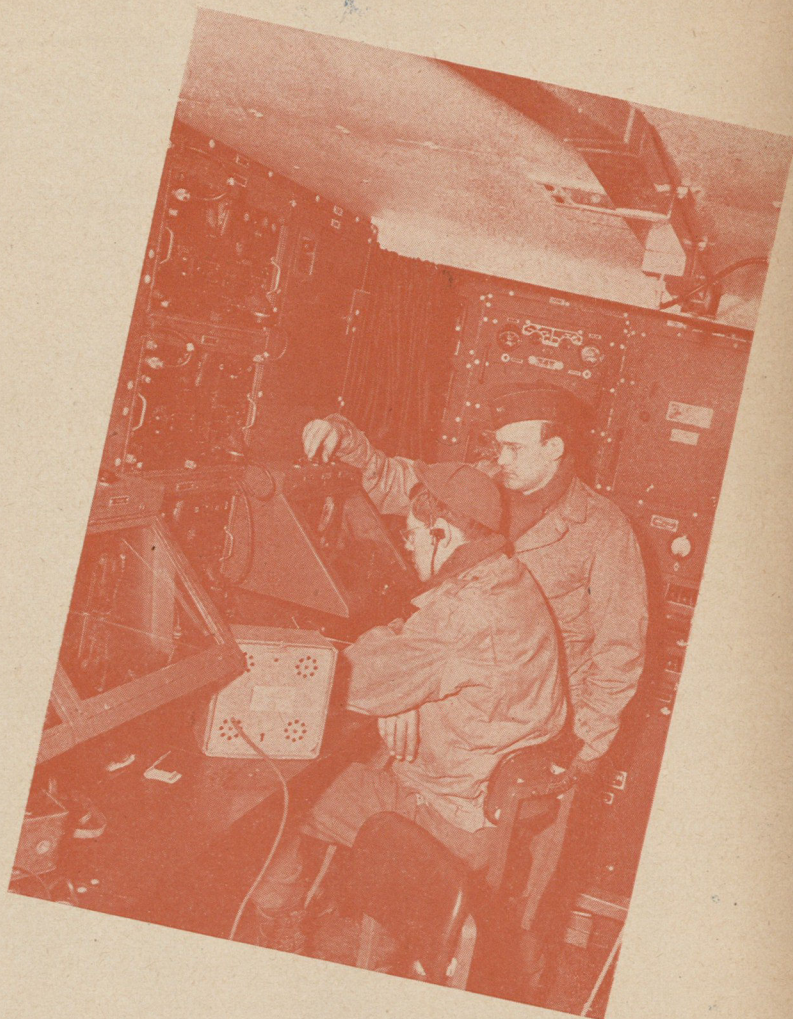
General James H. Doolittle, left, explains to C. B. Monro, center, President of Capitol Airlines, and J. C. Leslie, Vice-President of Pan American, details of Ground Control Approach system.

Assuming its budget request is approved, an early application of radar to the airways will be the use of 25 sets of scanning screens for use in airport towers which the CAA operates. These sets, costing about \$50,000 each, will enable the controller in bad weather to "see" the planes which he is bringing in to land, thus greatly improving present methods of traffic control at the approach stage, leading to greater facility in effecting safe landings as well as regularity.

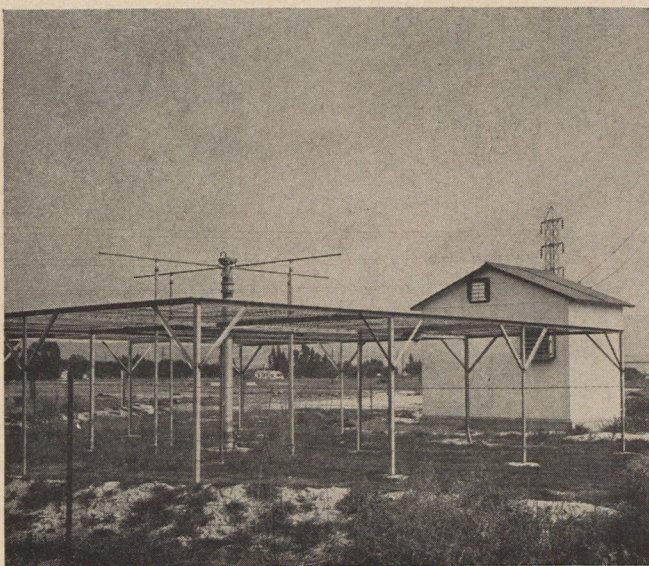
The CAA has been criticized for not providing for the private pilot as well as for the commercial pilot, since no provision is made to bring him in for landings in zero-zero weather. It is proper to identify the private pilot very accurately. If he is the typical private pilot flying a small personal plane, he is not going to get into the predicament of having to make an instrument landing. He is not likely for some time to come to have instruments in such a plane, since the equipment necessary will cost almost as much as the plane itself, and will constitute almost the weight of a passenger. It is true that the pilot of any kind of plane can be directed to a landing by GCA, provided he has adequate communications equipment aboard, but until the service test at present contemplated is successfully completed and funds for more equipment and for its operation and maintenance are available, the CAA cannot install it universally.

If by private pilot we mean the few individuals who have expensive planes, who themselves have adequate knowledge and experience to fly "on gauges," and whose planes are completely equipped, the airways system is designed for his use as well as that of the commercial airline pilot. He can land safely, using the ILS or GCA.

The private pilot, for the present, will be interested principally in the shift to VHF. This change is to be gradual and not completed on a national scale until 1949. The CAA will continue to operate the low frequency aids until it is mutually agreed by all concerned that it is logical to discontinue these aids. The VHF omni-directional range, of which 561 will be installed in the country, gives an infinite number of courses which can be flown by means of a simple receiver, a course selector, and a left-right needle indicator. This means, of course, that a pilot can fly by radio from Sauk Center to Three Rivers just as the airliner flies from Kansas City to Chicago, and on the same kind of radio aid.



An idea of complexity of GCA equipment is indicated in this picture of one of Army's installations. Whether or not GCA is to be preferred to ILS is matter of considerable current discussion.



One of most complete instrument approach systems in use is the ILS installation at Lockheed Air Terminal, Burbank, California. System directs pilots through fog for visible, contact landings.

APRIL, 1947



Author T. P. Wright is working toward day when pilots will be able to see on a screen in their plane a picture of airport they are approaching and of all planes in surrounding pattern.

COLD FACTS ABOUT A COLD COUNTRY

BY MAJOR BUD HUBER, *Hqs., AAF*

DURING the war about twenty bombers of the Eleventh Air Force took off from Adak one morning to bomb the Japanese Kurile Islands. Only ten returned. Why the ten planes returned is still puzzling me. From the time Adak was first occupied by American troops, the place was tagged as "worse than death." Apparently half of the bomber crews agreed. I have no argument with their choice. Frankly, I'd hate to come back to that grim, drab hunk of rock which has as its only claim to fame the fact that it is the spawning ground of the williwaws. On second thought, it has two additional claims to fame: the VD rate is zero-zero and there is no AWOL problem.

The day we slithered through a rock passage, over the menacing whitecaps and touched down on Adak's long runway the sun was out. We had brought "super presidential weather" according to the colonel who commands the base. He told us they figured Adak had three kinds of weather: presidential, congressional and investigating committee.

The whole morning on our day of arrival was sun-drenched and the photographers—Bert Brandt of Acme, Joe

Operation Frigid proved arctic rescue must be fast to be effective. 10th Rescue Squadron sled team, above, carried "victim" to helicopter site. Right, cold aids Frigid version of Indian rope trick.



AIR FORCE

Conclusions from Operation Frigid call for a total revision of equipment and thinking for Arctic defense

Jamieson of AP, George Skadding of Life, and Elton Lord of the War Department—had a field day. But all during this never-before-experienced sample of Adak's best behavior, the writing men and we "conductors" sat inside a smoke-heavy room for an hour-long briefing. After lunch we went into the field to watch Task Force Williwaw go through some tough paces.

Two minutes after we reached the first site, the Adak weather did a Mark Twain performance. It changed every minute. It rained, it blew, it snowed, the sun burned down. The fog bounced up and down, curled and swirled. We were cold and warm, wet and dry—all within the course of one short afternoon.

In some respects, Adak might be said to be in the "banana belt," to use the term Jack Hanley of the San Francisco INS office came up with in a story. The temperature never touches zero, stays more in the neighborhood around freezing, although the sideways rain that starts falling somewhere up in Siberia and finally hits Adak is piercing enough to puncture through about everything the Quartermaster has come up with so far. It's tough, though, on that tundra-covered rock when the winds come, for it has been figured by a conscientious medic that a full-grown williwaw is equal to forty degrees below zero in what it does to body temperatures.

Still, because Adak was so well behaved when we were there, it did seem like a "banana belt" spot compared to our stay in the interior of Alaska.

The day we landed in Alaska—and we came direct from Edmonton to Fairbanks—the temperature was playing around forty below. By that time we were wearing multiple layers of Arctic issue clothing wiggled into during the flight up. We literally crawled and stumbled down the stairs, weighted down by the bulky clothes . . . to straighten up stark staring as we were greeted by a smiling girl from the public relations office wrapped in a spring-weight camel's hair coat, wearing no hat—not even ear muffs—and sporting 52-gauge nylons! What a bunch of sissies we were with our umpteen layers of heavy stuff! A few of the more sporting souls started unpeeling. It was surprising, though, how fast those guys got the outer layers back on again after only a couple of minutes out on the field. By then, too, the glamour gal had disappeared, so it was no blow to the ego to creep back under the unbecoming clothing.

The next day, and several dreary days thereafter, we spent learning what the ground boys are up against as Task Force Frigid finds out the hard way what happens to men, machines



Boeing B-29s based at Elmendorf Field, Anchorage, Alaska, took part in the arctic exercise. Flights, like this formation over Mt. McKinley, accentuate the difficulty of operation at fifty below zero.

and guns in sub-zero climate. As far as I am concerned there is no praise high enough for that force of hardy men. What they are enduring defies imagination. The contribution they are making for the benefit of America in the future is beyond calculation. For months they will continue to work, live, eat and sleep in temperatures at record lows, touching as they did on one of the days we watched them, to sixty-two degrees below zero! Winter-hardened Alaskan sourdoughs grudgingly admit that this winter so far has been the toughest they care to remember. Yet GIs from Texas, the Carolinas, from nearly every temperate state in the country, are up there taking it.

After several awesome days watching the Frigid Project men perform military miracles, we looked in on the AAF at Ladd Field.

As a preliminary point, and in a serious mood, I'd like to get this fact down now: despite what might have come out in newspapers and magazines and over the air up to the time of this press tour, there is no heavy concentration of AAF men, matériel or machines in Alaska. Seward's bargain is not ready to drop off into the Bering Sea from the weight of our personnel and matériel. Only two airfields up there are bases for AAF activity simply because we have only two fields which can be used. At Ladd Field, the 62nd Squadron of the famed 56th Fighter Group is learning how to make P-51 Mustangs behave in that mean weather; and at Elmendorf, outside of Anchorage, the 28th Bombardment Group (VH) is going through its rotation winter training with B-29 Superfortresses. Other than about forty different planes at Ladd Field undergoing carefully calculated cold-weather tests, that is the extent of the AAF's combat-type plane activity in Alaska. ATC and Troop Carrier have small units up there. Aerial photo work and weather reconnaissance are carried on by the 46th Reconnaissance Squadron. The Tenth Air-Sea Rescue Squadron rounds out the roster, after taking into consideration the necessary service outfits needed for maintenance. The Alaskan line-up isn't much and certainly does not bear out many of the speculative stories getting big play of late in the press, magazines and over the ether.

New weapons were tried on Operation Frigid, like this JB-2 buzz bomb, being started at Ladd Field. By using pre-heaters and gasoline primer, warming up time on P-80 was reduced to ten minutes.



B-24 crew takes a final check before Frigid mission. Such tests demonstrated need for complete re-engineering of equipment in order to make defense of the arctic from the air mechanically possible.

COLD FACTS ABOUT A COLD COUNTRY

But, even with our limited operations in Alaska today, the AAF is learning a lot. Already it is clear that many of our planes, much of our matériel, and even some of our men can't take the temperatures much below minus thirty-five. Thirty-five below is the absolute minimum, the danger point for flying. It is now SOP up there that no plane, except for scheduled tests, can get clearance if the thermometer is bouncing below thirty-five.

At anything below minus thirty-five all aerial photo work stops. The big cameras freeze up at the extreme temperatures and at present there is no known remedy. And when the mercury drops down out of sight the recon outfit is hard put to make even the necessary weather observation flights.

That the extreme cold raises hobs-hell with the planes is obvious. Different metals contract to different degrees. Rivets sometimes pop, fuel and oil lines break, fluids freeze, and tires get as hard as the old K-ration biscuit and stay flat on the bottom so that when the plane gets under way it bounces along as though it were hooked up to an eccentric gear. A sixty percent anti-freeze solution (forty percent water) solidifies at minus sixty. Specified oil, if left on a hangar floor, soon takes on the appearance of a fudge patty, and, if left outdoors for several hours, gets as hard as rock candy. The P-51s are tucked wing-tip under wing-tip in a hangar, which is heated, so the starting problem for the fighters, because of congealed oil, is reduced to a minimum.

Any metal will freeze bare flesh to it when the mercury is at minus forty. Linemen must, therefore, do their tinkering while wearing layers of clumsy mittens. In close, precision work a man can risk removing his mittens for two minutes—no longer. Exposure beyond two minutes means severe frostbite. It is figured by our military men in Alaska that each degree below zero means a loss in efficiency of two percent per man. Consequently, at minus fifty, a man's efficiency is zero.

The big problem in the low temperatures around an airfield is the so-called ice fog. Actually, it is not a fog, and ironically, is man-made crystallized moisture drops formed by the condensation of the heat from chimneys, human breath, and the exhaust from vehicles and planes.

On one of the days during the Task Force Frigid exercise the plan called for four P-51s to come over in a mock strafing attack. While we stamped around in thirty inches of snow on a sixty below zero day fast turning to night, marveling at the fortitude of the ground men taking part in the rugged exercise, we kept watching the leaden sky for the fighters. They never came. I took a bad beating for the rest of the day from the ground boys and the press men.

The next day we learned that the Mustangs had rolled out of the hangar, warmed up on the line, and then taxied for the take-off. By the time the first two planes got set for the take-off the ice fog they had manufactured while taxiing was so thick the leader, Lt. Colonel Gerald Johnson, wouldn't risk getting off the ground. The runway was blanked out less than fifty feet ahead of him.

No one knows yet how the problem of the ice fog is going to be licked to allow several planes to take off in short time. Present anti-fog measures are useless against this new enemy.

One thing is sure, and that is that it takes GCA (radar Ground Control Approach) to get into Ladd Field at Fairbanks. We learned that the hard way.

It is a strange phenomenon, this ice fog. As we approached Fairbanks we could count the wires strung on the phone poles below, but just as we got to the outskirts of the city the sticky stuff, as thick as the proverbial pea soup, clamped down in the shape of a teacup over the entire place. The queerest thing about the stuff is that while flying over it you can look down through it and make out the ground quite easily, but flying into it and looking ahead or on an angle, not even a svengali can pick out a mountain! And the mass of ice particles goes right down to the ground. Even when the GCA controller let go of our plane about ten feet from the ground, every one of us was sweating out that landing. But that landing, made at dusk which multiplied the problem, was a strong sales argument for GCA as far as the newsmen were concerned.

One very significant fact came out of the visit with the AAF's Cold Weather Detachment at Ladd Field, and that is a Lockheed P-80 jet job can be started at fifty below in a matter of minutes. By first pouring heat into the air intake scoops from a Herman Nelson heater, and then starting the engine with gasoline and later switching to the kerosene concoction, the Shooting Star roared to a start in what seemed like no time at all. Actually, from the time the heater tubes were put into the scoops, and the engine revved up, only ten minutes elapsed.

In general, practically every AAF man up in Alaska agrees that instead of modifying what has been left over from World War II, it is going to be necessary to redesign our planes, our matériel and our personnel equipment to meet the sub-zero conditions. It is not a case of trying to "make do" that which we have. Most of what we have just won't work efficiently up there at the critical thirty-five below mark.

Right now the P-51 boys are stumped on the clothing problem. By the time a man dresses for Arctic flying he looks like something out of an H. G. Wells novel. Within the narrow confines of a fighter cockpit his movement is restricted. He tires easily. His efficiency drops. His coordination suffers.

Perhaps the worst factor in Arctic flying is psychological, and is the fear that mounts in a man's mind as he contemplates his chances of survival should he be forced down. No man can live long—a day or two at the most—in such temperatures unless he can keep warm. Already it is SOP that when a man's plane won't bring him back, he'll ride it down hoping that the skid track will help attract attention in that vast nothingness and then to be able to use the gas, the oil, the tires—anything—to build a fire and keep the fire burning until rescued. As part of the Arctic indoctrination of the fighter boys, every pilot must make a "survival test." Men in groups are taken out into the country and turned loose with just what they would have without scavenging a plane. All you have to do is listen to them recount their efforts to live. It puts fiction to shame!

There are many other vexing problems to be licked. Dif-

ferent gyros misbehave differently, fluxgate and magnetic compasses bounce around crazily for the north magnetic pole is east. Navigators more than earn their flight pay in Alaska trying to do contact navigating because of the difficulty of picking out identifiable points under the thick blanket of snow. Most maps in use above the sixty degree latitude line are inaccurate in regard to the plotting of minor features, although general features of the air charts are reasonably accurate. Still another problem thrown at the navigator is that because the earth's meridians converge rapidly at the polar top, the conventional method of measuring the angle between meridians and the desired true course is impractical. Then, too, celestial navigation is difficult in the far North during a long period of the year because of the extended twilight periods.

While weather forecasting in and around Alaska is admittedly quite accurate, it is still hazardous to send a plane out for more than six to eight hours for fear that Arctic weather will do one of its famous flip-flops. Even now it is

felt that the strain of Arctic flying is so great that a trip of more than eight hours is out of the question, and crews are being held down to a maximum of around fifty hours of flying per month—in any month when they can get in that much flying.

Much is still to be learned about polar environment influence on radio, on radar. Radar scope interpretation presents more problems because of the snow and ice and lack of definition. And then there is the ever present static problem from the Aurora Borealis. Yet, because the AAF got started as early as 1940 on the problems presented by polar navigation and communications, much has already been learned, strides have been made, solutions are nearer.

Partly from the B-29 Pacusan Dreamboat's flight, and from the flights and facts learned so far, it has been verified that the air above Alaska and over the frozen wastes of the North is not too cold nor conducive to icing to fly through once the plane is airborne. And because we are now learning to look at the globe, instead of the flat mercator-projected maps, it is obvious that the strategic short distances between the major countries are via the Arctic airlines. If there is a so-called "line of defense" for this country it now rests up in Alaska.

Alaskans are well aware of the vital importance of their territory. They are air minded. They appreciate the efforts—limited as they are now—being made by the Army Air Forces as the future deterrent should any aggressor nation strike at America again. Most of the military men in Alaska, and the people, are of one mind in agreeing that our northern rampart can only be taken by airborne troops and then after heavy bombing. The only obvious defense, they all reason, is an air force in being, widely dispersed, alert and

(Continued on page 66)

Members of 10th Air Rescue Squadron tried out survival technique. The slow-burning fire provides both warmth and a marker for rescue airplanes and helicopters. The opened parachute serves as tent.

Flight line, Ladd Field, Alaska, temperature —35°. Note number of heaters, which are absolute necessity in getting equipment started. Linemen must wear gloves for jobs taking over two minutes.



J. H. DOOLITTLE
PRESIDENT
W. S. FITCH
EXECUTIVE DIRECTOR



PHONE NATIONAL 2525
NATIONAL 2694

IMMEDIATE ACTION

Air Force Association
1603 K STREET, N. W.
WASHINGTON 6, D. C.

Dear Member:

Your Air Force Association was one year old on January 24th, so this is in the nature of a report.

At the end of the first year, more than fifty thousand present and former members of the Army Air Forces had joined the ranks of the Association; a Wing Committee had been set up in each of the 48 states, and scores of Squadrons had been chartered at the community level.

Until you could set the pace at our first national convention, scheduled for this fall, we considered that the AFA had two missions of first importance in its first year—vigorous support of autonomy for the Air Force and for armed forces unification, and, secondly, a forceful and active program for increasing the Association membership and organizing Wings and Squadrons.

The fact that, under President Truman's recent proposal for unification of the armed forces, the AAF has been offered the autonomy for which the Air Force Association has been fighting does not mean that we can sit back and go to sleep. Congress still must act on the proposal, and, in 1947, we must increase our efforts in support of AAF autonomy and let our views be known on the need for more adequate appropriations for the AAF, reserve training and research programs.

Association headquarters also intends to devote a large share of its time to continuing the active membership drive and organization program. We have our sights aimed on a membership of 150,000 by convention time in September of this year. Our membership campaign has followed two broad lines—a direct mail invitation to former members of the AAF, and the activation of Wings and local Squadrons—and both approaches require time, effort and money.

At the outset we encountered a natural-enough desire on your part to know what you would get for the \$3 annual dues. This was a challenging situation. On one hand we had to get enough members to give power and authority to the Association voice, and on the other hand we had to start and follow up a program of national and personal service attractive enough to appeal to prospective members. We tried to meet this challenge; not forgetting at the same time that you, as members, would be called upon at the first convention to elect leaders of your choice and to adopt what you believe to be a desirable program. Therefore ours has been an interim mission.

An attractive lapel emblem and an embossed membership card were the first tangible tokens of membership provided. Then, in July, 1946, *Air Force Magazine* was turned over to the Association by the Army Air Forces and became the official journal of the AFA. Every effort has been made to maintain its appearance and quality, and, at the same time, place it in the hands of members as a part of the \$3 annual dues.

A national AFA program was outlined, with autonomy for the AAF its first objective. The AFA then published and distributed a striking and effective pamphlet designed to convince the public of the compelling need for a strong, ever-modern Air Force as the keystone of national defense. The pamphlets, and full-length speeches in addition, were distributed to Wings and Squadrons; copies of *Air Force Magazine* were sent to every Senator and Representative, speeches were made and press conferences were held by AFA officers and members. The national program includes these additional objectives:

- Seek immediate expansion of Air Reserve and National Guard training.

- Actively promote youth interest in aviation.

- Stimulate and encourage aeronautical training in public and private schools.

- Act in public relations capacity for the AAF, when requested.

- Cooperate with the Air Forces Aid Society in focusing attention on worthy cases of former AAF personnel.

- Pay fitting tribute to our former comrades who gave their lives or who are missing in action.

- Celebrate AIR FORCE DAY by appropriate ceremonies.

- Sponsor and provide a medal to be awarded annually to the outstanding Air ROTC student at each university on the basis of scholarship and leadership.

A REPORT ON AFA'S FIRST YEAR FROM G

As the number of members increased, it was found that many of them desired personal services growing out of their duty with the AAF. We instituted a service department to meet this demand. Hundreds of the members have made use of it.

Some of the things done include:—providing information on reserve activities throughout the country; assistance to individuals in getting reserve commissions; furnishing information on the possibility of activating new reserve bases; assistance in having AAF provide needed information to the Veterans Administration with reference to various types of claims; assistance in expediting repatriation of prisoners of war; provide information on published, or in-process histories of various AAF units; provide information on re-rating of pilots; assistance to AAF personnel on active duty in getting assigned to technical schools; assistance in bringing wives and fiancées to the United States; provide information and assistance in expediting payment of claims for flight pay and for property not returned to owner; provide information and assistance to individuals on admission to aeronautical and military schools which have courses required for regular Army commissions; provide information on National Service Life Insurance and on obtaining Civil Service positions; arrangements for proper presentation to individuals, or their families, of medals won and not yet received.

Meanwhile, as Squadrons developed in the various states, the Association's influence upon community life and benefits for its members gradually expanded during the year. Squadron activities covered a wide field. For example, the Mansfield (Ohio) Squadron won an expansion of the reserve training program; the Phoenix (Ariz.) Squadron agreed to underwrite lab fees and succeeded in getting an aeronautical course included in the public high school; and the Paducah (Ky.) Squadron sponsored an Air Scout Troop. To further stimulate ideas for Squadron activities, the national headquarters in 1947 will provide a broad program of proposed activities.

All of these things, we feel you will agree, are assets, and we submit them for your consideration and comment.

There are also some liabilities. As an Association we have run into many of the same problems you have as individuals:—housing and material shortages, high prices and slow deliveries. The national headquarters offices are inadequate for current needs; the direct mail campaign has been handicapped severely by shortage of paper; the manufacturer was slow in the delivery of membership lapel emblems; costs in the publication of the magazine have not been offset by advertising revenue, and there have been cases of non-delivery of the magazine, emblem and membership card to members.

Thousands of you changed addresses during the year and failed to notify us, thus missing some copies of the magazine. Others received magazines out of the order of their publication; some of you received lapel emblems damaged in the mails and the names of a few were misspelled on membership cards.

We have, in short, experienced all of the difficulties normally encountered by any aggressive, fast-growing young organization. Some of the difficulties may have affected you personally and have been the source of annoyance to you. To those of you who wrote and told us about it, accept our sincere thanks; and, to those of you who didn't write, we are sorry that we were not able at the time to tell you about the problems.

We have been very much aware of these sources of irritation to you, and have been glad to correct them when called to our attention. We want you to tell us about them, but at the same time we want to ask your continued support and understanding as we try to give better service in the second year. We look forward to seeing you personally at the national convention in September. We will announce the exact date and location in the very near future.

Meanwhile, every day we hear of former AAF men and women who say they've never been asked to join the Air Force Association. There are three million who are eligible and we can't possibly reach them all—except through you.

Won't you spread the word and bring in your friends, accepting it as your personal responsibility to get two new members by convention time?

As ever,



J. H. DOOLITTLE



HEADQUARTERS

On an airplane swing across the country to the West Coast, AFA President Jimmy Doolittle spoke before large crowds in Denver, San Francisco, Los Angeles, and Tulsa. President Doolittle's visit to these cities provided the kick-off for intensive organization and membership campaigns under the leadership of Wing Commanders Stanford W. Gregory for Colorado, Frank A. Flynn for northern California at San Francisco, Wing Commander Frank Gabreski and Secretary Art Kelly for California at Los Angeles, and Wing Commander Harold C. Stuart for Oklahoma.

While in New York, General Doolittle announced that he had accepted the presidency of a new organization known as the "Fellowship of US-British Comrades." The group is composed of veterans of the United States and of the British Commonwealth who served together during World War II. General Edward P. Curtis, AFA's First Vice President, has been appointed as a council member.

ALABAMA

In Mobile, Alabama, M. E. Fontana of General American Credits called the initial Squadron group together and elected Charles P. Powell temporary commander. Plans were made for sponsoring an AFA float in the Mobile Mardi Gras.

ARIZONA

The Phoenix, Arizona Squadron—one of the earliest and most progressive of the AFA local groups—has requested representation on city, county, and state advisory committees wherever aviation promotion is concerned.

ARKANSAS

In Monticello, Arkansas, the Squadron organized to include Arkansas A. and M. College as well as Monticello proper. Officers include William E. Morgan, Commander; Jack Shelton, Vice Commander; Dolph T. Wells, Secretary;

William F. Ross, Treasurer; and John E. Brewster, Frank Carson, Jr., and Byron L. Magness, Councilmen.

CALIFORNIA

The Bakersfield, California Squadron, organized under the leadership of E. L. Hochstedler, elected John A. Storch, Commander; Burchie L. Hillberry, Vice Commander; Gordon L. Howden, Secretary; Richard N. Oster, Treasurer; and W. W. Mathews, E. L. Hochstedler, Robert L. Wheeler, and Andrew L. Millican, Councilmen. All AAF men and women in the Bakersfield area are urged to get in touch with Mr. Hochstedler (Box 190, Route 5) to become members of the Squadron and participate in its activities.

With over 100 paid-up members on the active list after only four meetings, the Santa Monica Bay Squadron has already elected its officers for 1947 and mapped plans for an ambitious program for the coming year.

COLORADO

Colorado Wing Secretary Max H. Houtchens was elected Commander of the Denver Squadron, along with Kenneth S. Valis, Vice Commander; Mary R. Nelson, Secretary; Wilmer M. Wheelock, Treasurer; and Warren P. Helsley, Carl J. Strickrott, and Wing Commander Stanford W. Gregory, Councilmen. Commander Houtchens is at 2040 South York, and all former AAF men and women in and around Denver are invited to contact him.

FLORIDA

Establishment of the Florida state Wing of the AFA was completed with the election of John N. Huttig as Wing Commander at a meeting of the Florida executive committee.

Twenty-five former Air Force men from throughout Florida assembled at the Officers Club, Headquarters of the 14th Air Force, Orlando Air Base, at the invitation of Edwin J. House, who has maintained an active interest in AFA since its inception.



During the New York Aircraft Show, held recently at Manhattan's Grand Central Palace, the New York Wing of AFA sponsored an exhibit of original paintings by R. Taylor Carson. His work depicted life of Army Air Force men stationed in North Ireland during the war. The display will become part of historical record.



Sacramento, California Sqdn. Number One was organized with fifty-one charter members. Officers from left above are: H. T. Wine, treasurer; O. H. Wulf, council member; G. M. Strain, secretary; L. J. Johnson, commander; G. O. Thorne, council member; V. I. Osborne, vice commander; and L. W. Lott, council member.

The first phase of Florida's organization program, planned at the executive committee meeting, calls for activation of Squadrons in nineteen cities of 10,000 or more population.

MASSACHUSETTS

In Cambridge, Massachusetts, the Squadron has instituted a membership drive and has obtained the fine cooperation of the Mayor's office, which is furnishing the Squadron with the names and addresses of former AAF men and women in the area.

MICHIGAN

Under the able organization leadership of John G. Gallagher, the Saginaw, Michigan Squadron joined the ranks of chartered groups with the following officers: Kenneth W. Brace, Commander; Clyde O. O'Dell, Vice Commander; Gerald E. Hynan, Secretary; Ronald C. Heinlein, Treasurer; and Russell J. Purchase, Edwin E. Strutz, and William Zissler, Councilmen. Secretary Hynan can be reached at 2003 North Michigan, Saginaw.

MONTANA

Montana's first Squadron has been organized at Helena by a former member of the AAF who is also Mayor of Helena, J. R. Wine, Jr. Mayor Wine was elected Squadron Commander. Other officers include Harland S. Herrin, Vice Commander; Arthur Serungard, Secretary; Archie Bray, Jr., Treasurer; and Howard M. Garrity, Dr. Claude Mears, and Jack Roberts, Councilmen.

NEW MEXICO

Down in New Mexico, the Albuquerque Squadron entertained General Harry A. Johnson, Deputy Commanding General of the 10th Air Force, Brooks Field, Texas. General Johnson spoke before the Squadron, covering many topics of interest including the AAF research program, unification of the armed forces, and Reserve training.

NEW YORK

Mary Gill, Fay Kane, and Mary Waterman—all members of the New York City all-girl squadron—made an "en masse" guest appearance on the WCBS show "Hits and Misses" in January. The girls tossed back answers to the questions MC Harry Kramer threw at them so rapidly, that their batting average resulted in a net profit of \$55 for the squadron treasury. "Hits and Misses" is a musical quiz program.



Nationally prominent political figures who have recently joined AFA include Representative F. L. Chelf of Kentucky (extreme left) who is shown taking pin from Al Near, state Wing Commander, and Gov. H. B. May of Utah (right seated) who joins as V. G. Holliday, Utah's AFA head; Lt. Col. S. Andrew, of Hqs. AAF look on.

OHIO

Out in Cleveland, Ohio, the Cuyahoga Founder Squadron has started the ball rolling on the organization of several Squadrons in the Cleveland area. It is planned that these groups will be assisted in their growth and activities by the Founder Squadron and that the Founder Squadron itself will serve as a clearinghouse where diverse opinions and ideas, as well as county-wide projects, can be discussed and carried out by the representatives in Cuyahoga County.

PENNSYLVANIA

After the York Squadron started Pennsylvania's organization program off, activities got under way in earnest. Organization meetings were held in several cities in the state, with the result that Pennsylvania is now divided into nine groups with a group commander for each responsible for the activities of local Squadrons in his territory.

The Johnstown, Pennsylvania Squadron elected Frank P. Cummins as Commander; C. T. Reese, Vice Commander; Merle C. Fitzgibbon, Secretary; James J. Wilson, Treasurer; and Wilbur C. Mulhollen, Joseph Plummer, Charles J. Campbell, and Richard C. Ashman, Councilmen. All former AAF men and women in the Johnstown area are invited to join the Squadron. The man to see is Secretary Fitzgibbon at 224 Union Street, Johnstown.

TEXAS

Down in Dallas, Texas, AFA Board member T. J. McHale called the initial meeting for the organization of Squadrons in the Dallas area.

VIRGINIA

Sponsor Marq Gray of 105-A Surburban Parkway, called together AAF men and women in the Norfolk area to begin organization of the Norfolk, Virginia Squadron.

The Blacksburg, Virginia Squadron, initially organized at VPI, has elected the following officers: J. O. Rowell, Commander; O. M. Glass, Vice Commander; J. P. Jacobs, Jr., Secretary; Rodney L. Webb, Treasurer; and A. W. Clegg, Joel B. Spahr, and J. W. Kirk, Jr., Councilmen.

WASHINGTON

In Tacoma, Washington, under the leadership of Wing Commander Neil M. Matzger and with the able assistance of Robert Dahl, initial organization activities for the Tacoma Squadron started off with plenty of local publicity.



First Air Force Association WAC Squadron, activated in Baltimore, Md., poses for its official picture. Its commander, Lucia M. "Bunny" Gardner, is seated fourth from left. Miss Gardner joined WAC in 1942 as one of first five enlisted women to be sworn in in Baltimore. At present squadron has twenty-five members, hopes for more.

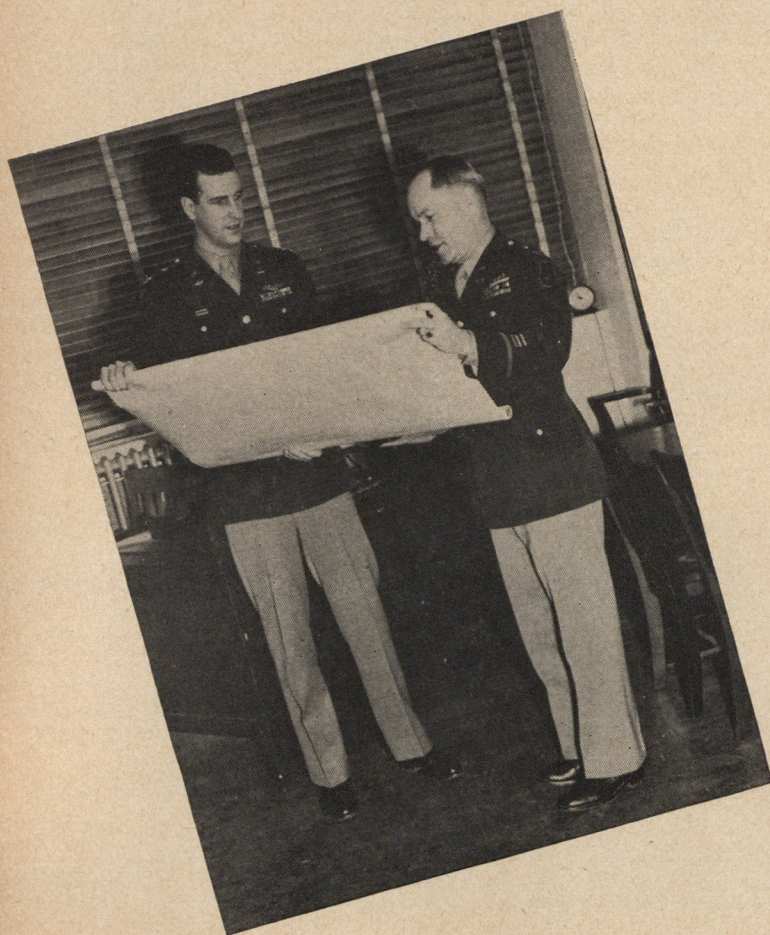
tomorrow's Generals

BY MAJOR RICHARD WALKER

Hqs, First Air Force, Mitchel Field, N. Y.

A NATION will live only so long as it has strong armies to guarantee its future. History has clearly demonstrated this fact time and time again. Ancient Greece survived only as long as its armies. Once they deteriorated, Carthage under Hannibal's armies dominated the then known civilized world. When Hannibal's armies failed, his country likewise failed. The axiom has held true in the past and is true today. We have just witnessed the decline of Germany, once the mightiest nation in Europe. Her failure was due not to the failure of the people or the government, but due to the failure of her armies.

World politics today are fundamentally the same as they were two thousand years ago. They are based on power and power stems from armies, and the will of the people to support those armies.



The lessons of history have not been ignored by the United States Army Air Forces. We realized that a lack of highly skilled technicians seriously impaired the operation of our Air Force early in the stages of World War II. In a future war it could cause our downfall. Therefore we have adopted a program that will furnish us with a large number of highly skilled, highly trained young officers.

This far-reaching AAF Reserve Officers Training Corps program was installed this Fall in seventy-eight colleges and universities throughout the nation with facilities available for an enrollment of more than 16,000 students. Present plans call for future expansion of this program with facilities to be provided for 30,000 students at more than one hundred educational institutions.

For some years prior to the war, the Army Air Forces had no Air ROTC units. A few which had existed previously were abolished in the mid-30's when limited training funds were concentrated on the production of pilots.

In order to see firsthand what type of young men were being attracted to this course, and what type of training they were being offered, I recently visited a representative university, the Massachusetts Institute of Technology at Cambridge, Mass.

Upon my arrival at Cambridge, I was greeted by Lt. Colonel Kenneth W. Holbert, Officer in charge of Air Force training in the ROTC program at MIT. Although he and his staff were veteran pilots of World War II, they looked almost as young as the students they were teaching. There was no mistaking their sincere interest in their job. The entire military staff was carefully chosen and well qualified for its job.

As we sat down in his office, Colonel Holbert outlined the Air ROTC program as it is offered at MIT. The students selected to receive the advanced course must have completed two years of elementary ROTC or have served with the Army or Navy for a period of not less than one year, and they must be physically qualified. Upon the successful completion of the course the student is commissioned as a Second Lieutenant in the Air Reserve.

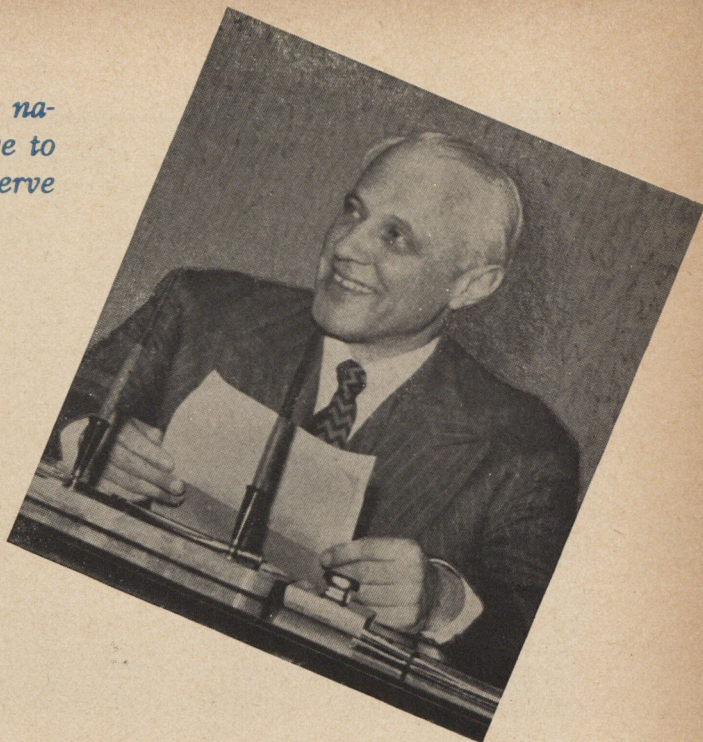
In the first year of the Advanced (Air) Course, the student receives instruction on the various administrative and tech-

Col. Harold Jackson, right, Professor of Military Science and Tactics, and **Lt. Col. Kenneth W. Holbert**, head of the Air ROTC program at Massachusetts Institute of Technology meet to discuss training schedules. ROTC students must stand in top half of class.

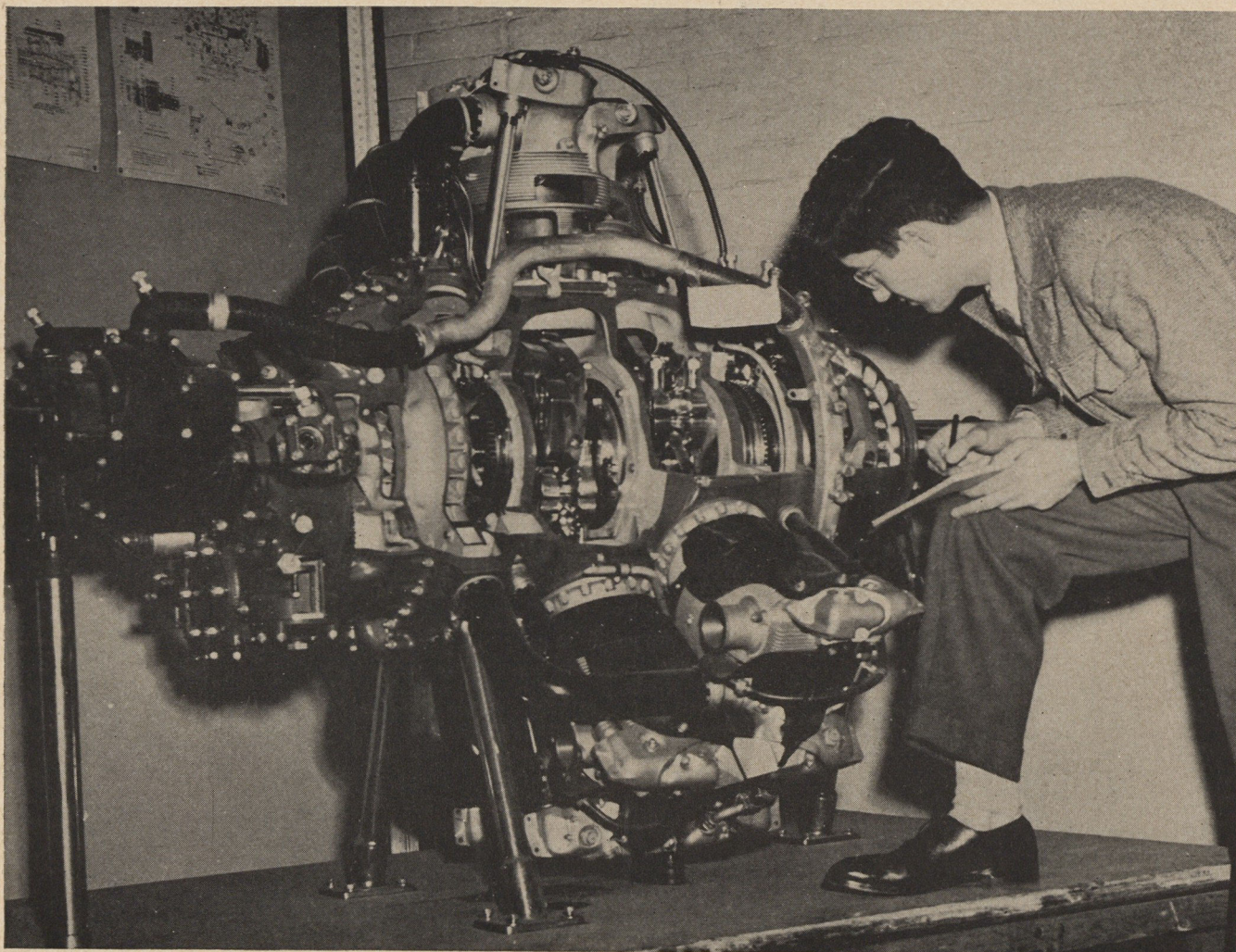
It's as true today as it was two thousand years ago. No nation can be politically strong without an armed reserve to back it up. The Air ROTC is helping build that reserve

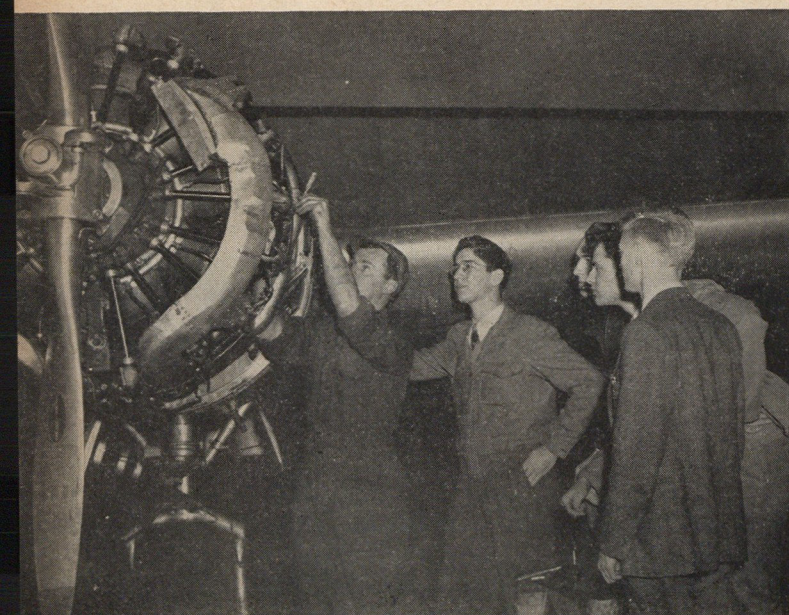
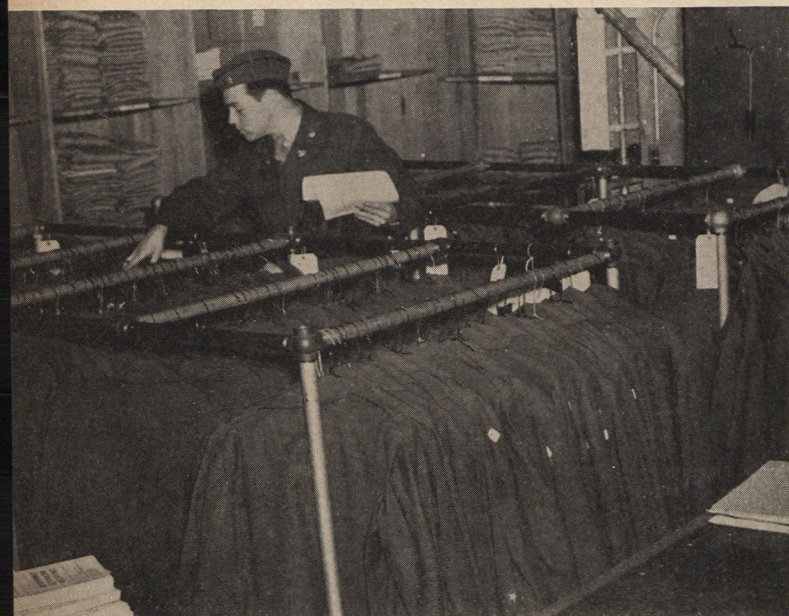
nical aspects of the Army Air Force. This includes work in such subjects as Air Force Supply, Transportation, Communications, Personnel, etc.

In the second year of the Advanced Course the student receives instruction on a particular specialized subject. These individual courses are designed to specialize the student in one particular duty assignment. Therefore a student may study to become a Personnel Officer, a Statistical Control Officer, an Engineering Officer or any one of a number of other duty assignments provided there are qualified personnel available on the instruction staff to school him in this particular subject. The particular course offered to the ROTC student depends primarily on the type of academic course he is following. Therefore, a student studying electrical engineering, should specialize in a military subject that is closely related to electrical engineering. Each school does not necessarily offer the same Air Force specialty as every other school. The subjects vary depending upon the curriculum of the school in question. For example, MIT offers specialties closely related to engineering, whereas another school that does not specialize in engineering may offer a series of military specialties entirely different.



President of MIT is Dr. Karl Compton (above), world famous physicist. Cadet John Diamond (below) of Penns Grove, N. J., sketches an engine part during a lab. period. Study in specialized subjects such as engineering is given during the second and final year of Advanced Course. Students work with latest equipment.





Present plans call for a summer encampment of six weeks to be conducted this year. During this encampment, the student will get an opportunity to use all the material that he has been studying during the past year. In addition, the students will be given instruction in subjects that are impractical to teach on the campus. This encampment is required of all students and it is planned to have it during the summer between the first and second years of the Advanced Course.

Orientation flight training is planned for the final year of the course and qualified students who desire to enter AAF flying schools will be checked at the end of this training. Students who show sufficient aptitude will be granted a high priority for selection as student officers at one of the AAF's flying schools. Air ROTC graduates who undertake this training will do so as commissioned officers and will enter a program especially designed for such graduates to avoid repetition of instruction previously given.

The entire ROTC program at MIT is under the command of Colonel Harold R. Jackson, Professor of Military Science and Tactics. Colonel Jackson is a veteran Coast Artillery Officer whose extensive experience with the Army in both peace and war has provided him with an excellent background for his present position. His staff offers the students instruction in any one of five branches of the service. In addition to Air Force training, students may enroll in either the AAF, Signal Corps, Ordnance, Corps of Engineers or Chemical Corps.

Colonel Jackson is a farsighted gentleman. He learned through his experience in the European theater during the last war that if a force is to be efficient there must be co-operation between the various arms of the service. His program of instruction places emphasis upon this fact and fosters a feeling of comradeship among the men regardless of the branch in which they specialize.

The Academic training the student receives at MIT is in itself virtually enough to qualify him for a commission in a technical branch of the service. During my visit I had an opportunity to observe ROTC men at work in the institution's modernly equipped laboratories. Here he has the opportunity of working with scale models of airplanes in high-speed wind tunnels. The very latest electronic equipment and completely equipped airplane engine laboratories are at his disposal, not to mention the well equipped physics labs, electrical labs and many others. He works under the supervision of the finest instructors. The President of the School, Dr. Karl Compton, one of the world's foremost physicists, heads a staff of professors whose qualifications are known and respected throughout the world.

There can be no question regarding the caliber of the men that our new ROTC is training. They are intelligent, alert young men, and are receiving the very best of training. The investment that the Air Force is making in these young men will bring ample return in well trained, well qualified young officers. If the occasion should arise where our country needs the services of these men, you may rest assured that they will discharge their duties efficiently and effectively.

Cadet John Diamond (top left) learns about electronics with aid of an Oscillograph. MIT boasts some of the world's finest professors in this type of study. Proof that the ROTC student's training gets down to most basic fundamentals of army life is found in the fact that a course in Air Corps supply and warehousing (center) is carried as a "must." At left a group of Air ROTC cadets at MIT learn how it is done from an Air Force mechanic stationed at Bedford Army Air Base. In addition to classroom studies, present plans call for each student to participate in a summer encampment of six weeks. During this period he will put to practical use all the theories he studied during the year. Encampment will probably be scheduled between enrollees first and second Advanced year.

CROSS-COUNTRY

Dust to Dust?

The cow pastures and corn fields in England, Italy and France which were hurriedly converted into AAF bases during the war haven't all been given back to the cows and the corn according to reports from overseas. For example, Major General Clayton Bissell, our Military and Air Attache in the American Embassy in Great Britain forwards this report on the present status of former AAF bases in the United Kingdom:

Of the 129 airfields in the UK used by the United States Air Forces during the war, the majority have been retained for use by the Royal Air Force. Of the rest, some have been handed over to the Ministry of Agriculture while others have been set aside as building land and allocated to the Ministry of Works. A few are used by the Ministry of Supply for storage purposes. In many cases the airfields are used for food production, building land and storage purposes. The following examples show how some of the ex-USAAF airfields are now being used:

DUXFORD airfield in Cambridgeshire which in 1942 was used by units of 345, 346, 347 and 350 USAAF Fighter Groups was a prewar RAF station. Now it is used by No. 11 Group of Fighter Command; RAF No. 66 and 91 Squadrons equipped with Meteor jet-propelled fighters are stationed there.

ANDREWS FIELD in Essex was built by the American Forces during the war and in the Summer of 1943 Marauder medium bombers of the 322nd Group of the US Eighty Air Force were operating from there. Now the field has been partly allocated to the Ministry of Works as building land

and partly to the Ministry of Food which is cultivating the land as part of the United Kingdom's food production drive.

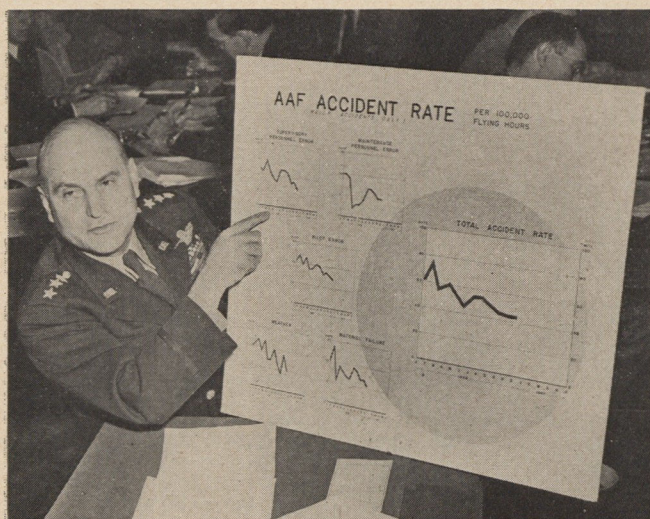
CHELVESTON airfield in Northamptonshire was an RAF station before the war and during the war in 1942 was used by the B-17s of the 301st Group of the US Eighth Air Force. This airfield is now used for storage purposes by No. 25 Maintenance Unit of Maintenance Command, RAF.

MATCHING airfield in Essex was used in 1944 by the Marauder medium bombers of the 391st Group of the US Ninth Bomber Command. It has now been allocated partly to the Ministry of Works for the building of domestic accommodation. But the major part of the airfield is used for food production by the Ministry of Agriculture and Fisheries and by the firm of Straight Aviation Training, a private firm specializing in the training of air navigators.

BURTONWOOD airfield and depot in Lancashire which was privately owned before the war was used by Air Depot Groups of the VIII Air Support Command of the USAAF in 1943. Now it is used by Technical Training Command RAF as a receiving and posting center for RAF entrants and by Maintenance Command for storing equipment. No. 276 Maintenance Unit is stationed there.

DEBACH airfield in Suffolk was built by American colored troops during the war. In 1944 it was being used by the 480th Sub Depot of the VIIIth, Air Force Service Command of the USAAF. Now this airfield has been allocated to the Ministry of Works and the Ministry of Supply for building purposes.

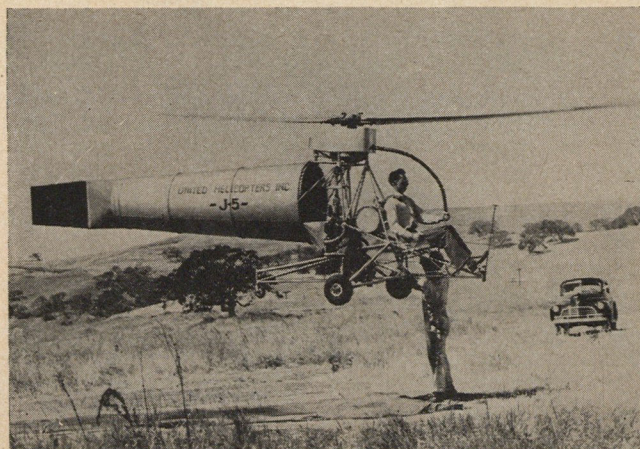
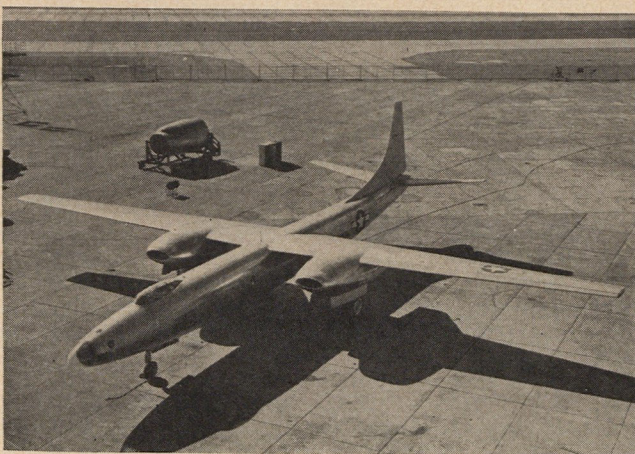
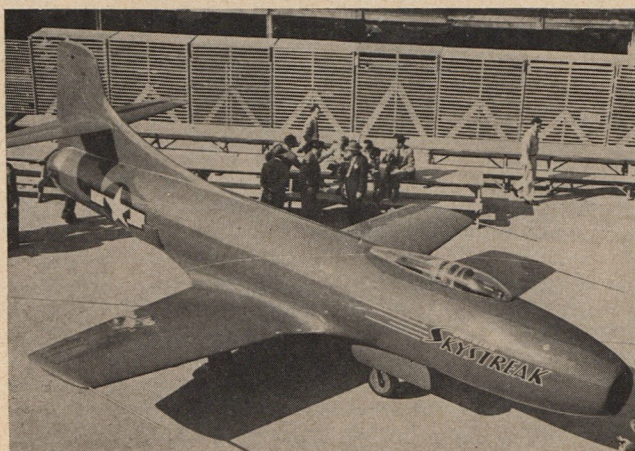
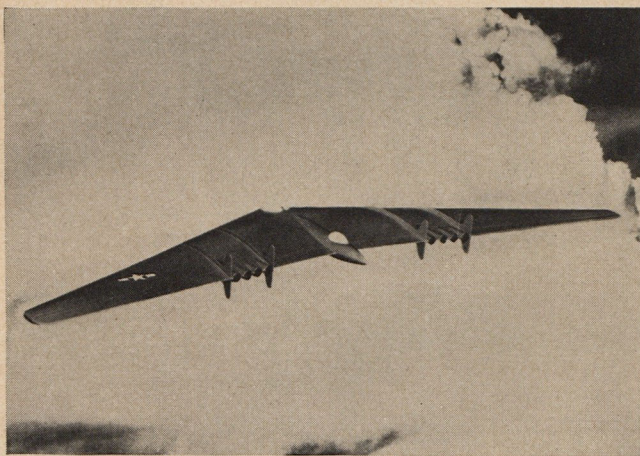
STANSTEAD MOUNTFITCHET airfield in Essex, a civil aerodrome before the war, was used in 1944 by the



Deputy AAF Commander, Lt. Gen. Ira C. Eaker, shows Senate Subcommittee a graphic analysis of basic air accident causes. Pilot error rated tops, while weather took only twelve per cent of the total.



North American Aviation's test pilot George Welch discusses P-82 performance with Lt. Col. Robert Thacker, pilot of Army's *Betty Joe* before recent non-stop flight from Honolulu to New York.



386th Group of IXth Bomber Command of the USAAF which was operating Marauder medium bombers. Now the airfield is in the hands of Maintenance Command of the RAF which is using the airfield for storage purposes, but it is planned that this airfield shall again become a civil aerodrome.

Technical Note on War's End

The Veterans Administration has found officially that President Truman's December proclamation ending hostilities has no effect on most of the laws administered by the Veterans Administration. Foremost among these is Public Law 346—the GI Bill.

VA has announced that the date of the official termination of the war, rather than the cessation of hostilities, is the determining factor in establishing the deadline for the educational, loan and readjustment allowance provisions of the GI Bill.

The same ruling applies to vocational rehabilitation, under Public Law 16, for disabled veterans, VA says.

Under the GI Bill, loans may be guaranteed or insured by VA up to ten years after the end of the war. Education or job-training may be started up to four years after the war. And readjustment allowances for discharged veterans expire two years after the end of the war.

Disabled veterans eligible for education or training under Public Law 16 face no specific deadline, but they must complete their training within nine years after the end of the war.

In nonservice-connected death and disability cases, rights depending on war veteran status alone, such as hospitalization, domiciliary care, and burial allowance will be accorded only to those who served between Dec. 7, 1941 and the date of the President's proclamation, Dec. 31, 1946.

The VA ruling specifies that wartime rates of compensation will continue to apply to service connected disability and death cases for members of the armed forces until the official termination of the war.

Practical Note on War's End

The War Department announced last month that it had been officially advised by the bus and railroad people that special furlough fares for service personnel within continental United States would be cancelled the first of March. Furlough fare tickets purchased prior to March first, the announcement said, would be good for passage at furlough rates between the points and within the time limits shown on tickets.

On January 30, the carriers cancelled furlough fares on rail and bus lines operating generally east of the Mississippi River. The new action applies throughout the US. Special fares had been in effect since late in 1940.

National Air Museum

The first meeting of the Advisory Board of the National Museum, recently established by Congress under the Smithsonian Institution, met in Washington, D. C. to discuss the organization and general policy of such an enterprise. The

Artist's conception of Army jet-powered flying wing, the Northrop XB-49, top. It is basically the same airframe as the B-35, but will be powered by eight GE J-35 jet engines, furnishing 32,000 lbs of thrust. Note the vertical air separators for stability. Second, Douglas Skystreak (D-558) jet powered craft built for the Navy to explore the transonic speed range. Army version will be called the XS-3. Third, the new Consolidated-Vultee XB-46, a jet-propelled medium bomber. Powered by four G.E. turbojet engines, it spans 113 feet and has an overall length of 105 feet, nine inches. This class of craft, as large as the B-24 and more powerful, is currently classified as a medium. The Liberator spanned 110 feet. Fourth, Designer Stanley Hiller tests the first US helicopter to be flown in the US using a tail jet to counteract rotor torque. In addition to the novel compensating setup which had previously been used in England, the new Hiller design built at Palo Alto, California, has a simplified rotor control system.

board consisted of A. Wetmore, secretary of the Smithsonian as chairman, Major General E. M. Powers, acting for General Spaatz of the Air Force, Read Admiral H. B. Sallada representing Admiral Nimitz, chief of Naval Operations, and the famed designers, William B. Stout and Grover Loening, civilian members, appointed by President Truman.

One of the primary tasks undertaken by the board is a survey from which the housing requirements of the museum may be estimated.

On February 10th, the famed Norden Bombsight No. 4120 which was used to drop the atomic bomb on Hiroshima was presented to the Smithsonian. A. C. Buehler, president of the Victor Adding Machine Co. of Chicago, manufacturers of the particular unit, presented it to Dr. Alexander Wetmore, Smithsonian's secretary. Representatives from HQ, Air Force, Research and Development section and BuAer Navy were present at the ceremony.

First Plane

Last month the AAF observed the 39th anniversary of the signing of the first contract to purchase an airplane. The contract called for the purchase of "one heavier-than-air flying machine" for \$25,000, to be delivered on or before August 28 of that year. The document was signed by Capt. Charles S. Wallace, representing the Air Service; Orville Wright, for the Wright Brothers of Dayton, Ohio; and Brig. Gen. James Allen, Chief Signal Officer.

Although the contract called for delivery in August, 1908, the actual acceptance flights were not made until almost a year later, due to a plane accident suffered by Orville Wright. On July 27, 1909, however, Orville Wright successfully completed the first of two acceptance flights staying aloft 1 hour, 12 minutes, and 40 seconds, thereby fulfilling the condition of the contract which stated that the airplane must fly continuously for one hour. On the initial flight he carried as a passenger Lt. Frank P. Lahm of the Air Service.

Three days later, before 7,000 spectators, the Wright brothers completed the second acceptance flight with Orville Wright as pilot and Lt. Benjamin D. Foulois (now Maj. Gen. Foulois, retired) as passenger. Since the contract called for sustained flight at a speed of 40 mph, Orville Wright flew a ten-mile cross-country hop from Fort Myer, Va., to Shuter Hill at Alexandria. Average speed for the flight was a trifle better than 42 mph.

Recognition

Six AAF officers who were on the staff of AIR FORCE during the war have recently received the Legion of Merit for their excellent work in developing and executing orientation programs through the facilities of the magazine.

The men, with ranks they held before discharge are:

Lt. Col. Herbert O. Johansen, former director of AIR FORCE, who is now a member of the staff of *Popular Science* magazine at New York.

Major Benjamin J. Grant, Jr., who was in charge of the Far East edition of the magazine, and who now lives at 3452 Gunston Road, Alexandria, Va., and is a member of the staff of the United States News in Washington.

Major G. Arthur Gordon, who was European staff representative of AIR FORCE, and is now editor of *Cosmopolitan* magazine at New York.

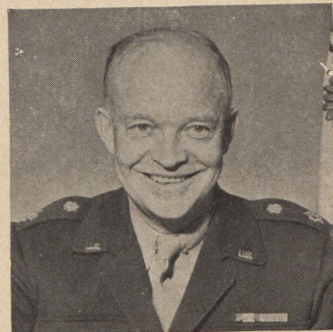
Major Harry H. Ransom, who served as deputy director and later as director of the magazine, and is now an instructor at the University of Texas in Austin, Texas.

Major Dan Goldstein, who was chief of the Services Division of the AIR FORCE editorial office, and is now a representative of Schenley Distilling Corp. at Houston, Texas.

Major John H. Jenks, of New York, who was chief of the Production Division of the magazine.

Other members of the AIR FORCE Staff, had been decorated previously.

ARMY WEEK



General of the Army Dwight D. Eisenhower

THIS month the AAF joins the Army in the observance of Army Week—April 6 through April 12. The purpose of the occasion is to honor America's soldiers, living and dead, who did so much to make peace possible; to call attention to the new peacetime pattern of national defense; to make the public aware of the Army's assignments both at home and abroad; to explain the need for a well trained, efficient Army of volunteers; and to bring the people and their Army closer together in our national community. The following is General Dwight D. Eisenhower's official Army Week message:

"There is peace in the world this Easter because Americans fighting men staked their lives that peace might be won. One incident—and there were thousands like it—epitomizes their fortitude, the depth of their devotion.

Early in the Battle of the Bulge, snow, sleet and numbing cold accompanied the Panzer thrusts of the German armies. Our soldiers, at first outnumbered and outgunned, contested every inch of the frozen ground against the enemy troops and giant tanks that swarmed out of the icy fog.

A German parachute commander, captured by our infantry on the critical northern shoulder, gave the interrogators the first indication that, despite its initial advantage, the German assault was failing and their hopes were dimmed. His comment was: 'You Americans are just too stubborn.'

Those Americans *were* stubborn, refusing to admit defeat.

America pauses to salute those of her sons, living and dead, who have, through seventeen decades, guarded our national existence and earned us peace in which to live and grow and prosper.

They have built into the structure of American life noble traditions that shall long endure, inspiring generations yet unborn to vigorous and sure faith in the capacity of this nation and its free people to meet every challenge.

We who are of the Army today are committed to a mission of security and peace. We shall succeed only insofar as we measure up to the spirit of those who served before us, and as we are supported by the American people. The spurs to great achievement are many and potent. Fresh in our minds is the memory of our comrades-in-arms who gave their lives in the desert and mountain, in the cities of Europe and in the Pacific jungles, in the skies and on the oceans of the earth. Watching us are millions of our fellows, who bore the brunt of war, now happily returned to their homes and families. All of them look to us that their sacrifice shall not be wasted. We must not fail.

You, the people, are the final arbiters. So long as you understand these issues you will not relax either your vigilant care of national security or your firm demand that aggression be permitted no spawning space. Thus you will do your part to insure that all future Easters are peaceful ones."

THE BIG STICK

BY CHARLES VILLENCY, *Hqs, AAF*

A YEAR after the signing of the Armistice of World War I, when military aviation was barely in knee pants, the War Department recognized the need for technical training of its airmen by establishing a school for that purpose. That was the birth of the Air School of Application.

A year after the end of World War II, the descendant of that early Air School of Application opened its doors as the AAF Institute of Technology, the Army Air Forces' new, streamlined, scientific school, geared to meet the complicated problems of the present and the future in aviation.

Although it's the grandson of the original school, the Institute of Technology bears little resemblance to the pioneer organization. In 1919 the factor of air supremacy in any future war was well recognized, but the technical problems were far less complex than those encountered after World War II.

Attuned to this new conception of the Air Age, the Institute of Technology opened its classes in September 1946 and is now rounding out its second semester at Wright Field, fittingly selected as the site of the school since it is the heart of the AAF's research and development program. Mission of the Institute is to provide men who can blaze new trails in scientific research and development, men who can give the AAF that particular type of genius necessary in the complex problems of procurement, supply, maintenance and service. The integration of these objectives is calculated to maintain for the AAF scientific and technical superiority and to provide the US air arm with a reservoir of highly skilled technical personnel.

The opening class of 1946 had an enrollment of 190 officers, ranging from second lieutenants to colonels. Most of the students enrolled for two-year courses, while about fifty officers chose a one-year course of the higher level.

Students now attending the Institute are pilots from all theaters of the world, non-rated officers with supply and procurements experience, senior officers with command experience and ex-prisoners of war.

Actually the Institute consists of two colleges, engineering and logistics. The engineering college offers instruction in aeronautical engineering with specific application to AAF requirements and application of scientific developments and related subjects. The logistics college program is keyed to AAF experiences in procurement, production and inspection of planes in World War II and to needs of the future. Specifically the engineering program includes such subjects as aerodynamics, physics, mechanics, higher mathematics, thermodynamics, design, etc. Accounting, economics, procurement and other subjects tied up with AAF procurement and supply are dealt with in the logistics school.

Perhaps the US isn't speaking as softly as Teddy Roosevelt would recommend, but we are carrying a big stick in the form of an energetic research and development program that begins at the new "Air Tech"

The Institute also includes instruction in staff organization and functions within the AAF with due emphasis on general service responsibilities, responsibility of commanders and staff officers of the Air Materiel Command, leadership, administration, Intelligence, personnel management and instruction methods.

The AAF is attaching great importance to a long-range program for the Institute of Technology. Witness the fact that plans are underway to establish the AAF's educational center, now located in one of the buildings at Wright Field, in a \$700,000 Institute development adjacent to the Wright Brothers memorial in the field's hilltop area. Using the Wright Memorial Park as an axis, such construction would raise a group of two-story brick and concrete buildings facing an open quadrangle. The buildings would be flanked by a 1,000-seat auditorium.

Since the technical job of engineering, logistics and procurement is within the province of the AAF's Air Materiel Command and because the facilities for such work are available at Wright Field, the Institute is organized under AMC and receives its direction from that branch of the AAF.

Recognition of the Institute as a college equal in its standards and quality to some of the best civilian institutions is expected to follow in the near future, so that Bachelor of



Progenitor of AAF Inst. of Technology was the Air Service Engineering School. Here class of '23 poses for picture. Lt. Gen. James H. Doolittle is at extreme right, standing.

Science or Bachelor of Business Management degrees, varying with the course of study, will be awarded graduates of the two-year course.

For the time being, graduates will be awarded a certificate of accomplishment, which can be applied towards a degree. This is especially attractive to officers whose education was interrupted by the war or whose careers had just been started when war came. Those whose education was interrupted are receiving instruction comparable to the third and fourth years of college in both engineering and logistics.

Students enrolled in the business phase of the Institute must matriculate from one-half to one-third of their time in engineering subjects. The reason for this is the many applications of engineering principles and terms in logistical phases of Air Forces operations.

Since the Institute is considered an all-important part of the AAF's education system, it is operated on a level with the Air War College, Air Command and Staff School and all schools comprising the Air University.

The faculty of the Institute consists chiefly of civilian professors and instructors, acknowledged experts in the fields of engineering and logistics. Some were on active military duty at Wright Field during the war. They receive salaries comparable to those of similar rank in the best engineering colleges. An advisory board of civilian educators has been appointed to serve as directors and to maintain civilian contacts.

Brigadier General Edgar R. Sorensen, a 1923 graduate of the Air Service Engineering School, successor to the original Air School of Application, is commandant of the Institute of Technology. He replaces Brigadier General Mervin E. Gross, former commandant of the Institute, who was killed in October 1946 in the crash of a P-80. Just before becoming head of the school, General Sorensen was serving as senior Air Forces officer on the staff of the Army and Navy Munitions Board in Washington. Before that he was on the US Strategic Bombing Survey overseas in London, Frankfurt and Munich. He is no newcomer to the educational program of the Institute since he has served with predecessor schools.

The Institute's civilian director is Ezra Kotcher, who has been associated with Air Matériel Command and the former Air Corps Engineering School for about eighteen years. He is thoroughly familiar with all phases of the problems of development and procurement of aeronautical equipment, and has a wide reputation in the field of aeronautical design and

Chief of the Institute of Technology since the untimely death of Gen. Mervin Gross, is Brig. Gen. Edgar A. Sorensen.



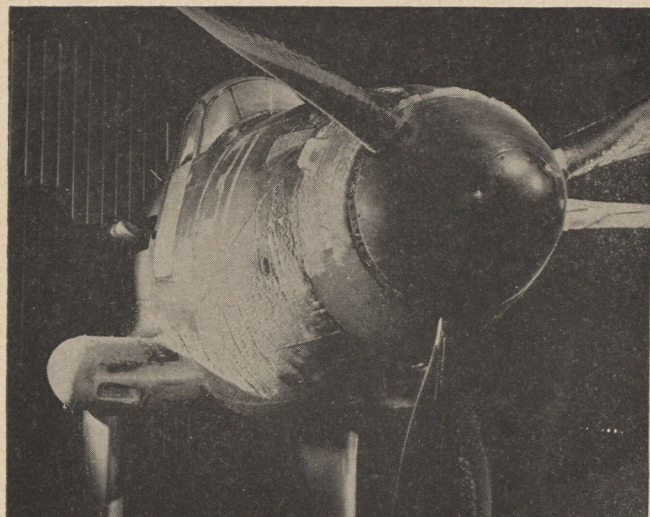
education. Dr. Clarence R. Wylie, Jr., acting dean of the College of Engineering, is a well known mathematician who came to the Institute from Ohio State University.

World War II, especially in its initial stages, demonstrated to the AAF the unvarnished fact that comparatively few men in the supply division were capable of computing supply requirements in the true meaning of the term. It became evident that the AAF needed specialists who would not only know the intricacies of logistics, but would have a sufficient knowledge of engineering terminology and engineering practices. This complex situation, accentuated by use of new air weapons in a war in which air power was tremendously effective, was among the motivating factors behind the establishment of the Institute in its current phase.

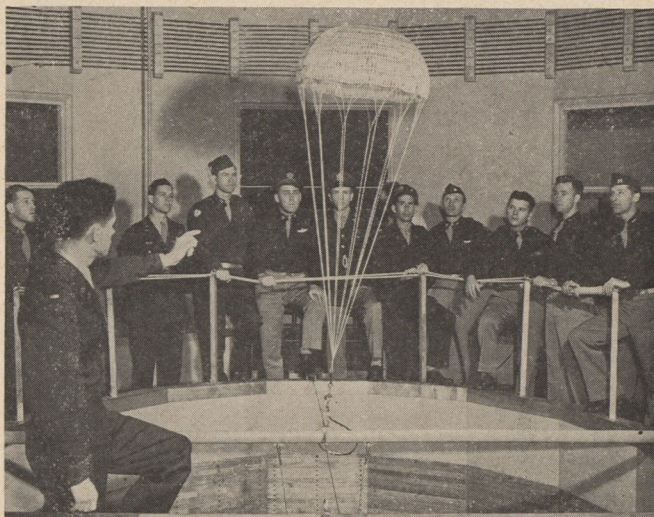
The original survey for setting up the school was not left to chance. Top brains of the scientific world, members of the Scientific Advisory Group serving as advisers to the Commanding General of the AAF, were enlisted in the survey. They found that no means were available at that time or in the immediate future for obtaining the desired undergraduate education in any of the existing civilian institutions. An AAF institution, therefore, was decided as a "must."

The AAF has placed a high premium on requirements for entrance. Requirements for the first class, now in its second semester, are two years of college work leading towards a Bachelor of Science or Bachelor of Arts degree in a recog-

(Continued on page 60)



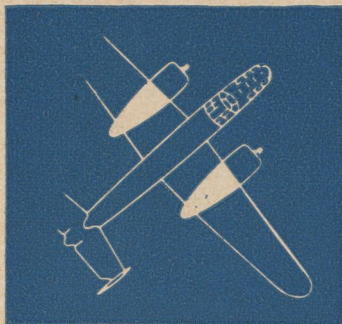
Performance of Air Force equipment in extreme climatic conditions is of ever increasing interest to the AAF. Ship above is being studied to determine icing characteristics.



Model of ribbon parachute in vertical wind tunnel of Wright Field laboratories of Air Matériel Command is studied by a group of Institute of Technology students.

tech

This month's technical activity stars a light two-stroke power plant, paracan drop system and an electronic magnetless compass



topics

One of these is the Model 4300, which was developed during the latter part of the war for power targets. It weighs only seventy-four pounds and has an output of 60 hp. During the war, one of the targets powered by this unit was clocked at over 200 mph. This plant is currently under production. In prototype stage is a 120 hp opposed-six air-cooled two-stroke unit which weighs only 150 lbs. It has been designed for both marine and airplane use. The probability is that the combined demand will allow mass production of the unit, thus reducing the sales price.

Two-stroke cycle engines have been tried before in light aircraft, but the excessively high operational RPMs required for maximum power output discouraged their development. However, advancement in design and metallurgy have been made since, which may offer compensating advantages. Light weight is achieved by the use of high-pressure aluminum alloy die casting for everything in the plant with the exception of rods, crankshaft and cylinder sleeves. One of the engineering innovations which is incorporated to eliminate the objections to the two-stroke cycle theory is the reverse flow scavenger system, a method for obtaining correct

McCulloch Motors, wartime builders of the four-cylinder engines that powered many of the radio controlled target planes has announced a new line of two-stroke air-cooled power plants, which will be built in their newly opened California plant. While most of the engines will be used for motor-scooters and stationary purposes, two units have definite possibilities in the aviation field.

turbulence and distribution of incoming fuel inside the cylinder. This permits the use of flat topped pistons, an innovation in two-stroke designs.

Civilian Power Boost

Water injection, the system which provided surge power to our wartime fighter planes and frequently made the difference between victory and defeat in air combat, is being made available to commercial aircraft, according to a recent announcement made by the Pratt & Whitney Division of United Aircraft. The system, developed in 1942, permits higher power by cutting down engine detonation. On large units, like P & W's 2400 hp Double Wasp and the 3500 hp Wasp Major, this is a bonus of from 250 to 300 hp, a sizable increase particularly in a multi-engined airplane.

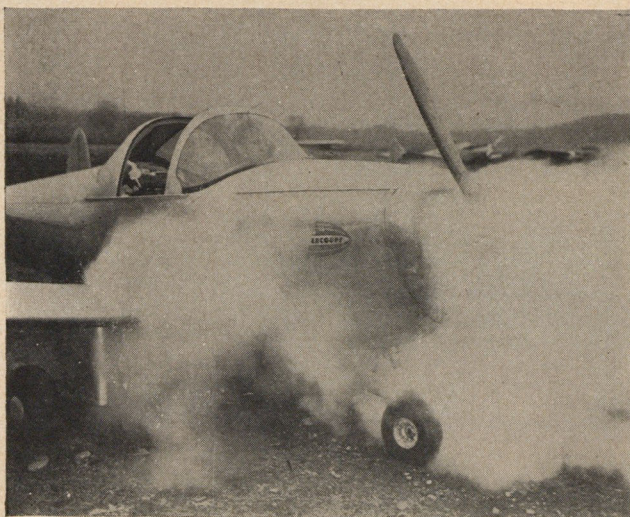
Because the commercial airplane uses its maximum power virtually only at take-off, the use of water injection permits the more efficient use of power, cutting down the engine weight that must be carried for the complete length of the flight.

Paracan Monorail

An automatic monorail system, capable of dropping fifteen standard 350-lb paracans (parachute borne containers) in eight seconds from the cargo hold of a C-82, has been designed by the engineers of Fairchild Aircraft at Hagerstown, Md. The system consists of an extruded aluminum beam extending along the ceiling of the Troop Carrier Command Packet, at the center line of the cargo hold. Suspended from the beam are trolleys which are actuated by an endless electrically operated cable. This cable carries the paracan to a tripper directly over the paracontainer door in the belly of the fuselage where they are released.

As each unit falls free, its parachute is opened by means of a static lanyard attached to the ceiling of the hold. Paracans are interconnected by means of a webbing tape of fixed length, which assures delivery in close pattern.

The system is operated by a push-button system at the jump master's station, which opens the paracontainer doors, unlocks the paracan system and starts the cable actuating system. The system may also be operated from the pilot's



World's smallest fire extinguishing system, miniature of the Walter Kidde units used on transports, tried out at Morristown, N. J. Like larger design, it consists of CO₂ bottle, situated under the seat. The extinguishing gas is piped to engine on release.



Army authorities are still secretive about benefits to be derived from this unusual landing gear setup experimentally installed in the Martin XB-26H. The tandem fuselage wheels are the same size while balancing wheels in nacelles are considerably smaller.

overhead control panel, or, in emergencies, can be controlled manually.

With the aid of the system, a C-82 can, for instance, drop two complete 75mm Howitzer batteries in the time it formerly took to drop one.

New Compass Principle

At a recent meeting of the American Institute of Electronic Engineers, Dr. Waldo Kliever, director of Research for Minneapolis Honeywell Regulator Company, unveiled the electron gun compass, an instrument no larger than a flashlight that is capable of flying the largest airplane or navigating monster ocean liners with an accuracy unprecedented in the science.

The device, which contains no moving mechanical parts, is designed to provide directional signals and to guide the airplane on a pre-set course. The instrument, known as the Cathotrol, is seven inches long and one inch in diameter, mounted on a gimbel joint so that it can swing freely. It is usually positioned in the wingtip or some other place where it can be free from magnetic disturbance. The circuit consists mainly of a specially designed vacuum tube which houses an "electron gun." This gun fires a constant and focussed stream of electrons at four tiny target plates.

When the gun is pointed directly at the earth's magnetic field, the electron beam is equally divided between the four plates. At any other position, the earth's pull bends one of the beams, so that they strike the target pattern unevenly. Through a sensitive electronic amplifier system, the instrument measures the different electron currents on each of the plates, and translates this difference into energy sufficiently powerful to move an indicator needle or to control an autopilot.

Lighting Small Airports

A portable lighting system which includes a beacon, floodlights, landing strip markers and a wind cone, has been designed by Westinghouse to provide illumination for small airports serving flying clubs, schools and communities of less than 25,000. Capable of being operated by one man, the equipment can be procured at about a quarter of the cost of permanent type apparatus.

Key to the portable lighting system is a mobile two-wheel floodlighting trailer, which can be pulled by one man or

towed by an automobile or jeep. On this are mounted the electric generator and the battery of two to four floodlights. Placed at one end of the landing strip, the flood is focussed down the strip to shine on a series of markers set in the ground at 100-foot intervals. Where the wind changes, the attendant can relocate the lighted path in a short time merely by moving the trailer and the markers.

As supplementary equipment, two Westinghouse *Approach Angle* Indicators are supplied to assist landing. A flashing, three-color beam shows yellow if the pilot is too high, red if he is low and green if his altitude is correct.

Electrical Heating for Props

Hamilton Standard Division of United Aircraft Corporation has announced the development of an electric de-icing system for propellers which, unlike many previous devices, is able to keep the airscrew free under the most severe conditions and for long periods of time. The system uses resistance heat plus the propeller's own centrifugal force to eliminate this major hazard to all-weather winter flying.

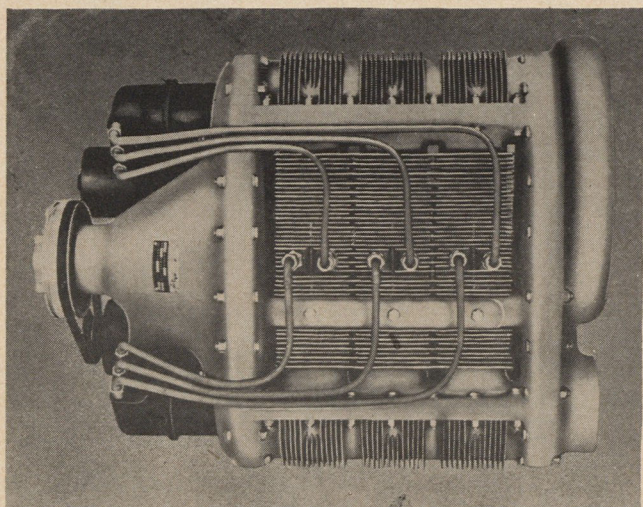
Two different heating units have been designed, one for hollow steel propeller blades, the other for solid aluminum alloy. The steel blades are de-iced by means of a special alloy heater wire cemented to the inside of the blade's leading edge.

For solid dural blades, the heating element consists of three layers of rubber, mounted externally on the blade. The middle layer is conductive rubber which supplies the heat by its native electrical resistance. The layer next to the metal is selected for good cementing and insulation qualities, the outer layer for smooth finish and resistance to the weather.

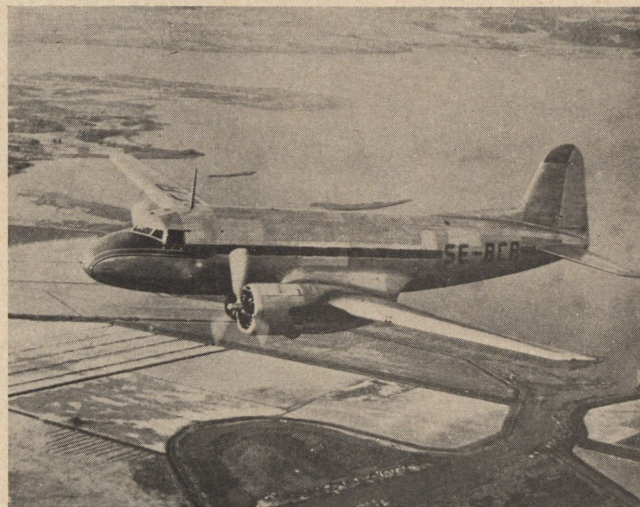
Current is provided either by the airplane's battery or by the generator system, and carried to the propeller by a slip-ring and brush circuit. The power supply is controlled by a timing device which cycles the current to each propeller in turn on a multi-engined plane. In this way, each prop can be served with heat, twenty seconds on, sixty seconds off for normal icing; sixty seconds on, 180 off for extreme conditions.

Personal Plane Production Holding

Despite a greatly shortened work-day month due to holiday shut-downs, December shipments of personal aircraft totalled a net billing of \$6,054,000 in December for the twelve top producers. This was a total of 1,891 units for the month. It was, however, a drop from 2,812 planes valued at \$8,190,000 for the previous month.



Plan view of McCulloch two-stroke engine, built in California, for aircraft and marine use. Incorporating new features, unit produces 120 hp for 150 lb gross weight. During the war, the company built a 60 hp opposed four engine for radio-controlled target planes.



Flight view of first postwar passenger transport built in Sweden, the SAAB-Scandia. Powered by two 1450 hp Pratt & Whitney engines, it can carry up to 32 passengers at 220 mph. Built for small field operation, it can land with full load in field 770 feet long.

Sign of a smooth engine

When your engine needs attention, you'll find expert help wherever this famous sign is displayed. See your Authorized PAC Dealer or PAC major base for guaranteed parts, service, or a PAC-rebuilt engine, and be sure of a smooth engine.

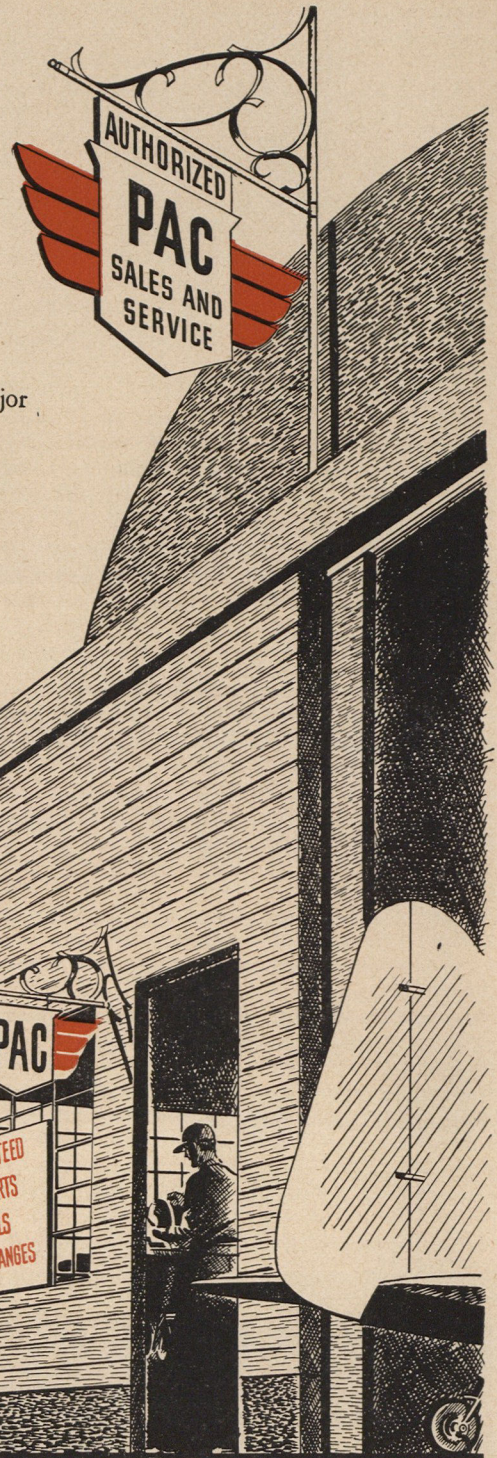
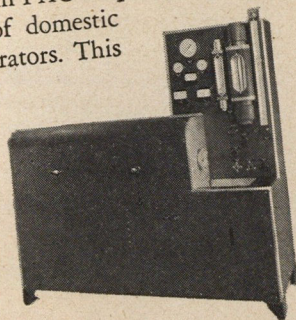
Your PAC Dealer is a part of the oldest and largest aviation maintenance and supply organization in the nation. No matter where he is located, on small or large airport, he is close to supplies and service from one of the major bases of the company, which reach across the United States and from Alaska to Mexico City.

The PAC Dealer organization is growing rapidly, as more and more airport-service operators learn how PAC helps them give better service to their customers. On trips, or at your own airport, watch for the PAC sign ... it's a good sign for flyers.



PAC-BUILT SERVICE EQUIPMENT

PAC builds many kinds of maintenance and repair equipment, both for use in PAC shops and to meet the maintenance needs of domestic and foreign aircraft operators. This hydraulic-pump test stand (PA-831) performs required tests on overhauled hydraulic pumps, up to 3000 psi. Descriptive literature is available.



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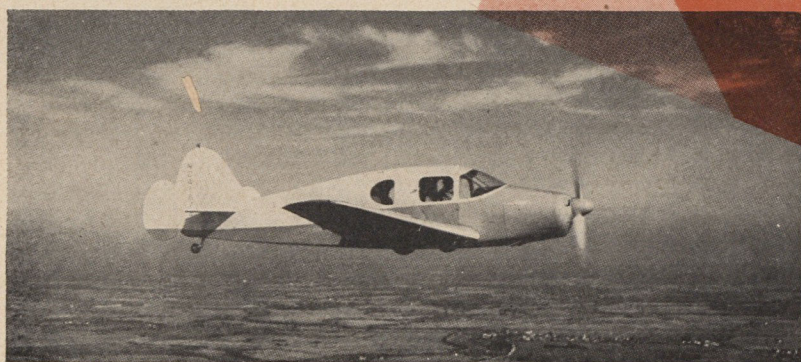
Anchorage, Alaska

AIR FORCE

A pilot's airplane built to get maximum performance out of minimum power, Bellanca's latest continues a tradition begun in 1922 with the first cabin type in US

CRUISAIR CLOSE-UP

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



Although not as apparent in the streamlined Cruisair as it is in older designs, Bellanca still retains a general airfoil shape for the fuselage, making it produce considerable lift.

BACK in the days when American air power was trying hard to recover from the damage the motor car industry had inflicted on it during World War I, a mild-mannered young fellow named G. M. Bellanca startled the industry with a five-place cabin monoplane that could do 105 mph on a ninety horsepower Anzani engine. In those days, a ninety horsepower plane was equal to a two-place Jenny that could hardly be *dived* to 105 mph. To this day, no other ninety horsepower airplane has ever equalled the cabin job in efficiency. Unfortunately, there was no function for the craft, and the business lacked either the money or the vision to put it to work. Only one was ever built. It is still in existence.

A few years later, an airplane known as the Wright Bellanca arrived at Curtiss Field (now Roosevelt Airport) in Mineola, Long Island. Engineers from a local aircraft factory came out to examine this radical looking high-wing monoplane with its lifting struts. In the light of the best mathematics of their day, they tried to calculate its performance, and came to the conclusion that the plane's absolute ceiling was 3000 feet below sea level. Then the airplane went forth and shattered a number of world's records.

Of course, the science of flight has come a long way since then. Still, Bellanca, the mild-mannered revolutionary from Milan, has kept his relative distance from the bulk of the industry's movement, preferring to be the innovator at times

when progress was needed, and conservative when change was being forced on the industry for the mere sake of variety. His theory of airplane building is embodied in the Cruisair currently under production at the Bellanca plant in New Castle, Del.

The Cruisair line began with a low-wing design which never got beyond the wind-tunnel stage in the early 1930's. It was to have been called the "Coach." Its low-wing theory had been developed previously by the "Flash," a single-engined racer built for the famed Irish pilot, James Fitzmaurice, for entry in the London Melbourne Derby, and by the low-wing trimotor which was built for the Romanian pilot Alex Papana and which, much later, placed second in the Bendix Trophy Race. Two things kept the "Coach" out of production. One was the collapse of the private-ownership market during the depression, the other was the sustained sale for the famed Pacemaker-Skyrocket-Airbus line of airplanes.

The first genuinely christened Cruisair was introduced in the late thirties. It was a high-performance three-place job using small radial engines like the Lenape "Brave" and the Rearwin 5F. Despite its light power, the ship cruised at 124 mph, and topped in excess of 135.

A lot of trail-breaking was done with this plane. Pilots of that time connected high performance with power, and private aviation connected such innovations as retractable

CLOSE-UP

landing gear—which the Cruisair sported—with military aviation. As a matter of fact, the plane's landing gear was often used as an argument against it by some of its competitors. The airplane was one day being demonstrated to Bernarr MacFadden, well-known magazine publisher, who flew his own plane at an age when most men are satisfied not to fall out of their rocking chairs. Mr. MacFadden asked Lou Reichers, the Bellanca salesman, what would happen if he forgot to lower the landing gear before setting down. Reichers explained that the average penalty was a broken propeller and some scratched paint. As a matter of fact, Reichers said, in the case of forced landing in unfamiliar territory, setting down with the gear up might be a safer procedure. A few weeks later, Reichers received a wire from the publisher—"Send new prop—see what you mean."

Just before the US got into the war, Bellanca switched from radial engines to flat opposed fours. Merchandising on these didn't get into high gear before the bombs fell on Hickam, and the advent of war put a quietus on planes for private use. Like everyone else, Bellanca forfeited his personal plans for the duration. He built parts for other people's airplanes and he built a trainer foreign to his production scheme. But when the enemy called it quits, Bellanca's plant was not too

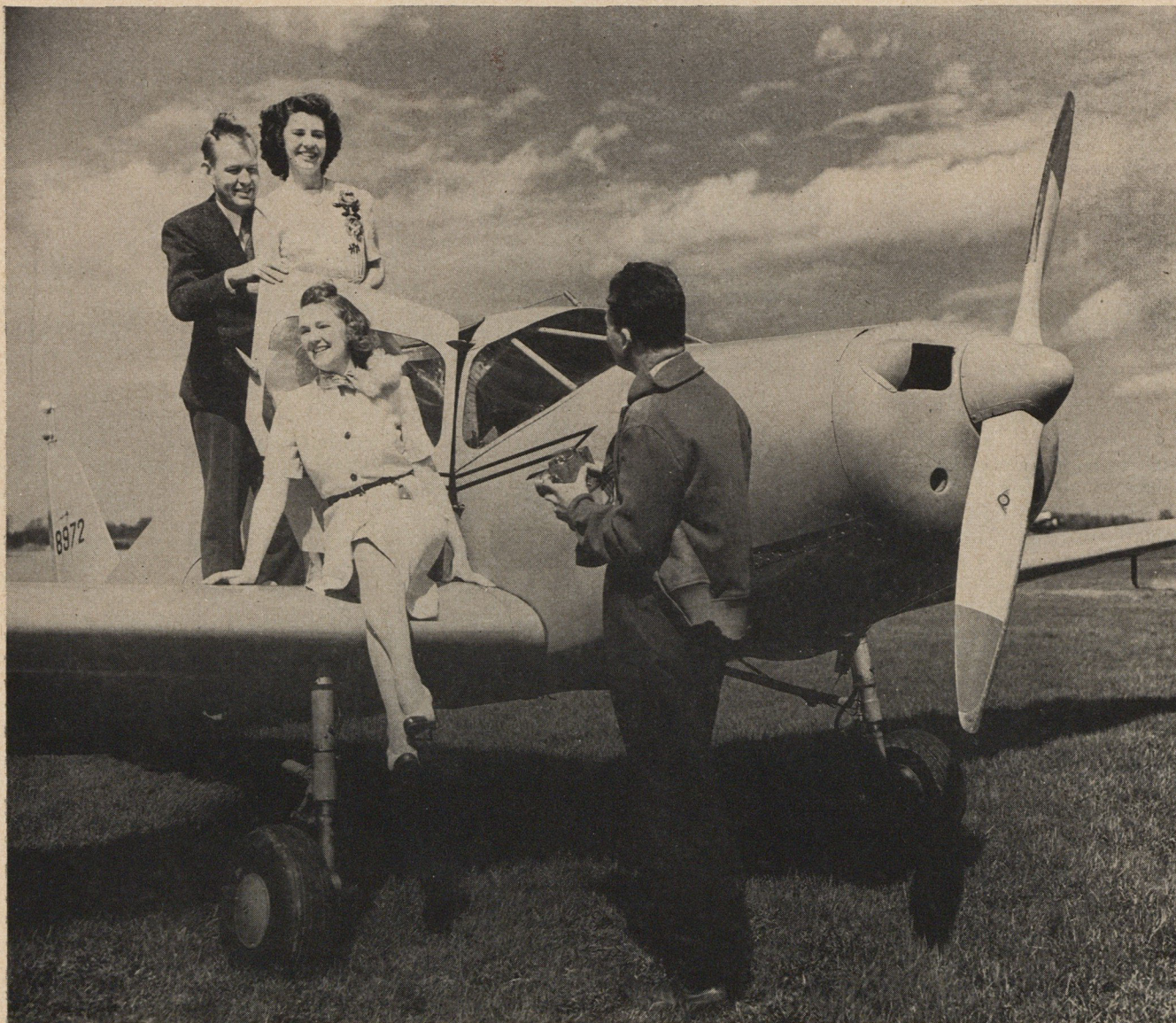
far away from its original product, and reconversion was not a slow process. The current Senior Cruisair is the logical development from the prewar model, with increased power, pay load and speed.

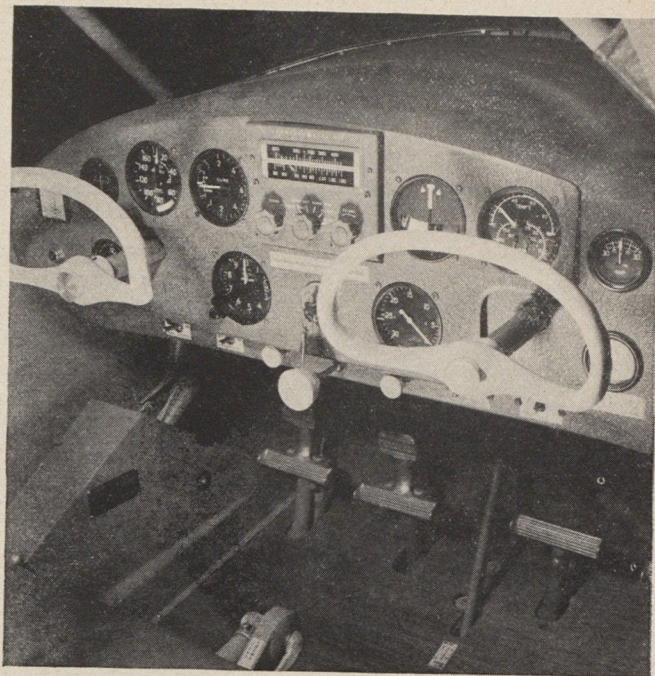
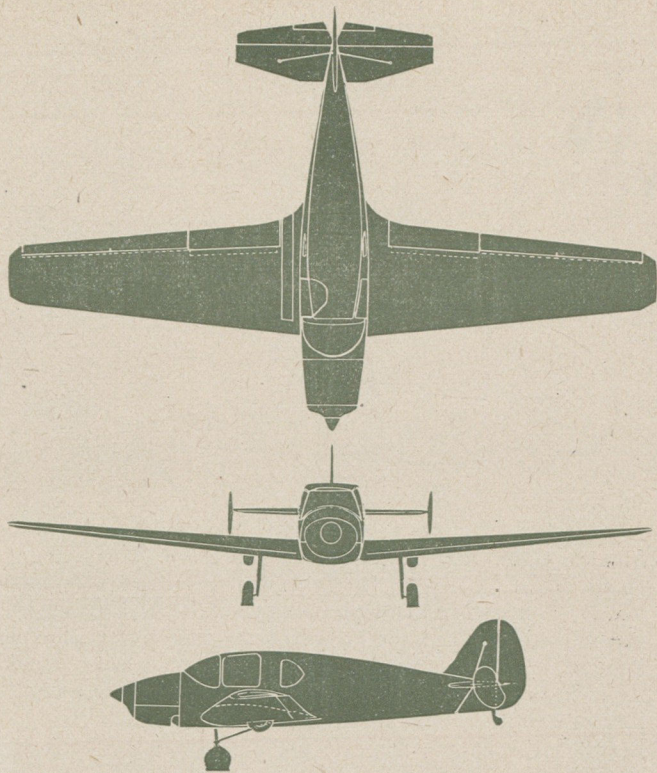
Cruisair Structure

The current Senior Cruisair is a four-place low-wing monoplane, powered by a 150 hp opposed six air-cooled Franklin engine. It has a 34-foot 2-inch span, 21-foot 3 11/16th-inch over-all length. Revised gross weight for the latest model is 2150 lbs. The fuselage is built up of welded chrome molybdenum tubing, as are the main wing trusses that run transversely through the airplane under the floor of the cabin. Forward of the front wing hinge, the airplane is covered with aluminum alloy cowling, aft, with standard doped fabric. The cabin is partitioned off from the power plant section by a stainless steel fire wall.

The wing group consists of two panels attached to the truss system, built integral with the fuselage. Their structure consists of two spruce spars and truss type ribs, covered with a plywood skin. An overskin of predoped fabric is applied both as a protective and superior aerodynamic surface. The ailerons are of similar structure, a single spar

Designed primarily as a personal vehicle, the Cruisair's proficiency makes it a top fixed base operator's airplane. Unlike one shown below, most current orders use Aeromatic propeller.





Cruisair three views (left). Above, front seat, showing excellent pilot vision, plus control accessibility from both seats.

with truss spruce ribs, fabric over plywood skin. It is fitted to the rear spar by three hinges. The slotted flaps are similar structures, controlled by a spring-recovered ratchet system. Three positions are provided, climb, take-off and landing.

The tail system is of conventional structure; stabilizer, elevator, fin and rudder, are chrome-molybdenum the same as the fuselage. Up to very recently, the auxiliary fins which were fitted to the ends of the stabilizer to give the Cruisair some of its remarkable flying qualities were of similar structure. Recently, this was changed to a built-up laminated wood structure, which appears to do the desired job with less performance penalty.

The landing gear is manually operated by one of the simplest possible systems, chain and sprocket. Each side of the landing gear consists of a main oleo leg propelled by a hinged strut. It takes thirty-two turns of a hand crank to get the gear up or down, and a workable and noisy warning system reminds the pilot if he reduces power too far without putting the gear down.

Pilot View

The cabin interior is not unlike any good tudor type sedan. A good, wide door has been provided. Like most low-wing monoplanes in its class, getting onto the walk is a fair-sized step for a woman wearing a skirt, but beyond that, the rear seats are quite accessible, which is a comfortable change from the contortions that passengers have had to endure in some light four-place types.

There is adequate leg room for a tall man at both sets of controls. The instrument panel is logically arranged. Standard instruments consist of a compass, air speed, altimeter, tachometer, oil temperature and pressure gages, fuel pressure and electric fuel level gages.

The dashboard has mounting space for two-way radio and a dome-set loudspeaker eliminates the nuisance of radio headphones for the pilot. Full fibreglass sound insulation, exhaust mufflers and canted exhausts bring the cabin sound level down to where the radio loudspeaker can be heard at ordinary volume, and conversation can be carried on without difficulty.

In flying the Cruisair, certain things become apparent. It is an airplane, not a synthesis of a motor car that decided to fly. Whatever is applicable has been adopted from the auto-

mobile without making the airplane a slavish imitation of the ground vehicle. For instance, the ignition system has a locking system, the electric starter is handily placed but it is not designed to be a toy airplane. It's man-sized and while the airplane has no inherent vices and will tolerate a fair amount of sloppy piloting, it is an airman's vehicle by design, by feel and by performance.

On the demonstration from which this report was compiled, the airplane got off in less than the 485 feet claimed for it by Bellanca's specification sheet. There was a mild breeze, no more than ten mph. It gained the first 2000 feet of altitude in a bit under two minutes while struggling out of Teterboro Airport's carefully policed traffic pattern. This indicated that the claimed 1130 feet-per-minute rate of climb was not exaggerated.

After take-off, a few minutes of hand cranking is required to get the landing gear up. While this may sound like a lot of work for ex-military pilots who are used to doing the job with a flip of a switch, the system is lightly loaded and it's not much work.

Cruising speed at 2435 rpm showed at between 155 and 160 indicated, generally confirming the claimed 153.6 mph. Short runs at 2700 rpm ran the speed past 170 indicated. Checked claim was 169.2 mph.

What was remarkable about the airplane was certain of its air characteristics. While the Cruisair is not billed as a two-control airplane, normal turns can be made without the use of rudder. At less-than-cruising speeds, turns well past forty-

(Continued on page 60)



G. M. Bellanca, designer of Cruisair, pioneered field of high performance airplanes for personal ownership.



in the AFA

INTRODUCING

Burton E. Donaghy

THERE is a West Point story, nearly as venerable as the long grey line, about the instructor who asked his plebe class how they would erect a flagpole. In answer, the plebes suggested a number of different ways of digging a hole and of getting the pole into it. But none of the solutions satisfied the instructor. He pointed out, caustically, that they were training to be officers and that an officer would get it done by telling a sergeant to do it and then leave quickly.

Perhaps there is only a remote parallel, but it is interesting to note that the business of getting the first annual convention of the Air Force Association into being has been inherited by an ex-Master Sergeant who proved long ago that he could do a complete and complicated job well by himself. His name is Burton E. Donaghy, and he's been doing things by himself for quite a spell.

From his office that overlooks New York's elegant Park Avenue, Burt guides the destiny of one of the nation's less discussed but more opulent trade groups, the National Beauty and Barber Manufacturer's Association.

Burt was born in Jersey City on September 4, 1909. He went to Lincoln High School and matriculated at Columbia at the age of fifteen. He took marketing and sales and allied business science in the days when that was a new sort of thing to be studying under the Bachelor of Science degree. He tried out for both football and track, but he was quite a little duffer. As a matter of fact, he didn't attain full growth until after he got out of school. Donaghy likes people and people like Donaghy. He put this talent to work early. While he was still in college, he sold advertising space for the Jersey Journal and did photo follow-up. When he left school, he took a crack at merchandising for the General Foods Company, calling on dealers and distributors. After that, he sold wholesale electrical supplies to large office buildings.

His next whack at selling was with a fuel oil company in New Jersey. In three years, he rose from commission salesman to sales manager.

But after three years as an executive, Burt quit his desk job and hired out at five dollars a day doing market research on a free-lance basis for advertising agencies, for magazines and for radio stations. In the decade before the war, Donaghy held key positions in a number of top advertising agencies and research units, always working on human reaction to new ideas. He was at the zenith of his career when, like many others, he received his Greetings.

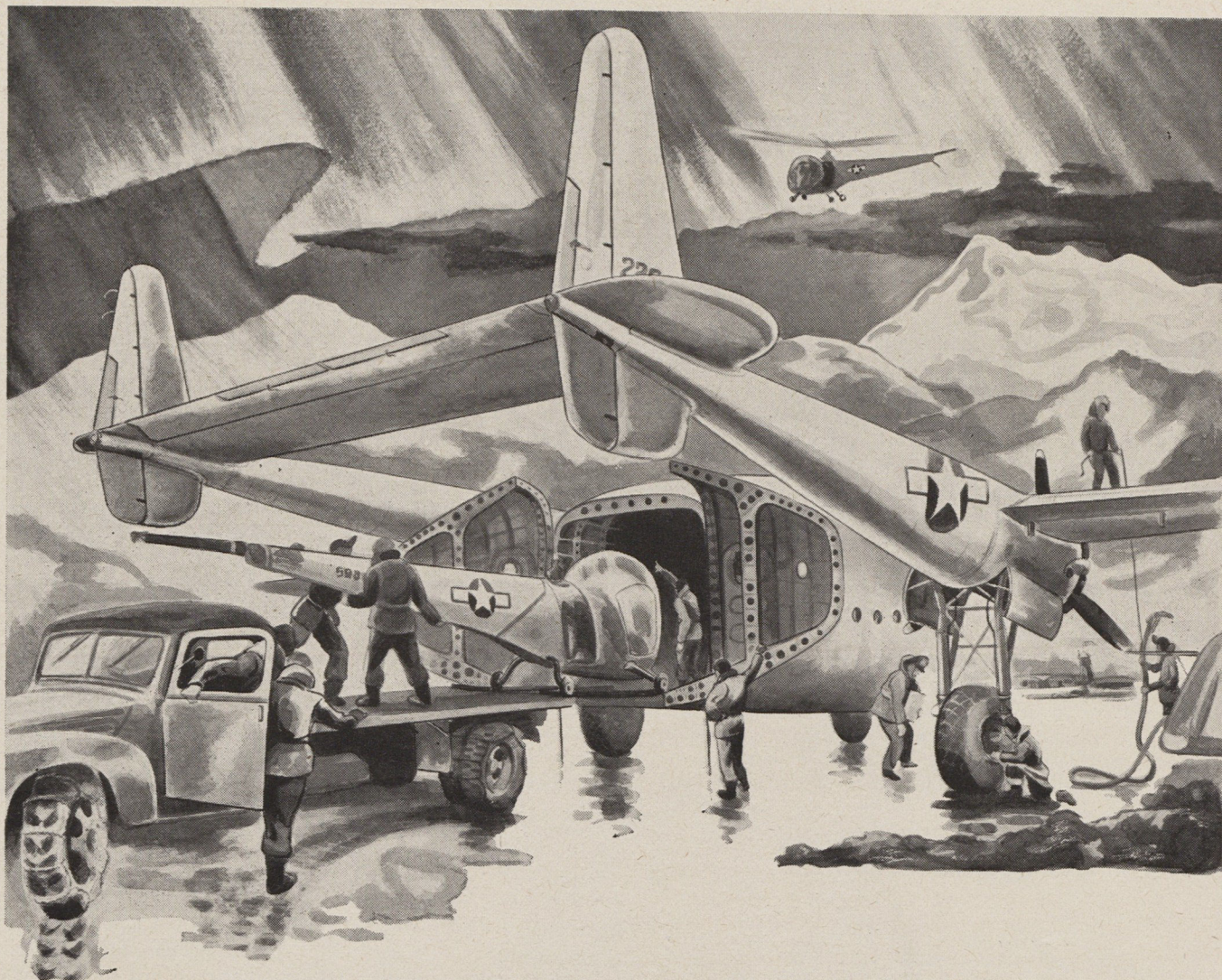
In April, 1942, Burt donned the khaki. He took basic at Miami Beach. Here, because of his work with people, he was retained for work in classification and personnel, and remained at Miami for two years. On the strength of his promotion to PFC, he was married to Louise Miller, movie and stage actress and model. He was a Technical Sergeant by the time he left Miami to go to a Redistribution Center at Santa

Monica, California. Here he made *full zebra*. After serving on the Coast for a year, Donaghy was ordered to Washington, D. C. It seemed that Col. Baskerville, the AAF's chief art expert, had collected the cream of the paintings that had been made by artists in the AAF. Gen. Arnold had ordered the collection to be exhibited in the major cities of the nation. Col. Baskerville handed the Master Sergeant the job.

When the Master Sergeant got out of his GIs early in 1946, he had a couple of things lined up to do. His current position with NBBMA looked like the best combination of executive freedom, profit and opportunity for his favorite pastime—meeting people. He became an AFA director when the organizing committee was combing the ranks for men to direct the destiny of AFA. One of the major needs was for men who knew men and could gage the way they thought and acted—that was Donaghy.

Director Burton E. Donaghy, former AAF M/Sgt. now Chairman of the AFA's First Annual Convention Committee.





With Task Force Frigid . . . on the Top of the World

On duty with Task Force Frigid, a Fairchild Packet recently disgorged a Helicopter—ready to fly in a few hours.

Part of a series of cold weather tests being conducted in Alaska, it was all in a day's work to the versatile Packet, pack horse of the nation's fast-moving Air and Ground Forces.

This Fairchild design has opened a new channel of military strategy—complete, fast, air-transport of guns, ammunition, vehicles, supplies and men. And it's doing this *now* for

an army that hasn't time to travel by land.

It rushes battalions of paratroopers to objectives, dropping them in compact combat groups.

It's a flying troop train for Air-transported Infantry and Artillery Battalions.

It's transformed in a few minutes into a huge flying ambulance for swiftly transporting as many as 34 litter cases and four attendants.

Designed specifically to carry military cargo, The Packet is another Fairchild example of "the touch of tomorrow in the planes of today."

 **Fairchild Aircraft**

Division of Fairchild Engine & Airplane Corporation, Hagerstown, Maryland

NELSON *Dragonfly*

Auxiliary power takes the backbreak and heartbreak out of aviation's most fascinating sport — soaring

SAILPLANES, until very recently, have always had one thing in common with sailboats. Both have been dependent upon the caprice of the winds to get them where they wanted to go. If Aeolus, who holds dominion over the breezes, took it into his fickle noggin to abandon the captain of either type of craft in the middle of a journey, the poor voyager was without recourse. If he commanded a yacht he could do little more than sit and watch the waves. If he was a glider pilot he was in worse shape. It was an unsavory state of affairs.

Some years ago the yacht skippers solved their problem by adding auxiliary power plants to their boats. The results were highly satisfactory. Now at last, soaring enthusiasts have likewise liberated themselves from most of the worries of powerless flight. He has developed a true sailplane with a lightweight engine auxiliary of sufficient power to get him into the air and, if need be, down again without mishap.

The new machine is known as the Nelson Dragonfly, designed by the noted glider-engineer William Hawley Bowlus. Externally, it resembles many of the other "pod"

type gliders that he has created in the past. The main difference, of course, is the addition of a special lightweight four-cylinder two-stroke-cycle engine, mounted pusher fashion on the rear of the pod.

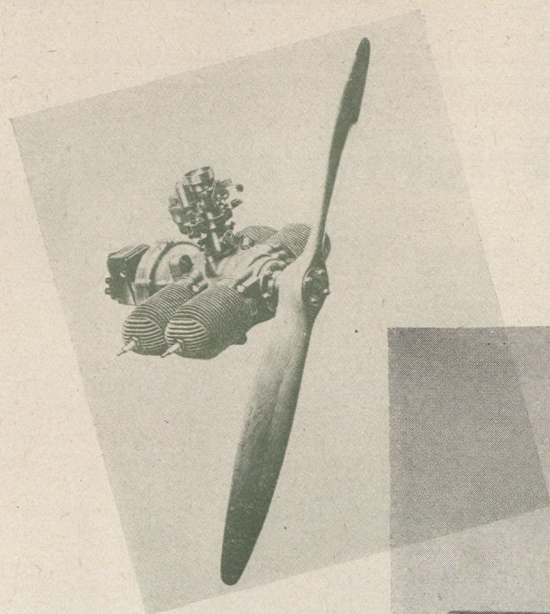
The new machine, recently certified by the CAA, is a two-place braced high-wing monoplane. The empennage is supported by a tubular dural boom. The pod is made up of a molded plywood shell around a series of closely placed bulkheads. A manually operated tricycle landing gear system provides unusually clean lines in flight. The wing is the conventional glider construction, wood monospar, with a D-shaped torque box acting as leading edge.

A single-piece molded plastic windshield offers exceptionally good visibility. The instrument panel carries the usual glider instruments: altimeter, airspeed indicator and sensitive rate-of-climb. In addition, there are the engine instruments and controls. A wire ratchet starter system is provided to allow restarting of the engine in flight.

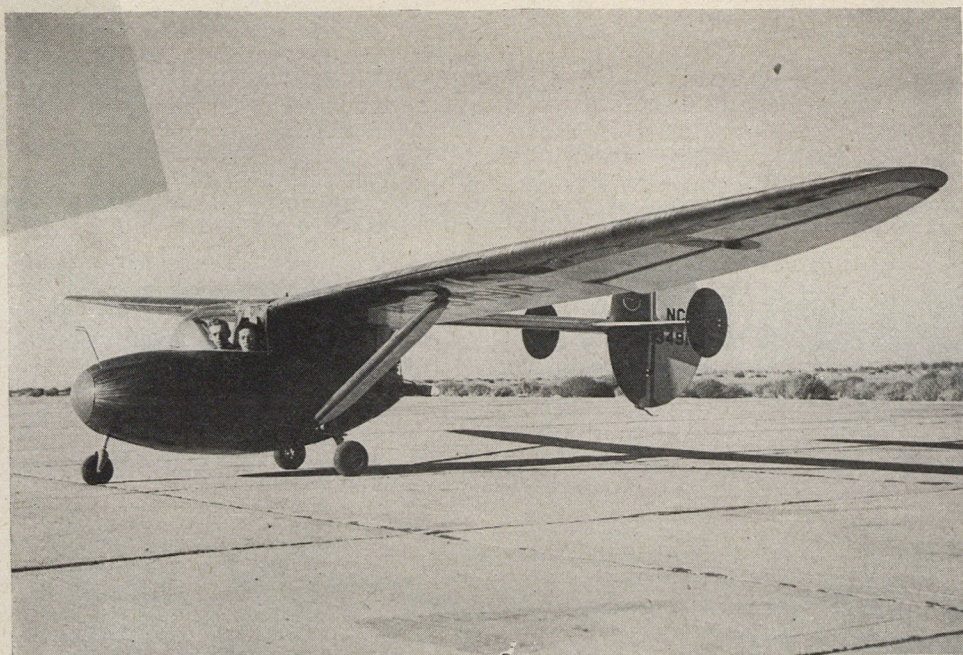
The Dragonfly's size is conventional for a two-place glider. Its span is 47' 4", over-all length is an even twenty feet. It weighs only 580 lbs empty. With auxiliary power, the craft has an operating speed of seventy miles per hour. In still air, the craft take off in 900 feet at sea level with 360-lb load.

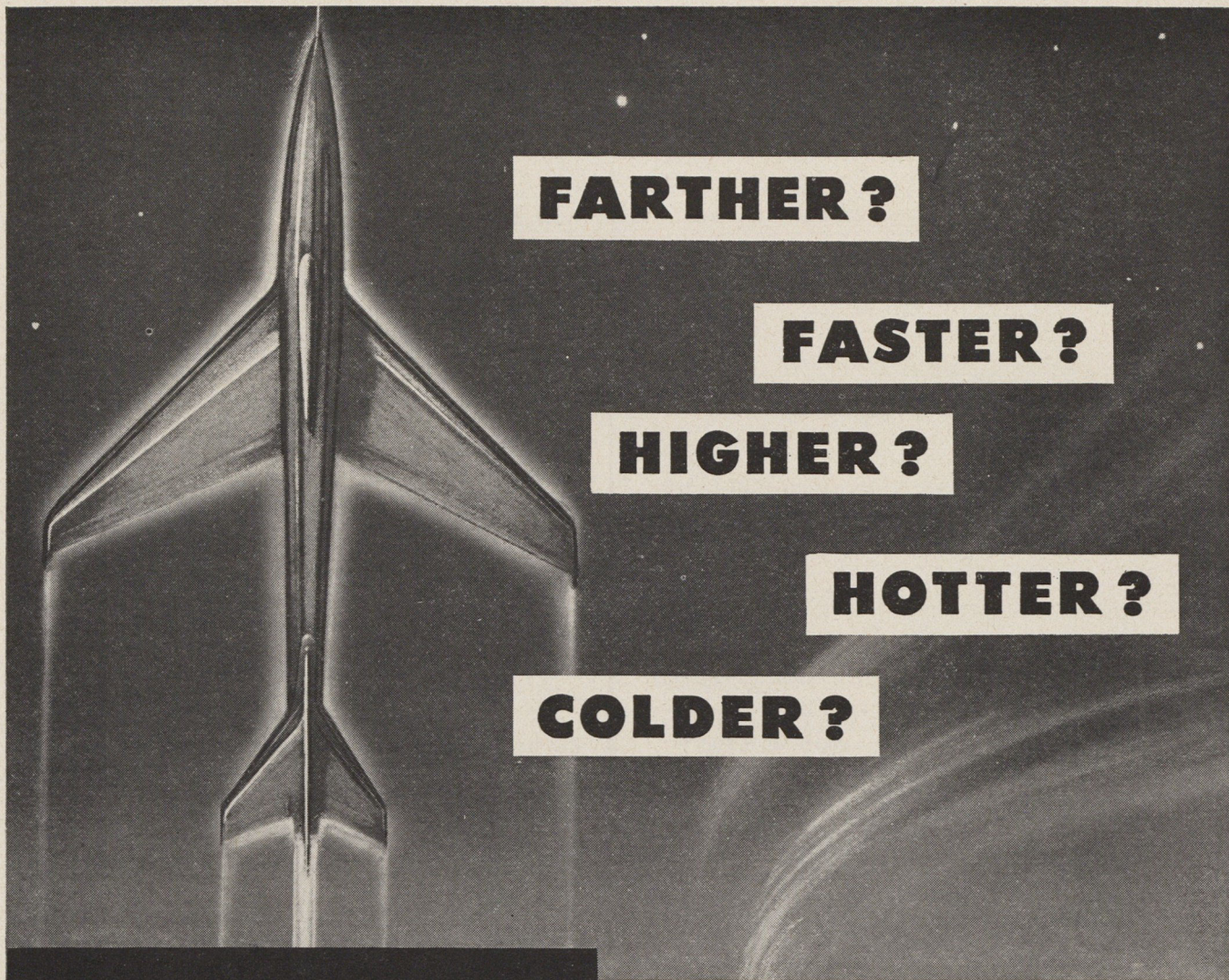
Probably the most remarkable thing about the Dragonfly is its power plant. The crankcase and other of its major parts are made of magnesium. The unit weighs only fifty pounds.

Like the true glider engineer, Bowlus defied the hangar-owner in the design of the Dragonfly. It can be assembled or taken down in fifteen or twenty minutes, carried on a standard glider trailer and stored in an average garage. The Dragonfly's tank has a capacity of three gallons, considered adequate for the average day's soaring.



The Dragonfly, right, was designed by the noted sailplane builder Wm. Hawley Bowlus. To an established configuration Bowlus added a 25 hp engine, above, weighing only fifty lbs. Previous glider engines rarely tipped scales at less than 125 lbs. It is one of the first planes designed from the beginning for auxiliary use only.





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Book

The Purple Testament. Edited by *Don W. Wolfe*. Stackpole Sons, Harrisburg, Pa. \$3.50.

This is an unique volume from history's viewpoint. It contains a number of short compositions, written at a university in Washington, D. C. in an English class conducted by the editor. All of the authors, fifty-three of them, were wounded veterans who were training to become councilors and national service officers for wounded veterans like themselves. Eleven of the number had single or double amputations.

The contributions are, for the most part, brief. They seem in most cases, to have been daily exercises in rhetoric, but most important, an opportunity for the fluid outpouring of something big that was penned up inside. There are brief notes by a young fellow who had made a fetish of stepping ashore on each foreign land with his right foot. He was saving the act of stepping ashore with his left in proper style, for the hour he stepped ashore on US soil for the first time—. But he wasn't able to. He left his left leg in France.

There is a strain of comedy in the volume, a nostalgia, even mellowed bitterness. In the introduction, one of the authors points out the fact that the Army is a fine machine for making men into killers. When dogs are released from the K-9 corps, some time is spent de-agitating them so that their social habits may be compatible with civilian life, but combat troops get no such consideration. For soldiers, the accounts of treatment at Lichfield may be tough to take.

The Purple Testament isn't easy reading. There is a minimum of "teacher's" blue pencil in it, only enough to delete what was probably GI vocabulary. It comes from the heart of men who shed blood to gain whatever good can come out of war. Recommended compulsory reading for all Congressmen.

The Official Pictorial History of the AAF. By *the Historical Office of the Army Air Forces*. Duell, Sloan and Pearce, New York. \$10.00.

At the point in history where the air arm of the nation's defense becomes at least nominally independent of ground influence, this official picture review is a worth-while milestone. Under orders from General H. H. Arnold, the historical section of the AAF assigned a group commanded by Maj. John T. McCoy to assemble a library size picture history of the total development of third dimensional warfare in the US Army. If an air force version of the proverbial five-foot shelf had been available, getting this book together might have been an easy job. But the business of making it complete, covering all the important points to a degree that it satisfied the veterans of the events and still keeping it down to a usable book was quite a job.

The work is divided into six phases. One is the antique phase, where the balloon efforts of such men as Thaddeus Lowe are projected against the panorama of history. Next is the pioneering phase, between the acquisition of the first Wright biplane to the use of the Jennies during the Mexican punitive expedition of 1914. This is followed by an examination of the part the Air Service, still part of the Signal Corps, played during World War I.

A considerable and well deserved amount of space is given the usually neglected period between wars, when the

Reviews

Air Force ran down despite the valiant efforts of the peacetime airmen to retain public interest. The public was thrilled, if one remembers, but not enough to get an economy-minded Congress loose from enough money to keep a first-rate air force flying.

Naturally, much of the book is devoted to World War II from Pearl Harbor to Nagasaki and all the stops between. The final part, in which color three-views of all the important aircraft flown by the AAF is reproduced is of real collector's value. This is supported by photographs where these are more revealing. There is also a list of AAF-acquired model designations not depicted in the final chapter.

Major McCoy's group should be commended for a workmanlike job. Designed primarily as a researcher's book and an information source, it has a place in the library of every person who is proud of the Air Force, its history and its records.

Flight Testing; Conventional and Jet-propelled Airplanes. By Benson Hamlin. Macmillan, New York. \$5.00.

A practical handbook for the flight test engineer and the engineering test pilot. The book is an outgrowth of the experience of the author since his graduation from Rensselaer Polytechnic Institute in 1937. Since July of 1942 he has held the position of Senior Flight Research Engineer at Bell Aircraft Corporation.

The book sets forth the systematized study of flight testing and data reduction methods developed by the author in the course of his work in flight testing during the war.

In addition to the standardized methods for the reduction of flight test data to standard conditions the book contains explanations of all the essential aerodynamic theories, including the theory and general characteristics of turbo-jet engines; the basic formulae used in flight testing and their applications; the methods of acquiring data and the data required for evaluating each aspect of airplane performance; and the necessary instrument calibrations and corrections.

Anyone concerned with the design and testing of aircraft should find this a highly useful guide and reference work.

Airports: Design, Construction and Management. By Horace K. Glidden, Hervey F. Law, and John E. Cowles. McGraw-Hill, New York. \$7.00.

A consideration of the many factors involved in the design, construction and management of airports, pointing out that the complex nature of this facility requires the specialized knowledge of many experts in order to avoid costly mistakes.

This book is based on the extensive experience of the authors in building and operating airports plus the assistance of various experts in all phases of airport engineering. Illustrative material taken from the published works of the Civil Aeronautics Administration, Bureau of Public Roads, American Society of Testing Materials and other governmental and private agencies has been used throughout the book.

The book covers: the role of the government in airport design and construction; site selection and layout; grading, drainage and pavement design; turfing and layout; radio aids and traffic control; obstructions, lighting and removal; specifications and tests; and a chapter on airport management.

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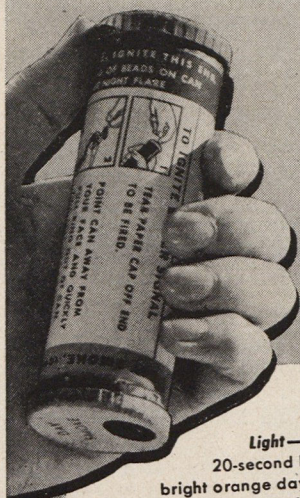
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Business Department

AIR FORCE

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FORBIDDEN CITY

(Continued from page 26)

around and around them at considerable speed, and a blurred succession of Doc Bos kept suggesting that maybe they should be on their way, and somehow they were back on their horses again and setting out for Lhasa in a lovely daze, rolling from side to side in the saddle and singing "Home, Home on the Range. . ."

They did not remember much about their entry into the Forbidden City. There seemed to be thousands of people lining the streets, they said, and women with jeweled nose-rings smiled at them from balconies, and native brown children and white donkeys skittered out from under their horses' hooves, and they had an impression of the Dali Lama's great marble Potala, towering five stories high above the rest of the city and topped by glittering gold domes, and huge mastiffs on chains lunged at them as they passed, and occasionally the nightmare face of a fierce Tibetan guard would swim toward them out of the mist, and suddenly their horses had halted before the British Government House, called the *dinkilinka*, and a British major was rushing forward with hands outstretched and saying: "Come on in and have a drink. . ."

They spent five days with Major Sherriff and his wife, and in some ways that was the most incredible part of the whole adventure, they said. They had hot baths, and shaves, and at night they slept in the first real bed in twenty-two days. They ate homemade ice cream, and played ping-pong with Mrs. Sherriff, who was the former Betty Hughes, one-time contender for the Wimbledon Cup, and one evening Major Sherriff got out a projector and showed an old Laurel and Hardy film. "We laughed till we cried," Crozier said. They wandered through Lhasa's narrow winding streets, devoid of wheeled vehicles of any kind, and they were relieved to find the Tibetans so friendly. They had been afraid the citizens would resent the fact that they had flown over the city—Tibetans believe that no human being should venture higher than the Dali Lama—but evidently the local priests had pointed to the wrecked plane as awesome proof of what happens to an offender, so the populace seemed to be satisfied.

Meantime Mr. Rangang, Minister of Foreign Affairs for the Tibetan Government, was arranging for a caravan to take them to the border; and at last, on December 19th, they started the long trek back to India. They had done what no other American had ever done, they had flown where no fliers had been before; but with every mile, the whole thing was growing more and more unreal, and already their glimpse of Shangri-La was only a movie they had seen.

They spent Christmas Eve along the trail at the small Tibetan outpost of Gyantse, with a single British officer named Captain Davis who was stationed there. The Captain broke out his only bottle of whiskey for the occasion, and they sat around and sang "I'm Dreaming of a White Christmas" and Captain Davis said he wished he had a harmonica so he could play a tune like that once in a while when he got homesick. You can get homesick even in Shangri-La. . .

Corporal Spencer remembered about the harmonica. As soon as he got back to India, he wrote his father in Rockville Center, L. I., and asked him the next time he was downtown he should stop by the stationery store and buy a harmonica and mail it to a Captain Davis in Tibet that had been so nice to Corporal Spencer when he spent Christmas Eve there. The address created a small sensation in the local postoffice. The postmaster, having searched through all his books in vain for the zoning rate, shoved back his glasses and shook his head.

"I bet you one thing, Mr. Spencer," he said defensively. "I bet your son's the first person that ever visited Tibet from Rockville Center."

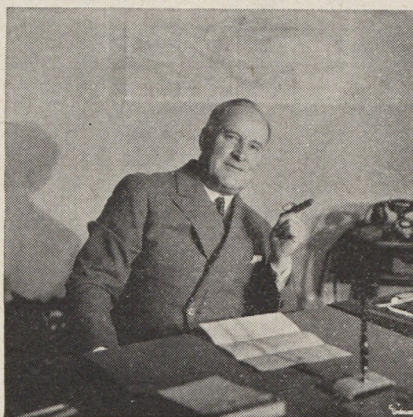
March, 1944

PICTURE QUIZ: Which of these five people gives the right reason for buying U.S. Bonds?

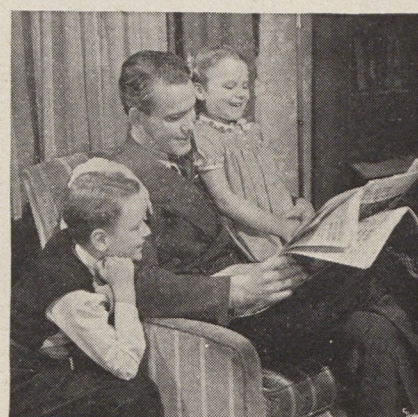
(ANSWER BELOW)



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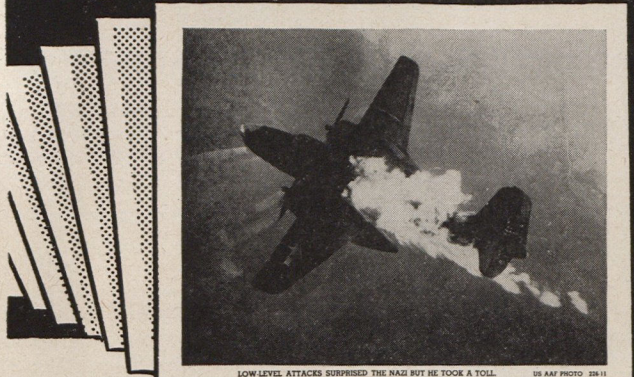
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CRUISAIR CLOSEUP

(Continued from page 51)

five degrees were made with ailerons alone, and the ship showed no tendency to skid or drop out.

Power off stalls, conditions where the nose is held up while the plane loses speed, were not unpleasant. At forty mph indicated, the ship did some shuddering and buffeting, but showed no whipping tendencies. It had to be held in the stalling position. Recovery was immediate as soon as the nose eased down. Power stalls were even easier. At cruising speeds, the nose dropped just a few degrees after the stall broke, then caught hold again. The landing gear warning system is simple but effective. The primary indicator is a strip of metal, attached to the landing gear trunnion, in such a manner that it will extend through the leading edge of the wing when the landing gear is down. The pilot merely has to look out and check. Then, as a reminder, the carburetor is rigged with a special Delco-Remy switch, which actuates the signal system if power is cut below 1700 rpm and the landing gear is not down and hooked. If the pilot has forgotten to lower the gear, a red signal lights up on the dash, and a LOUD bell starts ringing. The only way to stop the noise is to increase power or drop the landing gear.

The factory placards the Cruisair against intentional spinning. This has raised questions in some quarters. Of course, minimum standards for safe spinning characteristics have been established by the CAA and no airplane with poor spin recovery could be approved for license. Bellanca would prefer its pilots not to fool around with the Cruisair because, beyond six turns, the exceptionally clean design tends to pick up speed. While the plane will recover as soon as the controls are neutralized, the speed is likely to scare an unseasoned pilot out of a year's growth. If it's any comfort to the skeptical, the Cruisair has been spun up to sixteen turns any number of times and recovered easily and without undue strain on the airframe.

That's the Bellanca story up to now. In his drafting room in New Castle, G.M., as the crew calls him, discusses improved designs, while his satisfied customers ask—"Can he make it better?"

THE BIG STICK

(Continued from page 45)

nized college, high academic standing and an "excellent" rating in military efficiency. All applicants must be in the Regular Army or have indicated willingness to remain in the AAF for four years after graduation from the Institute. Accordingly, the AAF will be assured of a steady supply of men highly trained to meet the progressive flow of engineering and scientific achievements in military aviation.

Students now attending the Institute are well aware of the fact that they are being given the best instruction that such high-standard research and development facilities as are available at Wright Field can provide.

A new addition to the activities of the Institute of Technology is a comprehensive program of extension work for the thousands of Air Force reserve officers on inactive duty. The Extension Department, working with the Air University and other components of the War Department, is now engaged in developing a series of extension courses designed to provide industrial and scientific training for the many inactive reserve officers. These courses will be similar to those operating before World War II, but will be considerably expanded in content and subject matter.

better QUARTERS for fewer DOLLARS

NOT long ago, a prominent eastern airplane dealer made a careful survey among non-owner pilots to determine why they did not buy a plane. After eliminating those who couldn't afford one, or justify its ownership by utility, it became apparent that the high cost of hangarage and ground facilities was a major deterrent.

The prospect of owning a homeless airplane is akin to owning a homeless family. While it is easy to level accusations at so-called avaricious airport landlords, it must be remembered that by its very structure, an airplane hangar is exorbitantly expensive to construct and operate. There are not too many airport owners who can afford the cash outlay.

At the recent New York Aviation Show, held at Grand Central Palace, a fresh approach to the hangarage situation was exhibited in the form of a hangar tent built by General Textile Mills, Inc., who also make the non-oscillating "baseball" parachute. Tentage as aircraft shelter, in the light of past performance, has a second-rate record. But previous attempts at canvas hangars were merely conversions of Army cook tents or small circus tops.

The General Mills' hangar, on the other hand, is not a makeshift. It was designed and built specifically to house the average four-place airplane. Its floor plan is roughly keystone-shaped, thirty-one and a half feet deep, twenty-

seven feet on the rear side and forty feet at the open front. The frame is made up of steel tubing, consisting of five upright supports and three crescent-shaped top trusses, webbed by cable linkage into a catenary suspension system.

The treated canvas canopy is made up of biased sections, constructed to distribute the strain over wide areas. The catenary lines at the eaves aid functionally in distributing the load on the bias-cut fabric. A novel peg arrangement has been designed with extremely high holding power, even in loose earth. The front door is a forty-foot two-piece roll curtain which may be zipped together.

When rolled for shipment, the catenary hangar rolls up into a ten-foot package, weighing 450 lbs. Two men can put it up in an hour, using only a maul and a five-foot ladder.

The whole thing sells for a little under a thousand dollars. The manufacturer figures the life of the structure at a minimum of ten years. At average ground rents and operational costs, the owner can hangar his airplane at \$200 per year including maintenance, insurance and ordinary repairs.

For the exGI, looking for a profitable business, it presents some ranking possibilities. An operator who erects five units and rents them for \$50 per month (average fee around most large cities) would gross an income of \$3,000 per annum. And, in these days, that isn't chopped liver.

Wartime experience in tent engineering produces this catenary hangar, a bridge-type structure, covered in weather and mildew resisting canvas. Two men with a five-foot ladder and a maul can set it up in two hours, so that it will stay up in a fifty-mile-an-hour wind.



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OF AUGUST 24, 1912, AND MARCH 3, 1933.

OF AIR FORCE, published monthly at Richmond, Virginia, for
April 1, 1947.

State of New York } ss.
County of New York }

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or security holder appears upon the books of the company as
trustee or in any other fiduciary relation, the name of the person
or corporation for whom such trustee is acting, is given; also that
the said two paragraphs contain statements embracing affiant's
full knowledge and belief as to the circumstances and conditions
under which stockholders and security holders who do not appear
upon the books of the company as trustees, hold stock and sec-
urities in a capacity other than that of a bona fide owner; and
this affiant has no reason to believe that any other person, associ-
ation, or corporation has any interest direct or indirect in the
said stock, bonds, or other securities than as so stated by him.

PHILLIP ANDREWS, Publisher.

Sworn to and subscribed before me this 5th day of March, 1947.

(SEAL)

NATHAN GREENBERG.
(My commission expires March 30, 1948.)



PLANE BONERS

Analyzed by Veteran Pilots

HILL FIELD, UTAH—A pilot in an AT-11 was making a routine take-off with his crew chief in the copilot's seat. The sergeant noticed the flap indicator showed that flaps were down five degrees and, to be helpful, reached for the flap switch to raise them. However, he touched the landing gear switch instead and held it in the UP position long enough to start the retraction cycle. The pilot placed the gear switch in the DOWN position quickly, but it was too late. Flying speed had not been attained, so the pilot cut switches and the trainer skidded to a stop on its engine cowlings. The airplane received major damage, but the crew was not injured.

Comment: Unintentional retractions of landing gears cause many costly AAF accidents. Apparently, the only way to stop the trouble is to educate crews to think carefully before flipping switches in the cockpit. Also they must look and be certain that they have chosen the right switch. In this case, both the pilot and crew chief were at fault. The pilot should have briefed the sergeant to act only on a signal from him, and the crew chief should not have touched a cockpit control without direction from the pilot. It sounds like an old story, but similar simple mistakes occur far too frequently.

KIMPO, KOREA—A P-51 pilot landed, opened the canopy, raised his seat, and taxied toward the ramp. He taxied through a lane 120 ft. wide between parked planes. A stalled tug was being pushed across the lane by another tug when its operator noticed the fighter bearing down on him. He leaped from the tug and ran to one side to try to signal the P-51 pilot to stop. The pilot slammed on the brakes and nosed the P-51 up two feet from the tug. The propeller and engine received major damage.

Comment: Another case where a ground crew and pilot joined forces to cause an accident. The pilot obviously forgot for a moment one of the first things he learned in flying school, "always S while taxiing." And the

ground crew displayed extraordinary temerity when it pushed a tug in the path of a whirling prop.

DAVIS-MONTHAN FIELD, ARIZ.—Two pilots were making touch-and-go landings during a transition mission in a UC-45. While the flaps were coming up on the take-off roll, the instructor pilot placed the gear switch in the UP position when he thought he felt the airplane become airborne. The airplane settled on the runway and skidded 1200 feet on its belly. There was no injury to the crew, but the UC-45 received major damage.

Comment: Here's another case of premature retraction of the landing gear. It appears that the instructor pilot experienced a false sensation of being airborne when he retracted the wheels. Most likely, this was caused by the fact that the flaps were retracting while the airplane was rolling at near flying speed. The accident proves that you can't trust the seat of your pants when flying an airplane. The only time to retract the gear is when you can actually see that you are airborne or when your altimeter indicates you have sufficient altitude.

MONTGOMERY, MINN.—An Air Reserve pilot was cleared on a local transition solo flight in an AT-6. After flying out of the local area, the pilot decided to buzz a highway that was under construction. At twenty-five feet, the trainer struck two power lines that were connected to a farmhouse. The pilot climbed the AT-6 to 3000 feet, checked it carefully, and returned to his base for a successful landing. The Texan received major damage.

Comment: This was the reservist's first solo flight in an AT-6, and his first solo flight since he resumed training. He just couldn't resist the urge to buzz. He was lucky to survive the accident, but the airplane did not come out as well. For his moment of doubtful pleasure, the pilot was suspended from flying and was directed to appear before a flying evaluation board.

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



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ramparts
we watch—

YOUR HELP IS NEEDED

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On pages 34 and 35, Air Force Association President James H. Doolittle, asks each of us to accept it as our personal responsibility to get two new AFA members by convention time in September. Certainly this is an easy task. Who among us doesn't have at least two Air Force buddies who would be glad to join if they were made familiar with our program?

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Clip these two membership application blanks. Give them to two of your friends who are eligible to join. Explain to them that in addition to the personal satisfaction they will get through participating in our "mission," they will receive:

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3. A distinctive lapel insignia that marks them as a former member of the Army Air Forces and as a member of the Air Force Association.
4. The opportunity to continue service friendships, perpetuate AAF traditions, and commemorate those who did not return through the formation of state Wings and local Squadrons.

Do it now. Our goal is 150,000 by September! !

APRIL, 1947



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CITY AND ZONE

STATE

Rendezvous

Caterpillars

Gentlemen:

I would like to inquire as to how I can join the "Caterpillar Club" or any useful information of where the chapters are located.

I was shot down over Regensburg, Germany, Feb. 5th, 1944 while on a daylight bombing mission and was forced to bail out and landed in the Alps near Munich.

I would like to contact other boys in the same situation as well as my old flying buddies from the 2nd Bomb Gp., 429th Squadron which was stationed in Italy.

John P. Olinik
12361 Maine Ave.
Detroit, Mich.

The Caterpillar Club is sponsored by Switlik Parachute Company, Inc., of Trenton, N. J. Its original member was Lt. Harold R. Harris who made the first emergency jump on record in October, 1922. In January, 1946, a Caterpillar Conference was held and it was decided to organize local chapters. Entrance fees were established at \$2.00. Full information on Club activities will be furnished on request by the Caterpillar Club, Broad Street Building, Trenton 8, N. J.

Godsend

Gentlemen:

That "Locator File" department in which you list names and addresses of old Air Force buddies is a godsend and I'd like to utilize it now.

I am trying to locate ex-Flight Officer Harold Bumph of the famed Burma Air Rescue Unit who co-piloted for me up the Salween Gorge one rough day in 1944, on a search mission. I believe F/O Bumph lives in Los Angeles.

His last assignment was with me in the 1352nd AAF Air Rescue Unit, ICD-ATC, 1944-1945.

Bernard J. Cahn
Capt., ACR
156 E. 94th St.
Brooklyn 12, N. Y.

Where's the Photog?

Gentlemen:

I'm a member of the Air Force Association and would like to contact a former buddy.

While I was overseas with the 13th Fighter Command, he was attached to my outfit, but the last I know of him he was a photographer for the Island Service Command on Guadalcanal, with the rank of M/Sgt. His name is Joseph Knapp and I believe his home town is Dallas, Texas.

Can anyone help me get in touch with him?

Harry G. Carroll
8 Livingston Pl.
Teaneck, N. J.

Old Friends

Gentlemen:

In a recent issue I read that you can give information on old friends of the service. I would appreciate it if you could supply the address of F/O John T. Donaldson, T-9410.

Thomas H. Caka
2014 W. Dakota No. 124
Seattle 6, Wash.

AIR FORCE's files do not reveal whereabouts of Mr. Donaldson, but perhaps some of "Rendezvous" readers can locate him.

New Hope

Gentlemen:

After reading your answer to Cpl. O'Neals' letter in the last issue of AIR FORCE I find myself with a new hope of locating an old war pal of mine. 1st Lt. Thomas Paige Anderson, Medical Officer and Flight Surgeon is the party I am trying to find and the only information I can give you to help is that Lt. Anderson left March Field, Calif. in November, 1945 and went to Flight Surgeons School and then left Camp Shanks for overseas duty.

Thank you very kindly and my compliments to AIR FORCE Magazine and its editors . . . it happens to be, to my knowledge, the only ex-service publication that hasn't degenerated to the ranks of a cheap pulp magazine . . . ask me, I know . . . I was a sucker for every solicitation that came in the mail since being reverted to inactive status a year ago. If it stays as interesting and authentic in the future as it has been in the past I am quite certain it will do wonders to perpetuate a feeling of brotherhood among all the ex-GI's from the Air Corps.

Harold Littman
2nd Lt. AUS, ORC
849 South 18th St.
Newark 8, New Jersey

Anybody Seen the Sgt.?

Gentlemen:

I am trying to locate T/Sgt. Francis J. Casper, who was with the 15th Air Force in Italy. We were flight engineers on B-24s but stationed at different air bases.

If he or any of his crew should see this, I would appreciate their contacting me.

Bernie C. Alzua, Jr.
227 East Broad St.
Westfield, N. J.

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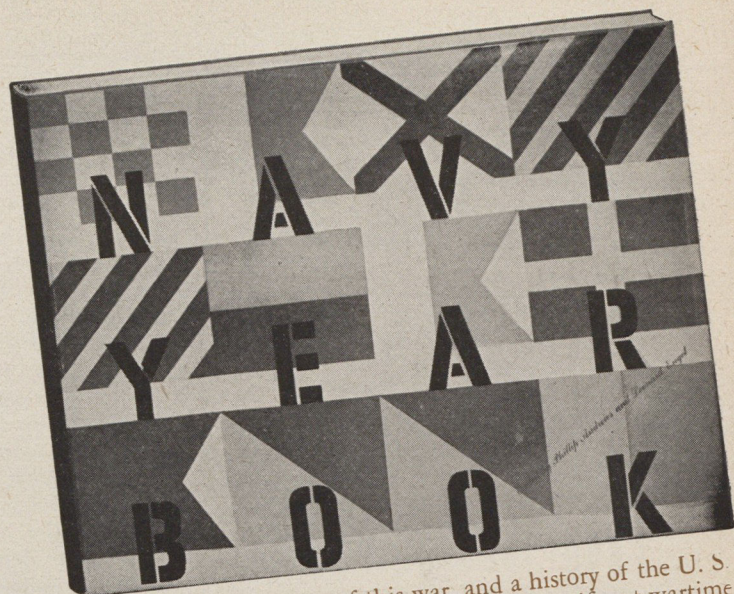
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COLD FACTS

(Continued from page 33)

ready for defense with sufficient re-
serve to strike back before the aggres-
sion can mount.

The Alaskan Railroad, the lifeline of
Alaska, is run down and just about
struggling along. Yet, all supplies must
move into the interior from the ports
over this one-track railroad that can't
run on the main line when the wind
gets much above gale force for fear of
being blown off. It is a matter of rec-
ord that trains have been blown off the
tracks by the high winds, and snow
slides have delayed traffic for days.
While we were up there a snow slide
below Fairbanks had cut that place off
from its supplies for two weeks. Sup-
plies were so low that beer was being
rationed.

Getting supplies from the States up
to the territory is another problem.
Steamship service is irregular and inad-
equate when the winter weather sets in.

The Alcan Highway is not the
answer either. Recently, as an experi-
ment, a convoy of trucks made the run
loaded with a variety of needed sup-
plies. The cost was prohibitive, so high
that highway trucking is commercially
unprofitable even though the new travel
road, running from Edmonton, Canada,
to Fairbanks through hundreds of miles
of muskeg and mountains—an unin-
habited region—is kept open the year
'round.

What Alaskans say is needed is a di-
rect rail connection with the United
States. Such a route has been surveyed
and is possible, they maintain. It is ad-
mitted, however, that the railroad pri-
marily would be of strategic value and
would have to be built and initially
maintained by the Government, since it
could not pay its way at the outset.

Once the problem of supplies is

licked it is apparent that our military
leaders will lick the next set of prob-
lems. The role that air power will play
in relation to the Arctic is borne out in
the fact that Alaskan Command is
under an air force general, Major Gen-
eral Howard A. Craig. Gen. Craig has
the over-all tactical command of the
Army, Navy and air forces in Alaska
and the Aleutians. As an indication of
the faith being placed on air power in
the Arctic, the command general has
set up the Alaskan Air Command,
under Brigadier General Joseph H. At-
kinson, with headquarters at Elmendorf
Field. Under the Alaskan Air Com-
mand come two subordinate commands,
the Yukon Sector based at Ladd Field,
headed up by Brigadier General Frank
F. Everest and which takes in all of the
Alaskan mainland except the Aleutian
Peninsula and the Aleutian Islands; the
other command, headed by Brigadier
General Edmund C. Lynch, head-
quartered at Adak, is called the Aleu-
tian Command and takes in the thou-
sands-of-miles-long chain of unsinkable
aircraft carriers now stretched across the
North Pacific to the threshold of Asia.

On the basis of the command set-up
it is clear, on the surface, that every-
thing is being done to assure the protec-
tion of our northern frontier. Under the
surface, however, the picture is some-
thing else. The AAF is struggling to do
its job with only a handful of men, rela-
tively speaking. It needs bigger fields
and more fields. It is confronted with
a housing shortage.

More money must be spent than is
being spent now in research, develop-
ment, construction—on all the problems
connected with Arctic activities—if this
country is to stand up and fight back
after an attack over the wide open North.

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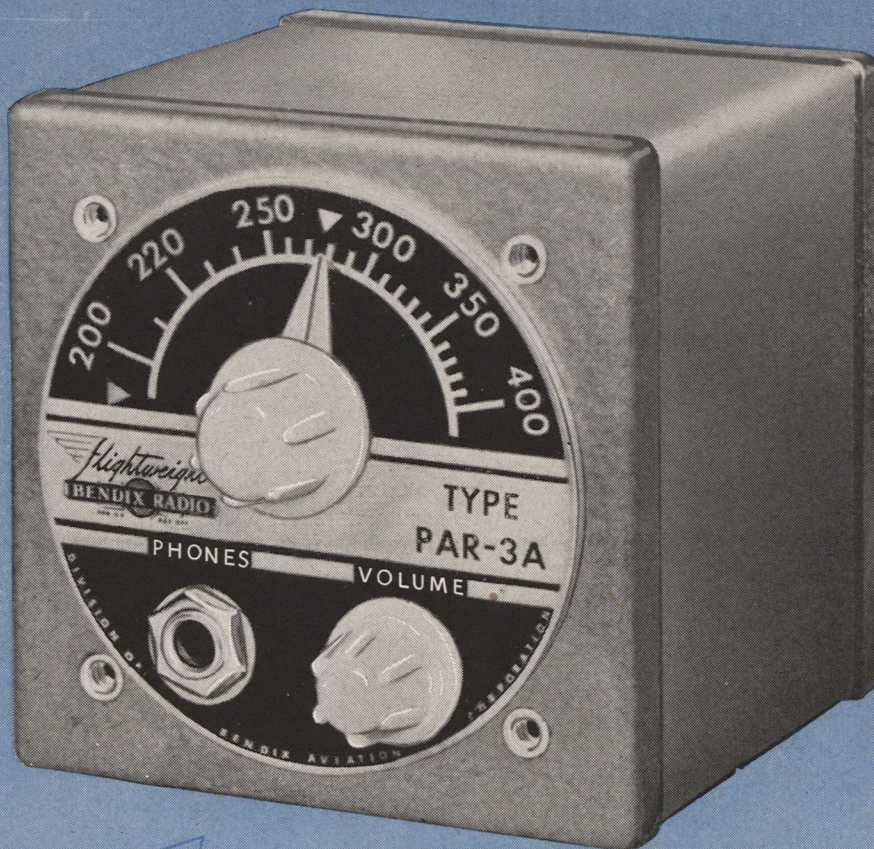
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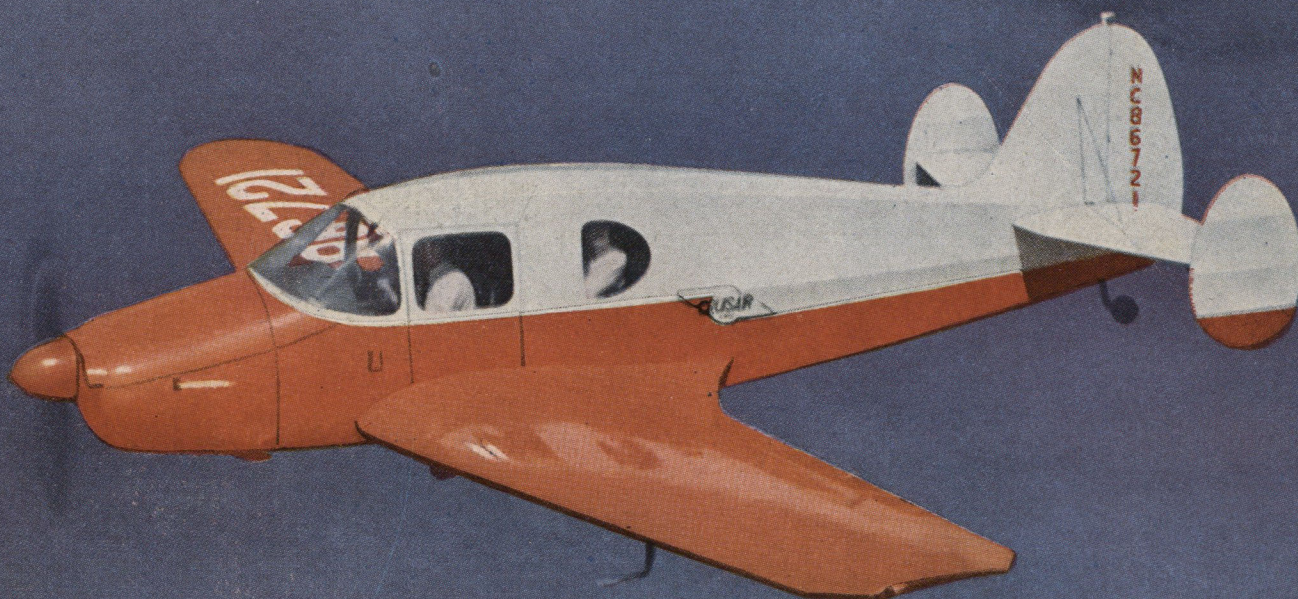
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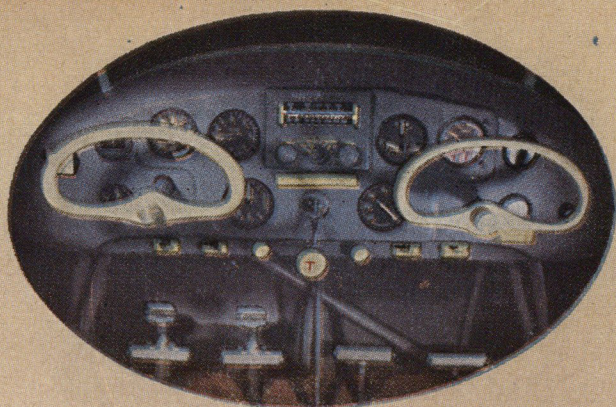
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