











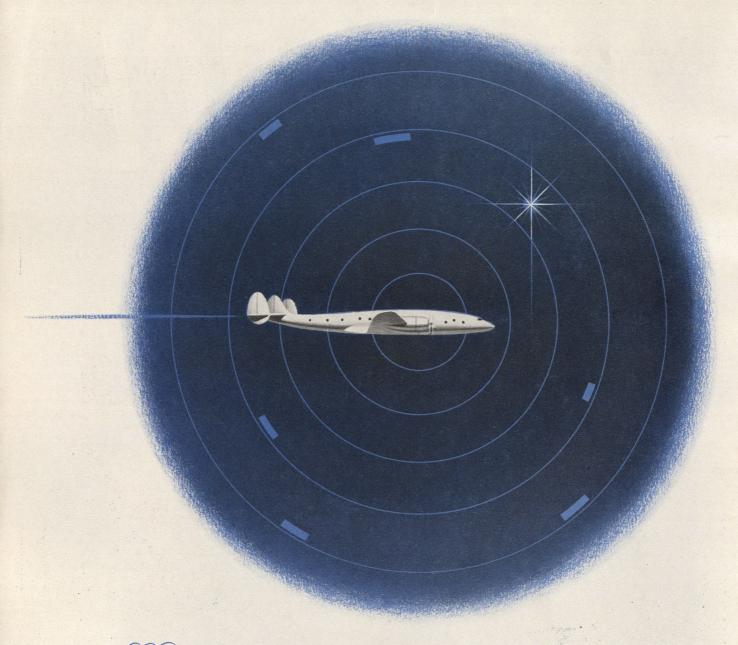






WHAT HOPE IS THERE LEFT? An Exclusive AIR FORCE Interview with Alexander P. de Seversky

JANUARY, 1951



Phristmas-Happy

The Guiding Star, a radar beam, Symbols of the Season's theme. Peace on Earth, good will to men, Safe return, home again.

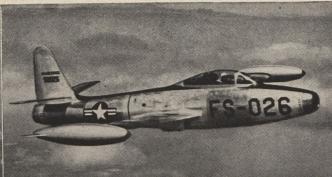


This Veteran GCA (AN/CPN-4) has served each Christmas since '48 in trouble spots of the world, guiding air men to safe landings at Norman Wells, Arctic Circle, '48; Tempelhof Airdrome, Berlin, '49; Kimpo Air Base, Korea, '50.



Gilfillan Los Angeles, California





it counts most --in the air

The U. S. Air Force and U. S. Navy have accumulated more than 500,000 hours of actual flight operation with Allison Turbo-Jet engines in the aeroplanes shown on this page. This is more time in the air than the jet engines of any other manufacturer in the world.

Represented in this broad background of experience are thousands of hours of flight time on both J35 axial and J33 centrifugal flow engines — with and without afterburners — on the two models.

Now two new Navy planes are flying with Allison Turbo-Prop power. Here, too, Allison is the leader with its Navy-sponsored T40 twin Turbo-Prop engines out in front gaining in-the-air experience.

It's experience that counts — and these turbine engines have it where it counts most — in the air — in these airplanes.

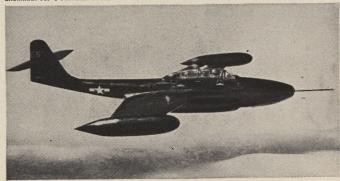
Allison J33 engines also lend assistance to reciprocating engines in the

Martin P4M and North American AJ-1.

DIVISION OF GENERAL MOTORS
INDIANAPOLIS, INDIANA



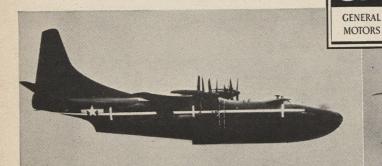
GRUMMAN F9F-3 PANTHER POWERED BY ALLISON J33 TURBO-JET



NORTHROP F-89 SCORPION POWERED BY TWO ALLISON J35 TURBO-JETS WITH AFTERBURNERS



DOUGLAS A2D SKYSHARK POWERED BY ALLISON T40 TURBO-PROP



PS





AIR FORCE

THE OFFICIAL JOURNAL OF THE AIR FORCE ASSOCIATION

JANUARY, 1951 VOL. 34, No. 1

THIS IS AFA

The Air Force Association is an independent, non-military, airpower organization with no personal, political or commercial axes to grind; established and incorporated as a non-profit corporation February 4, 1946.

Active Members are men and women honorably discharged from military service who have been assigned or attached to the US Air Force or its predecessor services, or who are currently enrolled in the Air Force Reserve or Air National Guard. Service Members (non-voting, non-office holding) are men and women currently assigned or attached to the US Air Force. Associates (non-voting, non-office holding) are men and women not eligible for Active or Service Membership who have demonstrated an interest in furthering AFA's aims and purposes, or in proper development and maintenance of US airpower.

ITS OBJECTIVES

To preserve and foster the spirit of fellowship among former and present members of the Air Force, and to perpetuate the identity and group solidarity of wartime Air Force units large and small.

To assist in obtaining and maintaining adequate airpower for national security and world peace.

To keep AFA members and the public at large abreast of developments in the field of aviation, and to stimulate community interest in Air Force activities and installations.

ITS OFFICERS AND DIRECTORS

ROBERT S. JOHNSON, President

Regional Vice Presidents: Edward R. Tufts (New England); George Hardy (Central East); Merle Else (North Central); Warren DeBrown (Northeast); Jerome Waterman (Southeast); Thomas Campbell (Northwest); Thomas Baker (South Central); Dr. John Biggerstaf (Midwest); James McCusker (Rocky Mountain); Ray Ireland (Great Lakes); William Hensley (Southwest); Thomas Stack (Far West). Secretary, Julian B. Rosenthal, Treasurer, Benjamin Brinton.

CARL A. SPAATZ, Chairman of the Board

Directors: Edward P. Curtis, James H. Doolittle, John P. Edmondson, Meryll Frost. B. E. (Shorty) Fulton, Frank O'D. Hunter, Arthur Kelly, Thomas G. Lanphier, Jr., Roy Leffingwell, Randall Leopold, Dr. W. R. Lovelace, Dr. Paul Potter, Robert Proctor, Mary Gill Rice, C. R. Smith, James Stewart.

FEATURES

DELTA WING: HOW NEAR?	5
AFA FLAG TO AUSSIES	6
A NOISE ANNOYS	11
WRATH FOR MR. ROTH	16
ONE WAY OUT	21
SURVIVAL UNDER ATOMIC ATTACK	26
WHAT HOPE IS THERE LEFT?	34
BOB TOURS AGAIN	36
DEPARTMENTS	
TECH TALK	
AFA NEWS	38
AFA ROUNDUP	39
TECHNIQUE	42



THE COVER

The alert, intense young man on the cover is part of the most alert, intense AF organization not actually in combat today. He is a B-36 "scanner" in the Strategic Air Command, and his job as a crew member is to watch the huge plane's engines to see that they function properly at all times. His job as a member of SAC, however, is to give hesitation to any Russian plans of further conquest, or failing that, to give them plain hell. The question of the moment though, is whether there are enough of his number to do either.

READ "WHAT HOPE IS THERE LEFT?" PAGE 34

AIR FORCE STAFF

JAMES H. STRAUBEL Editor and Publishing Director

NED ROOT, Managing Editor

ROBERT FLEISHER, Ass't Managing Editor

WILLIAM A. DEAN, Art Director

JAKE CULPEPPER, Associate Editor

HELENA REDMOND, Contributing Editor

AIR FORCE MAGAZINE is published monthly by The Air Force Association at McCail Street. Daylon i. Ohio. EDITORIAL OFFICE: 1424 K St., N.W., Washington 5, D. C., Sterling 2305. Publisher assumes no responsibility for unsolicited material, ADVERTISING OFFICES: Main Office: 360 Lexington Avenue. New York I7, N. Y., Murray Hill 9-3817, Sanford A. Wolf, Advertising Manager, Western Area Advertising Manager. David Shawe, 3974 Wilshire Boulevard, Los Angeles 5, Calif., Dunkirk 3-8976, MAILING: Recentered a second class matter, December 11, 1947, at the post office at Dayton, but the Act of Marchard States of the Company of the Act of Marchard States of the Act of Ma

Ignition Headquarters



for Over a Quarter of a Century

Since aviation's earliest days Bendix has dedicated its resources and manufacturing skills to the solution of the industry's ever changing ignition problems. Thus today, one source and one source alone—Bendix—is uniquely qualified to plan and produce ignition equipment specifically designed to meet the operating needs for every plane and purpose.

No single type of ignition equipment is the final solution to every operating problem. Let Bendix experience help you determine the type of ignition equipment best fitted for your specific purposes.



Bendix

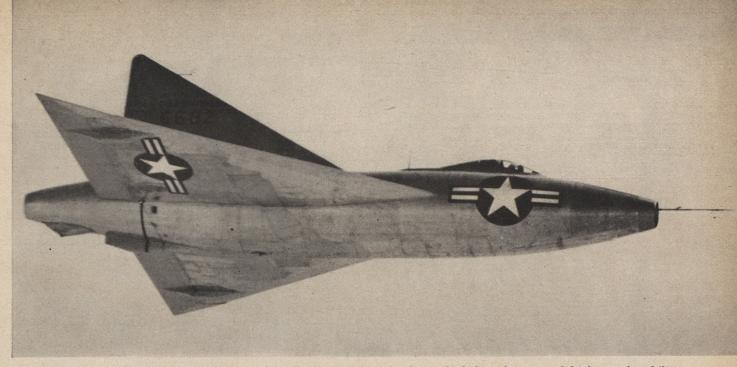
SCINTILLA MAGNETO DIVISION of

SIDNEY, NEW YORK

Export Sales; Bendix International Division, 72 Fifth Avenue, New York 11, N. Y.

FACTORY BRANCH OFFICES:

117 E. Providencia Avenue, Burbank, California • 23235 Woodward Avenue, Ferndale, Michigan 7829 W. Greenfield Avenue, West Allis 14, Wisconsin 582 Market Street, San Francisco 4, California



America's entry in the Delta wing field is the XF-92A, a research plane which has shown good high speed stability.

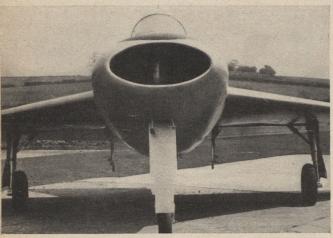
DELTA WING: HOW NEAR?

The dawning of the delta wing as an airfoil configuration for *operational* fighter aircraft seems closer to reality in Sweden and Great Britain than it does in the United States. Though still in the drawing board stage, the designs of the noted Swedish artist-technician Bjorn Karlstrom are far enough along to show sound evidence of practicality.

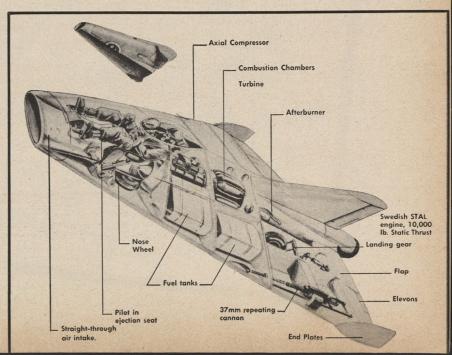
The Swedish delta wing plane would be an interceptor-type fighter, powered by a new STAL jet engine currently on the test block and rated at 10,000 pounds static thrust with afterburner. Its top speed, according to competent calculations should be roughly 725 miles per hour or better with a practical load.

As far along are the British whose Boulton-Paul P-111 is regarded by students of fighter plane design as the closest approach to a delta wing fighter aircraft possible at the present time. The P-111, like America's XF-92A and the British Avro 707, was built solely for supersonic research. It has a wing span of 33 feet 6 inches and stands 12½ feet high. The ship's power and performance data have not been released, but it is known to be powered by a Rolls Royce Nene engine similar to the one used in the Avro 707.

The flying wedge is not a new idea. It was born in the mid thirties when a German, Alexander Lippich, suggested that a plane could be shaped like a flying tail and still be a practical aircraft. Much experimental work was done by the Germans along these lines just prior to the war, but the project was dropped when the Nazis turned all their efforts to fighting the war. When the Luftwaffe was grasping at straws toward the end, the idea was resurrected and at one point got as far as a successful glider which was to have been powered by a couple of pulse-jet engines. These were never installed, however, and when the war was over, and Lippich's idea became public property, both the United States and England, and presumably Russia, picked up where Lippich left off.



Above, front view of Britain's Boulton Paul P-111, also built solely for research purposes. Right, a ghost rendering of the Swedish entry still in design stage. Their's is interceptor type.



ROBERT S. JOH



SIXTEENTH STREET, N.W.
WASHINGTON 6. D. C.
STERLING 2305

September 5, 1950

Air Marshal Richard Williams Royal Australian Air Force Association Sydney, Australia

The men and women of the Air Force Association of the United States are grateful indeed for the Opportunity to send to their staunch friends of the Royal Australian Air Force Association the warmest greetings upon the occasion of Australia's tion the warmest greetings upon the occasion of Australia's Air Force Commemoration Week. The memory of your magnificant and selfless fight to preserve the freedom and dignity of man in World War II will never grow dim in the minds of those of us who served beside you.

Today our two forces are joined again to put down the despots who would rule by force and tyranny. It will not soon be forgotten in America that Australia was the first of the United Nations to place its Air Force at the disposal of the United Nations to place its Air Force at the disposal of the Force at the disposal of the United Nations of the Royal Australian Air force rose almost Thus Fighter Squadron of the Royal Australian Air Force rose almost shuntaneously with the planes of our own Figure 1 and 1 and

As a small measure of our great regard for your fellow-ship, both in peace and in war, we are pleased to present to you the standard of our Association. We ask you to accept it with the standard of our Association. We ask you to accept it with our deepest good wishes, and with the knowledge that the Air Force Association of the United States will be at your Wing-tip always in the attainment of our common ideals and objectives.

Robert & Johnson

mrs

TO POSTER THE SPRIT OF PRIENDSHIP AND PERPETUATE THE HONOUR AND IDEALS OF H.M. AIR PORCES



AIR FORCE ASSOCIATION
Australian Flying Corps and Royal Australian Air Force Association

RW.CA

330 GEORGE STREET, SYDNEY, N.S.W.
31st October, 1950.

Robert S. Johnson, Esq., President Air Force Association of the United States, 901 16th Street, Northwest, WASHINGTON, 6.

On behalf of the men and women of the Royal Australian Air Force Association, I thank you for your very kind letter of 5th September.

We value very highly the friendship which was established between Members of our Association and of your own in war, and we appreciate your very warm greetings and reciprocate them most heartily.

We are proud to know that once again under the auspices of the United Nations Organisation our small auspices of the United Nations Organisation our small surprises was able to co-operate with yours against the sinister plans of the Korsan aggressor.

We shall always value the standard of your Association which you have presented to us; but, even more highly, the sentiment and feeling which prompted you to make that presentation.

We accept it and the good wishes it conveys with the deepest appreciation and with the confident hope with tour respective nations will slways be side-by-side that our respective nations will slways be side-by-side in the support of worthwhile ideals and the maintenance of freedom in the world.

FEDERAL PRESIDENT.

AFA FLAG to AUSSIES

General Kenney presents our standard to the Royal Australian Air Force Association in colorful ceremonies down under

n a warm and friendly expression of good will, the Air Force Association has presented its standard to its Australian counterpart in a colorful ceremony at St. Andrews Cathedral in Sydney.

The Air Force Association was represented by General George C. Kenney, Commanding General, Air University, Maxwell AFB, Ala. General Kenney, who spent much time in Australia during the war, was enthusiastically received during his recent visit and was extremely impressed with the Royal Australian Air Force Association which boasts a membership of 65,000 in a country whose entire population is less than that of the City of New York. The standard was dedicated by Archbishop Mowll.

Sydney will be long remembered by service-men of the last war as "the best leave town in the world." More recently, the famous 77th Fighter Squadron of the Royal Australian Air Force were among the first to join with our own Far Eastern force in fighting the Reds in Korea.

Accompanying the flag was a letter from our President, Robert S. Johnson, expressing our warmest greetings and the assurance that "the Air Force Association of the United States will be at your Wing-tip always in the attainment of our common ideals and objectives."

The Australians are planning a big reunion and celebration in March 1952 to commemorate the 10th anniversary of the landing of the Americans in Australia in 1942.



The impressive ceremonies pictured here took place in Sydney's St. Andrews Cathedral. Presenting our flag is General George C. Kenney. Dedicating it for Australians is Archbishop Mowll.

Systems Engineering

Guided missiles experience aids Martin in implementing this airplane design concept

Guided missiles were the first aircraft to attain supersonic speeds—the first to acquire fully automatic control-and the first to require the close design integration of components which The Glenn L. Martin Company calls Systems Engineering. Today, with piloted airplanes also passing the sonic barrier and being assigned increasingly difficult missions, it is essential that they, too, be designed as integrated air-borne systems, not merely as flying vehicles whose sole goal is speed.

With a background of demonstrated accomplishments on top level missiles projects, and continuous growth in this field . . . The Glenn L. Martin Company has carried over Systems Engineeing from its missiles experience to its airplane designing. The Martin engineering staff has been shaped and manned to provide proper emphasis on all three of the basic types of functional elements involved in the production of a modern airplane -airframe and power plant-electronic flight and navigational controls—and military armament or passenger facilities.

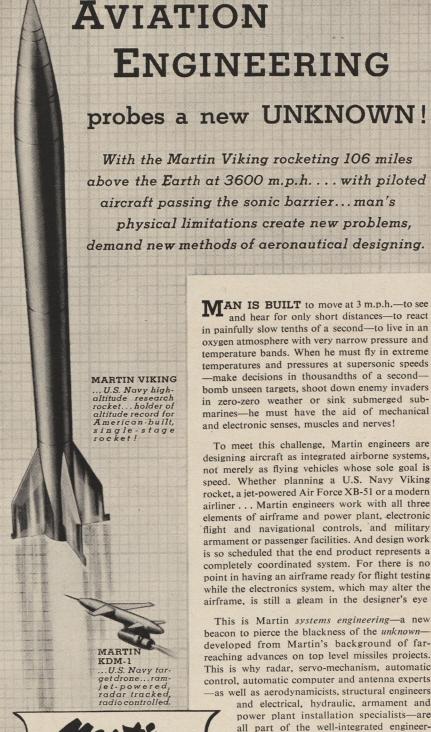
Martin Systems Engineering recognizes that the immediate problem of aeronautical engineering is not to concentrate exclusively on airframe performance, but to integrate the necessary electronic and mechanical systems into the airframe design to produce a truly effective military weapon. And, whether the weapon is a manned airplane or a guided missile, it is imperative that the complete development be so scheduled that the end product represents a completely coordinated system. There is no advantage in having an airframe ready for flight testing while the guidance system, which may necessitate airframe changes, is still a gleam in the designer's eye.

That is Martin Systems Engineering. That is why radar, servo-mechanism, automatic control, automatic computer and antenna experts—as well as aerodynamicists, structural engineers and electrical, hydraulic, armament and power plant installation specialists—are all part of the well-integrated engineering team The Glenn L. Martin Company offers its customers today.

Martin Ads Tell Air Power Story

Reaching millions of informed, alert American magazine readers, Martin advertisements like this one highlight air power's important role in our country's preparedness program. And survey after survey has demonstrated that their fiction-style appearance attracts an extremely high readership.

The general public and business circles are reached through the pages of Time, Newsweek and Business Week. The men and women who write and edit the news are kept abreast of latest developments through Editor & Publisher, American Press and Publisher's Auxiliary.



MAN IS BUILT to move at 3 m.p.h.—to see and hear for only short distances-to react in painfully slow tenths of a second—to live in an oxygen atmosphere with very narrow pressure and temperature bands. When he must fly in extreme temperatures and pressures at supersonic speeds -make decisions in thousandths of a secondbomb unseen targets, shoot down enemy invaders in zero-zero weather or sink submerged sub-

To meet this challenge, Martin engineers are designing aircraft as integrated airborne systems, not merely as flying vehicles whose sole goal is speed. Whether planning a U.S. Navy Viking rocket, a jet-powered Air Force XB-51 or a modern airliner . . . Martin engineers work with all three elements of airframe and power plant, electronic flight and navigational controls, and military armament or passenger facilities. And design work is so scheduled that the end product represents a completely coordinated system. For there is no point in having an airframe ready for flight testing while the electronics system, which may alter the airframe, is still a gleam in the designer's eye

This is Martin systems engineering—a new beacon to pierce the blackness of the unknowndeveloped from Martin's background of farreaching advances on top level missiles projects. This is why radar, servo-mechanism, automatic control, automatic computer and antenna experts -as well as aerodynamicists, structural engineers

and electrical, hydraulic, armament and power plant installation specialists-are all part of the well-integrated engineering team Martin offers its customers today! THE GLENN L. MARTIN COMPANY, Baltimore 3, Maryland.





Manufacturers of: Military aircraft • Martin airliners • Guided missiles • Rockets • Electronic fire control and radar systems • • Electronic fire control and radar systems • Precision testing instruments Developers and Licensors of: Mareng fuel tanks (to U. S. Rubber Co.) • Marform metal-forming (to Hydropress, Inc.) • Honeycomb construction material (to U. S. Plywood Corp. and Aircraft Die Cutters) • Structural adhesives (to U. S. Plywood Corp. and Bloomingdale Rubber Co.) • Permanent fabric flameproofing (to E. I. duPont de Nemours & Co.) • Hydraulic automotive and aircraft brake Hydraulic automotive and aircraft brake
Leaders in Building Air Power to Guard the
Peace, Air Transport to Serve It.



AMERICAN sets the pace with





Once again - the fleet of the year is the Flagship Fleet!

To such famous Flagships as the DC-6 — the favorite of transcontinental travelers — and the popular inter-city Convair — American now adds the DC-6B Flagship, even larger, faster, and more luxurious than the DC-6 itself.

This year, as always, American is first with the finest in air transportation. Such leadership, apparent in personnel as well as equipment, explains why American Airlines carries more passengers than any other airline in the world.

the new DG-6B FLAGSHIP!





DC-6 routes for long distance air travel

Convair routes for short distance air travel

AMERICAN AIRLINES INC.

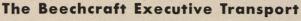
AMERICA'S LEADING AIRLINE

Again in '50!

The sales leader in its class Beechcraft Bonanza

This revolutionary 4-place plane has set records all over the world—for fast, versatile performance, for remarkable operating economy. For comfort—and for sajety—far beyond CAA standards. So sales records, too, have just "come naturally." Today the Model B35 Bonanza is helping to set a new, faster pace in almost every field of American business. For more facts on the Bonanza, contact your Beechcraft distributor today, or write Beech Aircraft Corporation, Wichita, Kansas, U. S. A.

Top speed, 184 mph Cruising speed, 170 mph Range, 750 miles Fuel economy, 9.5 gph



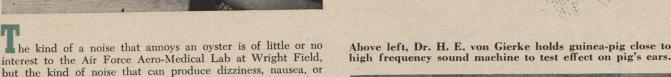
Familiar sight on all the world's airports. This twinengined Model D18S carries seven to nine in luxurious comfort; cruises at 200 mph. It's the ultimate in air transportation.



Beechcraft

BEECHCRAFTS ARE THE AIR FLEET OF AMERICAN BUSINESS





man beings is something else again. It was once the case in the Air Force that such discomforting noises came primarily from the front offices or higher headquarters. Now, however, they have a new source-jet planes. The roar of a jet has been recorded in ranges of intensity that can cause actual mechanical damage to the eardrum. For this reason, the Aero-Medical Lab at Wright is conducting a unique series of experiments to find out all it can about the destructive capabilities of noise and thereafter to devise protective measures for Air Force personnel.

even temporary disarrangement of the sense of balance in hu-

The testing lab is a sound-proof room, the interior of which is pictured on this page. To measure the intensity of sound, the "decibel" scale is used. A whisper heard from five feet away is listed as 25 decibels, the average office is 50, heavy street traffic is 90, and a pneumatic rock drill, 130. Near jet engines levels of 140 decibels and higher have been measured.

The known effects on the ears of these various sounds are that at 90 decibels there is interference to ordinary speech communication. From 130 to 140 decibels, sounds begin to be painful to the listener, and at about 160 decibels, there will be

mechanical damage to the ears.

For obvious reasons a human is not exactly prone to permitting the use of his ears for study in determining the effects of these highest level sounds. Guinea-pigs are therefore used. Completely anesthetized, the sleeping guinea-pigs are exposed to sounds that would damage the ears of a human. True, they damage the ears of the guinea-pigs, but they feel no pain. Later the animal is humanely killed and the actual result of their exposure to the sound waves is studied.

The principal cause of deafness due to exposure of intense sounds is believed to lie in the damage occurring in the ear's cochlea. This snail-like structure receives the end product of sound waves and in turn transmits the pressure to the nerves. Prolonged exposure to loud noises results in temporary traumatic deafness. Repeated exposure to the noise may even result in permanent changes within the inner ear. This is the

lab's primary concern at the moment.

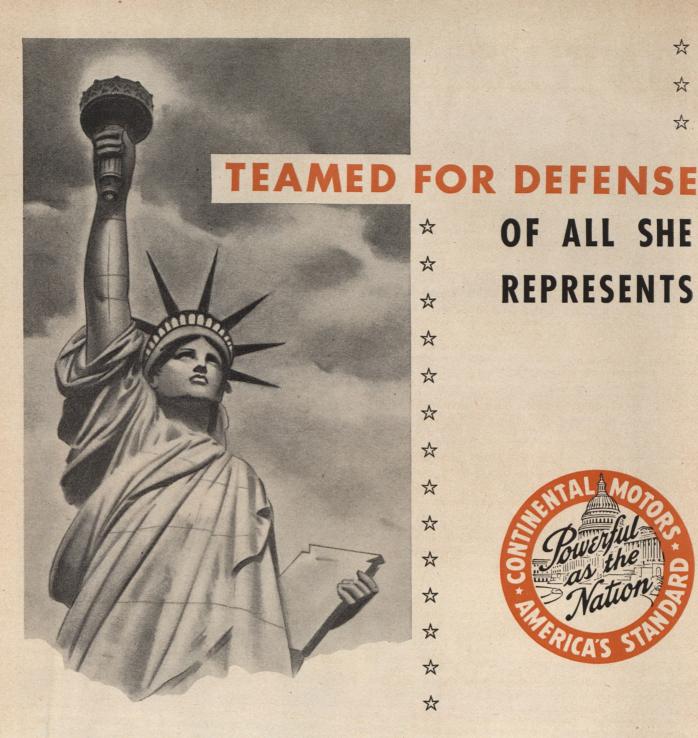
This "testing cell" is insulated with fibre-glass blocks measuring 8 inches square at the bottom, and tapering to a wedge. The edges of these wedges are set at right-angles to each other producing a checkerboard effect. Further protection to personnel is gained by placing this cell in another room lined with sound-absorbing material. The insulation absolves 99% of the sound waves. In fact, a person speaking in a low voice cannot be heard unless the listener is facing him.

After shutting out all other sounds and noises from the cell, a siren is used to produce any designated frequency. It can omit sound from 250 to 150,000 cycles per second of a variable and controllable frequency and intensity. The normal ear of a young adult can hear sounds ranging from 20 to 20,000 cycles. Determining the amount of vibration that enters the body

"Television" set above shows how sound vibration is distributed over body surfaces. Below, Dr. H. O. Parrack, left, and Dr. von Gierke begin test. Anesthetized pig is suspended on scale-like platform next to sound machine.



(Continued on page 48)





公

公

公



Throughout the greater part of a corporate history reaching back nearly 50 years, it has been Continental Motors' privilege to work hand in hand with the country's Armed Forces in the development and production of internal combustion power. Continental research and engineering facilities and precision-manufacturing knowhow have been at the nation's disposal since long before World War I.

This cooperation is closer today than ever before. As might be assumed, it is more effective, too. For Continental Motors has never been so well equipped as now for teamwork with the agencies pledged to Freedom's defense.

AIRPOWER IN THE NEWS

VOL. 34, NO. 1

WASHINGTON, D. C.

JANUARY, 1951

- OVER-ALL AF PROGRAM for fiscal '51 with proposed supplemental appropriations would provide funds (\$13,945,798,000) for 651,095 military personnel and 68 groups by June 30, 1951. AF had 411,000 men and 48 groups last June.
- AF'S TACTICAL AVIATION PROGRAM in support of ground units will be further implemented with the recall to active duty on January 8 of an ANG Aircraft Control and Warning Group from Georgia. Unit will be redesignated as a tactical control group and assigned to TAC. . . Presque Isle AF Base in Maine will reopen during January as a ConAC base.
- LONG-AWAITED REGULATION (AFR 39-43) on "enlistment and re-enlistment in AF Reserve" has been issued by USAF. Regulation authorizes enlistment of former EM from any service or civilian component thereof in grade or equivalent grade held at time of discharge. General age limits are 17 thru 34; however, personnel may be accepted up to the age of 55 if they possess certain needed technical skills or have served a certain number of years.
- CONAC HAS RECOMMENDED that grades be adjusted in cases of enlisted Reservists on EAD who accepted a Reserve rank prior to present emergency lower than that held at time of separation. . Reservists to be recalled would receive final type physical prior to reporting to EAD under a plan that has been recommended by ConAC to Hqs., thus saving men from giving up their jobs, homes, etc., to find later they're physically disqualified for EAD. Also in the planning stage at Hqs. is a "liberalized" grade structure plan that will give ex-AF personnel and Reservists a break in entering the Regular Establishment.
- RECALLED RESERVISTS are given the same rights, privileges, allowances and benefits as Regulars. This includes the quarters allowances for enlisted personnel with dependents. . . Maximum ages in grade for Reserve officers holding mobilization assignments or mobilization designations have been suspended until further notice.
- USAF RELAXES RECRUITING REQUIREMENTS. An individual with no more than two dependents may be enlisted in Regular AF without regard to grade. A person with more than two dependents must qualify for S/Sgt. or higher before he will be accepted.
- TOURS OF ACTIVE DUTY to several thousand second lieutenants during remaining seven months of current fiscal year will be offered by AF. Officers will be recruited largely from AF ROTC graduates.
- THE LOWLY JEEP has been recalled to active duty. AMC has announced that the Jeep and other military-style vehicles will be used only where their ruggedness and special capabilities are needed. . Fifteen thousand trained Naval Reserve enlisted personnel will be recalled to active duty during April, May and June, 1951.
- JACKIE COCHRAN, recent Harmon Trophy winner, has been appointed as Special Consultant to Gen. Vandenberg on matters pertaining to women in the AF. . .

 Dr. Hugh L. Dryden, Director of the NACA, has been named to receive the 1950 Daniel Guggenheim Award. Dr. Theodore von Karman, chairman of the (Continued on page 14)

AIRPOWER IN THE NEWS CONTINUED

Scientific Advisory Board to the Chief of Staff, USAF, has been awarded the Klevin Gold Medal by a special award board consisting of presidents of eight major engineering societies of UK.

- MAJ. GEN. ORVIL A. ANDERSON, recently relieved commandant of Air War College, has applied for retirement.
- COMBAT PERFORMANCE OF AF IN KOREA to date is being evaluated by Dr. Robert L.

 Stearns, President of University of Colorado. . . Total AF casualties through November 10, 1950, totaled 206. . . Navy and AF have not requested inductees under Selective Service for current build-up of strength and do not plan to place calls for February, according to Selective Service Hqs. . . Clayton Fritchey of New Orleans has been appointed Director of Public Information for Department of Defense.
- AF WILL ESTABLISH ITS OWN FINANCE CENTER in Denver. USAF personnel pay allotments for dependents, insurance allotments and other finance services have been performed for AF by Army. New center is scheduled to begin operations early next year.
- TWO FAMOUS BOEING AIRPLANES will be preserved as a tribute to the records they made in post-World War II aviation. Because of a recent accident, "Lucky Lady II" which made the first non-stop round-the-world flight, will travel throughout the country as part of AF Exhibit Unit. Later she is scheduled to take her place in the Smithsonian's National Air Museum. The XC-97, which set a still unsurpassed trans-continental speed record for transports by flying from Seattle to Washington, D. C., in six hours and four minutes in 1945 will be towed to an Albuquerque, N. M., children's park for permanent display.
- SECOND GI INSURANCE DIVIDEND will be paid on any policy in force for three months or longer, not necessarily consecutively, between policy anniversary dates in 1948 and 1951. . . Extension of GI Bill to Korean veterans is still in committee and has not been scheduled for hearing.
- REDUCED FARES FOR SERVICEMEN ON LEAVE OR FURLOUGH was urged by Rep. Jacob J.

 Javits (Rep-Lib, NY) in recent letters to Association of American Railroads,
 National Association of Motor Bus Operators and Railroad Passenger Interterritorial Committee. Companies have power to make reductions under Section 22 of Interstate Commerce Act. Mr. Javits advised the carriers that
 he is demanding a hearing of Ways and Means Committee on his bill (RH9801)
 which waives the 15% Federal tax on transportation for service people on leave
 or furlough, provided the carriers reduce their fares on this travel.
- MODERNIZED B-36, equipped with four jets and six piston engines capable of generating approximately 42,000 horsepower, made an extended test flight over southern California last month. Aircraft is first of an undisclosed number of early model B-36 bombers being modernized to B-36Ds at the San Diego plant of CONVAIR. . . 300 more engineers will be needed by Boeing Airplane Company by first of new year. . Walter H. Beech, president of Beech Aircraft Corporation, died last month at the age of 59. . . Pratt & Whitney Aircraft division of United Aircraft will need an additional 10,000 employees during next year to meet demands of its accelerated engine production program for AF and Navy, William P. Gwinn, General Manager, has announced. . . Commercial air carriers scheduled to drop out of Pacific airlift between December 1 and January 1 will continue to fly indefinitely, MATS has announced.





When you choose the U. S. Air Force as your service, you're choosing top training for peace or war in 42 career fields. You'll enjoy good pay . . . additional pay if you fly. You'll get aptitude tests that help assign you to duty for which you're best fitted. And you'll know the pride that goes with being one of the best, in a topflight outfit!

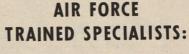
Take to the Air Force . . . for an interesting, rewarding and exciting life. Come war or peace . . . choose the Air Force way. Visit your nearest U. S. Army and U. S. Air Force Recruiting Station today for complete information.

Get On Top... Stay On Top... With The U.S. Air Force

RECRUITING







If you're a former Air Force specialist, with one or more of 200 most essential MOS skills, you can re-enlist in the Reserve for three years in your old grade at last honorable discharge. Reservists may request active duty in present grades. Civilian jobs are protected under Selective Service. You are needed . . . NOW!

THE U.S. AIR FORCE NEEDS MEN for these and other fields:

RADIO AND RADAR MAINTENANCE

AIRCRAFT AND ENGINE MAINTENANCE

WEATHER

ARMAMENT SYSTEMS

Outstanding cargo transports designed to operate from short or undeveloped landing fields-to carry troops or supplies to forward combat areas speedily, efficiently, safely.

The 25,000 lb. XC-123 required only 500 feet of runway for its initial takeoff



WRATH for

The Editor AIR FORCE Dear Sir:

I have read in your December issue the article by Bernhard A. Roth with the catchy title "The Thrill is Gone, but the Money Lingers On", and I think Mr. Roth deserves to be caught-up a little on his fuzzy statistics and equally fuzzy reasoning.

Certainly there has been a change in private aviation during the past ten or fifteen years, but this change is by no means a retrogression. Mr. Roth and who else says there are now "about onethird the number of privately-owned planes that were on hand in 1940"? Not the CAA who should know. The CAA says we have five times as MANY private airplanes now as in 1940, and almost seven times as many certificated pilots, and that we fly a billion miles a year (exclusive of scheduled airlines) which is more than five times the nonscheduled mileage of 1940.

Like other airport operators, I am in business to serve enough people with gasoline, tie down facilities and aircraft repairs to feed and clothe myself and my family. I work seven days a week and most nights to make a living. Does Mr. Roth think I don't welcome customers? He complains he can't get close to the planes. I can name 9 airports within 15 miles of D. C. and 17 within 35 miles where a person who likes to hang around an airport can get within 100 feet of a FLYING airplane if he is willing to give up his television set for half a day and come on out. And Mr. Roth should know that you can shoot landings at Springfield Airport for 58c a piece.

My field, and every other field I know is wide open to anyone who wants to work upon his own airplane. We certainly have no rules against owner maintenance for two basic reasons-one, the wolf at the door, and two we cannot afford for any of our pilots to have an accident due to faulty maintenance.

Mr. Roth says the thrill is gone. Now a thrill to one generation may become ridiculous to another. When CAA restricted acrobatics on civil airways, it eliminated the nincompoop who insisted on getting a few loops and snap rolls out of his system for the benefit of his girl friend watching him from Mr. Roth's nearby airport. I take my thrills differently. I just returned from a single engine flight Washington to Key West, Havana, Camaguey, Guantanamo City, Port-au-Prince and return via Sangua la Grande thence direct to Miami. was a decided thrill to raise a landfall under a 900 foot cloud base and know that we hadn't missed Haiti and ended up half way to Bermuda out of gas. To me in particular the thrill was on the return trip-the constant radio communication which we maintained with Key

MR. ROTH



West and Miami for the 200 miles water hop from Sangua la Grande, Cuba, to Miami. Unlimited visibility at 8500 feet enabled us to see Cal Say and Elbow Key 30 miles away, and omnirange cross bearings allowed us to report our posi-

tion to Key West by latitude and longitude several times during the flight. Mr. Roth can have his Eaglerocks—I'll take

my thrills practical.

The 10 hour elapsed time flight plan -Miami to Springfield, Virginia-filed at Sunny South the next day was routine with two exceptions: along about Daytona, airways weather reported Jack-sonville, which was to be our gas stop, at 1 mile in smoke and fog. Forecast was for 2 miles (below CAA minima). We obtained permission through Daytona radio, relayed by interphone from Jax for a VFR approach-tower to be contacted over the Bayard fan marker. We were in the clear and VFR all the way but this field had a local smoke condition which cleared up about our approach time. A MOST thrilling experience to any average CAVU pilot. Incidentally, we closed our flight plan with Washington on radio within 3 minutes of the originally filed 10 hours total elapsed time. All of which would no doubt bore Mr. Roth, but we got a kick out of it.

But Mr. Roth's main complaint is with the cost of private flying. Heaven knows we can use lower costs in this business but, again, Mr. Roth should get his facts straight. He should know that the cost of a five-place, 150 mphr airplane has been reduced from \$17,400 to \$14,000, and that the cost of a rental airplane is still \$7.00 an hour—both these figures despite the fractional worth of today's dollar. A good two place airplane can be purchased for \$500 to \$1000, half down, a year to pay.

The duster and cap days of the open automobile are gone; so are the days of helmet and goggles and flying by the seat of your pants. The modern private airplane has become a reliable means of transportation which, if used, costs about the same as a good automobile.

about the same as a good automobile. Just to prove it, I will sell Mr. Roth a sound, used two-place airplane equipped with two-way radio, metal prop and other extras for \$1025, and if he will use it at least 200 hours a year it will cost him no more than 4c per mile to operate. This plane will deliver Mr. Roth at a speed of more than 100 miles per hour and, I venture to add, will give him a thrill or two.

Carl V. Allen Springfield Airport, Inc. Springfield, Va.



SECRETS ARE COSTLY!

In a competitive economy such as ours, trade secrets are usually guarded jealously. But, when national security is at stake, technical secrets become the common property of the members of a vital industry such as aviation. Guarded secrecy is too costly—too time consuming. That's why the National War Production Council was organized during World War II.

Today, under a program evolved by the Committee on Guided Missiles of the Research and Development Board of the Department of Defense, highly important developments are made available immediately to a select list of contractors, universities, technical institutions and government agencies connected with the missile program.

Here's how it works. At Bell Aircraft, or at any other major missile contractor or agency, an important contribution to the guided missile program may be developed. At once, it is relayed to other plants and agencies where it might provide the answer to a challenging problem. As a result, time—the most essential element—is saved. Costly duplication is avoided. Taxpayers' dollars are conserved and can thus be applied to other vital projects affecting our security.

From experiencing the incalcuable value of this information service as both contributor and beneficiary, Bell Aircraft appreciates fully the efficiency and foresight of our leaders in defending the American way of life. We are proud to be a member of a team where secrets are shared with the front line defense.



Pioneer of Supersonic aircraft — remote controlled flight — jet and rocket propulsion — rotary wing aircraft — fighter design, armament and construction — guided missiles.



beyond

the

BLACKOUT

• Giannini precision Accelerometers give faithful indication of the values of gravity beyond the range of human endurance. Giannini Accelerometers are precision-built for a variety of exacting applications in all fields of aircraft and industry. Write for catalog and engineering data.

G. M. Giannini & Co., Inc. Pasadena 1, California Springfield, New Jersey



giannini

TECH TALK By Helena Redmond

After four years of continuous research, AMC's Communication and Navigation Laboratory has come up with the design for a new signal generator which features greater range, less radio leakage, and greater accuracy than its predecessors. The device, officially labeled the TS-413/U Signal Generator will replace seven currently-used generators and has facilities for modulating output signals up to 50 percent by audio frequencies of 400 and 1,000 cycles per second. External modulation from 100 to 15,000 cycles per second is also provided. At the panel, output signals are available over a voltage range from two microvolts to one volt. One thousand units, slated for use at AMC Headquarters and maintenance and repair bases using that particular range, are now being built by Harvey-Wells Electronics, Inc., Southbridge, Mass., and the Cole Instrument Co., Los Angeles.

Shock mounting, developed by AMC's Components and Systems Laboratory, and manufactured by the Marion Electrical Instrument Company on a Signal Corps contract, has taken the normally-sensitive voltmeter out of the delicate class and made it an item you can literally kick around. The secret lies in a rubber ring mounted in a circle at the back of the hermetically-sealed case. The new one-piece design floats the voltmeter, eliminates the present bulky and awkward shock mounting, and saves valuable instrument panel space. AMC engineers point out that any electrically-operated instrument on an airplane panel could be shockproofed in the same way. The new voltmeter will have commercial applications on generator sets where motor pulsation causes vibrations, in mobile television stations and public address systems, and in plants full of vibrating machinery. Installed in a case with other equipment, it can be made portable for such jobs as automobile tune up, radio, and telephone repair.

Air to ground delivery by parachute is 12 times as fast today as it was during World War II. A new monorail system, developed by AMC's Equipment Laboratory and Ryan Industries of Detroit, Michigan, can put five tons of cargo in a 1500 foot area during one seven-second pass. Key feature of the new system is a single rail running the length of a cargo plane such as the C-119. Twenty bundles, each weighing 500 pounds, and each equipped with its own parachute, are suspended on trolleys that run on special rollers. A push button opens the cargo doors, unlocks each trolley individually, and releases each bundle at a pre-determined point above the open doors. A static line opens the parachutes individually as the packages clear the plane.

A new high temperature carbon resistor has been developed for the Air Force by Batelle Memorial Institute of Columbus, Ohio, under the guidance of Air Materiel Command's Electronic Subdivision. The new resistor can operate under full load at temperatures up to 200 degrees Centigrade. Old type resistors conked out at temperatures higher than 70 to 85 degrees Centigrade. Temperature coefficient of the ordinary composition or wire wound resistors ranges from one to 20 percent. The new one varies less than 1/10 of one percent. After standardization the new resistor will be used in almost all Air Force equipment, and will eventually also be used in precision circuits of television sets, telephones, calculating equipment, and memory devices.

The Air Force has accepted delivery of a new crash boat officially designated "rescue boat Mark I". The 40 foot craft was designed and built by the Navy and features a hinged "transom" or "tailgate" at the stern, which can be lowered into the water to provide a working platform to bring in survivors aboard. The tailgate can be lowered to about 18 inches under the water, and a litter can be placed under an injured man so that rescuers can slide him gently up the tailgate ramp and into a cabin equipped with hot and cold running water, electric heating facilities, blood plasma, drugs and bandages, sufficient to provide emergency treatment while en route to a hospital ashore.

SELECT THE INSURANCE suited to your own status



CLASSES A-1 and A-2

Designed especially for pilots and other flight crew members of the REGULAR military services, who are engaged in military flying activities as a full-time occupation. A-1 covers accidental death and loss of sight or limb from any cause, including military or civilian accidents, on land or sea or in the air, world wide. A-2 offers the same accidental death coverage as A-1 but does not cover loss of sight or limb.



CLASSES B-1 and B-2

Designed especially for pilots and other flight crew members in the RESERVE military services, whose flying activities are part-time (generally limited to weekends and the two-week annual military service period). B-1 covers all types of accidental death, whereas B-2 is limited to death from aviation accidents only. B-1 also has broader loss of sight and limb benefits than B-2 (see chart).



CLASS C

Designed for all persons who are not flying personnel and whose participation in aviation is limited to traveling in aircraft as passengers or to working in or around aircraft on the ground. Death or injury from every type of nonaviation accident, and from certain types of aviation accidents, is covered (see chart).

For Your Security AFA Accident Insurance

LOW-COST PROTECTION FOR MILITARY AVIATION ACTIVITIES

general accident insurance—including private and commercial flying

issued by Lloyd's of London

HERE'S A NEW insurance plan which protects you and your family, day and night, at home or away, on land, on sea, and in the air, any place in the world, even while you pilot—or are a passenger in—military aircraft, and even while you are on active duty with the Air Force.

AFA Accident Insurance requires no physical examination. It pays off for loss of sight or limb, as well as for accidental death, in certain categories. No other accident insurance offers you—at such small cost—comparable military and civilian air and ground protection. Available in units of \$1,000—up to a maximum of \$10,000 — AFA Accident Insurance is exclusively for members or associates of the Air Force Association. Annual premiums per \$1,000 of insurance range from \$3 to \$15. See chart below.

HERE'S EXACTLY WHAT YOU GET AND WHAT IT COSTS

Premiums payable annually, semi-annually, or quarterly

	PERSONS ELIGIBLE:	SCOPE OF POLICY COVERAGE (indicated by √)					ANNUAL			
CLASS OF	All AFA members and associates (other than	Death Benefits			Loss of Sight or Limb Benefits			PREMIUM PER		
POLICY	paratroopers and air- borne infantry) except as follows:	Military Aviation Accident	Civil Aviation Accident	All Other Accidents	Military Aviation Accident	Civil Aviation Accident	All other Accidents	\$1,000		
A-1	No exceptions	~	~	~	~	~	~	\$15.00		
A-2	No exceptions	~	~	~				13.80		
B-1	Flight-rated REGULAR military personnel not eligible (see note 1)	(see note 2)	(see note 2)	~		(see note 2)	~	7.20		
B-2	Flight-rated REGULAR military personnel not eligible (see note 1)	(see note 2)	(see note 2)			(see note 2)		4.80		
С	FLIGHT-RATED Regu- lar and Reserve mili- tary personnel not eli- gible (see note 1)	(see note 3)	(see note 3)	~	~	~	~	3.00		

NOTE 1: "Flight-rated personnel" means pilots, co-pilots, navigators, flight engineers, radio operators, bombardiers, aerial gunners, and similar flying personnel of the military services or their reserve components.

NOTE 2: Class B-1 and Class B-2 policies expire with respect to aviation accident coverage if the insured person serves 120 days, consecutively or non-consecutively, on active military duty during the policy period; but Class B-1 coverage continues in effect thereafter for other types of accidents.

NOTE 3: Class C coverage does not apply to accidental death of the insured person on an aircraft unless he is on such aircraft as a passenger or in the course of his employment as ground crew or administrative personnel.

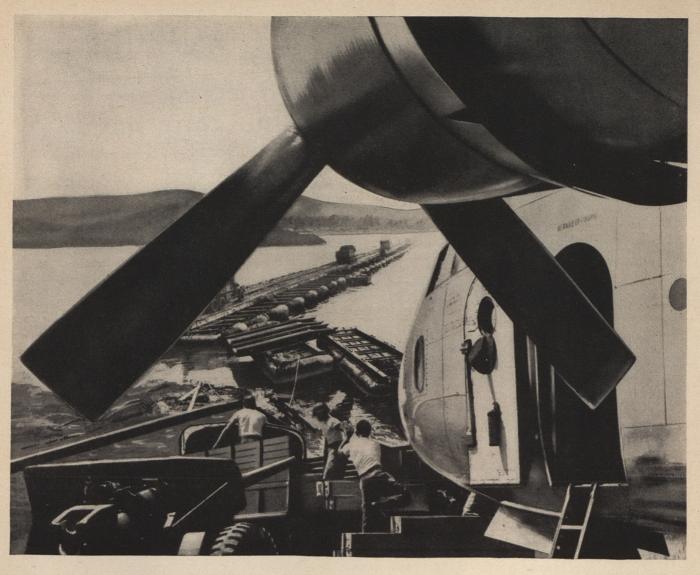
AIR FORCE ASSOCIATION

1424 K ST., N. W. • WASHINGTON 5, D. C.

Please send complete information about AFA Accident Insurance, together with schedule of optional means of payment, and application blank.

Name
ADDRESS

CITY......ZONE....STATE.....



The Bridge That Flew To Korea... Overnight!

All bridges across the Han River had been destroyed by retreating North Korean Communist armies, holding up the United Nations advance. We needed to bridge the Han in a hurry.

Back in Japan, U. N. troops prepared a 256-ton, 600-foot pontoon bridge—in sections—to fit into the U.S.A.F. Combat Cargo Command's Fairchild C-119's. Piece by piece, plane by plane, they flew the bridge to Korea overnight!

Here again, Fairchild C-119's displayed unique versatility—under rigid military conditions. Battle-tested, tough and rugged "Flying Boxcars" are airlifting everything for the Army, Air Force and Marine Corps—personnel, trucks, ammunition, hospital equipment—even BRIDGES! It is the backbone of the airlift to Korea today.



Other Divisions: Fairchild-NEPA Division, Oak Ridge, Tenn. • Fairchild Engine Division, Guided Missiles Division, Al-Fin Division, and Stratos Division, Farmingdale, N.Y.



More eloquent than words are the bone-tired, bitter expressions of these frostbitten casualties awaiting air evacuation.

ONE WAY OUT

The only thing twenty thousand trapped GIs and Marines could do was fight and pray as they fought for some miraculous rescue. The rescue came, and it was indeed a miracle

By Benjamin F. Blackman

Reported from Tokyo

irst word of the entrapment came to 10th Corps Headquarters in Korea by radio on the morning of November 28th. Chinese and North Korean forces, said the message, had slipped completely around elements of the First US Marine and 7th Infantry Divisions in the hills between the Chosin Reservoir on the north and the town of Hagaru on the south. Commanders of the 20,000 surrounded US troops estimated that the enemy numbered between 80,000 and 120,000. Not only were the Americans outrageously outnumbered, but strong, piercing stabs by Chinese forces had inflicted heavy casualties and cut considerably into available equipment.

Under such circumstances, the Red Commanders

had every reason to expect a quick victory—either by capitulation or annihilation of our forces. Indeed, had the men in the pocket been fighting under any flag except the stars and stripes, this expectation would undoubtedly have come to pass, but for the Yanks there was a way out—airlift.

The story of the hastily built and miraculously executed air bridge that brought in prodigious quantities of US supplies to the Hagaru area and took out unbelievable numbers of wounded men is an heroic episode in an ignominious chapter of US military history.

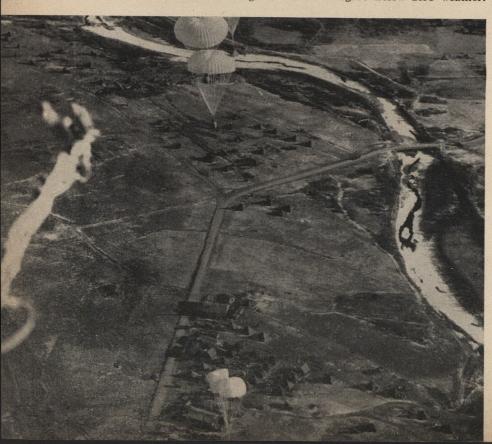
As soon as the radio message from the encircled GIs was received at 10th Corps Headquarters, Corps Commanders called in Lt. Col. Burt M. (Tex) Carlton,



Above, vital supplies, desperately needed by Marine and Infantry troops encircled by Chinese Communists, are loaded quickly into a C-119 Flying Boxcar.



Above, emergency supplies, ready to be air-dropped to encircled Marine and Army troops, are piled up ready for loading on FEAF Cargo Command aircraft. Below, special delivery out the cargo door. This was the only photo made before the camera shutter froze tight in the 23 degree below zero weather.



Far East Air Forces Combat Cargo Command Liaison Officer. Could the airlift which had performed such miracles in Berlin and from Tokyo to Kimpo perform another? Carlton thought it could. He flew over the area and made a survey of the terrain for a possible landing field.

Hagaru nestles in a narrow valley some four miles south of the ice coated reservoir. Towering hills on two sides make it vulnerable to heavy fire from Communist troops. Yet it is one of the few locations in the area which affords terrain level enough

for an airplane to land.

Through the close liaison work between Carlton and the X Corps Commander, contact was made with Army and Marine commanders of the encircled troops who were advised of the plan for evacuation provided a strip could be cleared near the village.

Marine engineering units worked steadily day and night to hack out a cow pasture size field near the thatch

roofed huts in the village.

Meanwhile, Carlton reported the planned air evacuation to Lt. Col. Allen D. Smith, Commanding Officer of the 801st Air Evacuation Squadron, attached to FEAF Combat Cargo Command Headquarters. Smith requested sufficient troop carrier transports be made available to accomplish the mission.

At noon, December 1, a twin engined Douglas C-47 transport of the 21st Troop Carrier Squadron, roared over the snow covered hills and circled the dirt strip which had just

been completed.

Enemy small arms fire clanked against the dull fuselage as the work horse of the Air Force let down its flaps for final approach to the 3,200 foot field,

Wounded Marine and Infantrymen looked up from their huddled positions near the frozen strip to watch the unarmed troop carrier glide down onto the field and bounce to a halt at the far end. "Friendly" North Koreans, closely supervised by burly Marines, quickly unloaded ammunition and emergency medical supplies flown in to supplement the constant air drops of C-119 Flying Boxcars. Thirty-four wounded were placed aboard and the first flight made its way out of the death trap.

Other "Skytrains" quickly followed in trail formation to deliver valuable supplies and fly out capacity loads of battle casualties. Entire aircrews of each ship, from pilot to crew chief, joined in loading and unloading the planes in order to step up the evacu-

Before darkness halted the first day's operation, the mercy ships had

evacuated 167 wounded from the frozen area in the North Korean hills.

At dawn the following day the air

operation was resumed.

Seven Air Force C-47's and four Marine R4D's teamed together to form a dawn to dark airlift which shuttled between the frozen dirt strip and the coastal air base at Yonpo, 40 miles to the south. The planes averaged 34 patients each flight.

Meanwhile, weary half frozen Marines and Infantrymen had to beat back wave after wave of charging enemy troops from the edge of the icy, wind-swept field. Fighter planes continued their close support mission with .50 caliber ammunition and deadly napalm. Every available man was thrown into the fight to protect the perimeter. Artillery was slammed at point blank range.

When the first full day's operation ended at dusk, more than 1,000 battle wounded and weather casualties had been evacuated from the tiny

strip.

While outnumbered Americans fought throughout the following night to hold the landing field at Hagaru for another day's evacuation, aircraft maintenance crews at Yonpo worked frantically to service and repair the bullet scarred C-47's for another day's operation, starting at dawn. Combat Cargo Command support units filled each aircraft to capacity with ammunition, rations and

gasoline for flights in. As darkness moved into day, the bridge went up again. C-119 Flying Boxcars again roared out to parachute emergency ammunition to add to that flown in by the C-47's and every air tactic known and some heretofore unknown was used to relieve the mounting pressure on the tired troops. For example, one contingent of Infantry, fighting rear guard action near the edge of the reservoir, was observed by transport pilots to be under attack by an overwhelming force of Reds charging across the ice. Employing fighter tactics, two C-47 pilots and one C-119 pilot diverted their aircraft from the primary mission and roared in toward the Communists at zero level, driving them back. Not until fighter aircraft appeared to strafe and napalm the cowering enemy did the buzzing troop carriers return to their original flight path.

During the following three days the toll of war and weather casualties mounted. Frost bitten Marines and doughboys clung desperately to their positions to hold the airstrip open

This was the guy the Air Force came to rescue; the GI in bitter retreat.





This group of encircled Marines struggle down a road carrying a helpless litter patient to a cleared strip for air evacuation under the guns of the foe.



Above, wounded Marines arrive at a battalion aid station to await air evacuation at a Communist-surrounded airstrip. Below, Marines, some of them walking wounded, warm themselves at a fire until the planes come. In the foreground are parachute packs used by the Air Force to drop needed supplies.



until transports could evacuate the remainder of the casualties. The highest one day evacuation figure was reached on December 5 as 1,580 patients were airlifted from the battle zone to Yonpo airfield.

But it soon became evident that the strip could not be held much

longer.

The situation was summed up by one Marine Lieutenant as he helped a blood caked patient aboard a C-47.

"We shoot all we got at those blank blank blanks," he shouted, "but they keep on coming at us."

On December 7, the ninth anniversary of another American reversal, the battered elements of the 1st Marine and 7th Infantry Divisions began falling back before powerdriving enemy blows. Still the unarmed C-47's continued their flights. Wounded Americans, with tear filled eyes, were placed aboard the planes. These were not tears of happiness but tears of fatigue. Those who were able looked back at their buddies still fighting in the nearby hills. They knew only too well that within a few short hours the last plane would lift its wheels from the frozen dirt strip and the men remaining would lose their only contact with the outside world.

From then on the ground situation at Hagaru became confused. At times, pilots approaching the field were not sure whether it was still in our hands or not. Smoke from gunfire and napalm bombs blanketed the area. Battles raged furiously on the hillsides overlooking the strip and in the small village itself. There were still many wounded to be flown out if time would permit.

Colonel Robert D. Forman of Memphis, Tennessee, director of operations for Far East Air Forces Combat Cargo Command, flew into the airstrip at noon to personally supervise the final evacuation operation.

He made sure that every American destined to remain behind and fight his way out was equipped as adequately as possible.

Overhead, fighter planes continued their attacks on enemy forces coming down from the hills. The now empty incoming transports still landed, loaded up with casualties, and roared into the air again.

The graveness of the situation was indicated by the terrific din of battle and the swirl of smoke about the defenseless C-47's as the aircrews rapidly loaded their planes. Michael James, New York Times war correspondent, who flew into the battleringed airstrip with Colonel Forman, wrote a vivid eye witness description of the last few hours of air evacuation at Hagaru. Said he:

"By this time the whole area was a sea of flames. Not only were Marines burning their surplus stocks, but two slightly damaged C-47 transports, neither of which could be flown out due to lack of immediate repairs, went up in flames. Colonel Forman who flew the last transport out . . . was notified by radio jeep that there was one more wounded man desperately in need of expert medical attention. For one hour Forman waited while the enemy closed in on the field. Eventually a jeep drove up with the last casualty who was taken aboard.

'Colonel', said the Marine Lieutenant driving the jeep, I'll kiss the whole Air Force in Macy's window at any time you say."

Shortly afterward his plane lifted its nose into the smoke-filled sky as the enemy swarmed over the tiny strip which the outnumbered but still fighting Americans were forced to abandon. Those left behind to fight their way out heard only the dull drone of engines as their last connection with the outside world was broken.

Eight miles farther down the valley, engineers had cleared another airstrip, hoping that the entrapped ground forces could fight their way there for another air evacuation.

For the first time in history a complete bridge was air dropped. It consisted of eight spans, each weighing two tons.

Eight C-119 Flying Boxcars, each carrying one span, flew over the designated drop zone and parachuted their cargo making it possible for the encircled troops to cross a dam where the original bridge had been dynamited.

After twelve hours of bitter fighting, during which time vital supplies were parachuted by other Flying Boxcars, the embattled forces reached the new airstrip located at Koto.

Lt. Col. Phil Cage of Houston, Texas, Commanding Officer of the 21st Troop Carrier Squadron, piloted the first transport into the new strip which could only be used for two days. Deep snow on the field and poor visibility limited the first day's operation to 19 casualties.

During the second day's air operation from Koto, 293 wounded were evacuated. The weathered-in airstrip was then abandoned.

The remaining battle-weary ground troops lashed out again toward a link-up with other friendly forces driving north from Hamhung.

Thus ended the mercy air operation. An operation which in days saved 4,690 tired and wounded fighting men from a frozen grave in the bleak desolate hills of North Korea.



Peering into the haze, trying to spot a C-47 which they know is looking for their entirely-surrounded air strip are two Marine officers and an AF pilot.



For the wounded, above, the final leg of the bitter struggle was the short flight to a Field Hospital at Yonpo and then to Japan. Below, arrival at Yonpo. The airlift which brought them to clean hospital beds and safety was one of the minor miracles which saved our outnumbered men from annihilation.





What Are Your Chances?

If a modern A-bomb exploded without warning in the air over your home town tonight, your calculated chances of living through the raid would run something like this:

Should you happen to be one of the unlucky people right under the bomb, there is practically no hope of living through it. In fact, anywhere within one-half mile of the center of explosion, your chances of escaping are about 1 out of 10.

On the other hand, and this is the important point, from one-half to 1 mile away, you have a 50-50 chance.

From 1 to 11/2 miles out, the odds that you will be killed are only 15 in 100.

And at points from 1½ to 2 miles away, deaths drop all the way down to only 2 or 3 out of each 100.

Beyond 2 miles, the explosion will

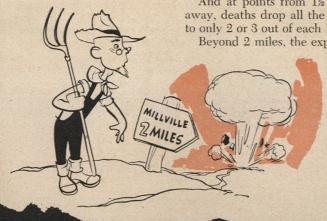
cause practically no deaths at all.

Naturally, your chances of being injured are far greater than your chances of being killed. But even injury by radioactivity does not mean that you will be left a cripple, or doomed to die an early death. Your chances of making a complete recovery are much the same as for everyday accidents. These estimates hold good for modern atomic bombs exploded without warning.

What About Super Bombs?

Do not be misled by loose talk of imaginary weapons a hundred or a thousand times as powerful. All cause destruction by exactly the same means, yet one 20,000-ton bomb would not create nearly as much damage as 10,000 two-ton bombs dropped a little distance apart. This is because the larger bombs "waste" too much power near the center of the explosion. From the practical point of view, it doesn't matter whether a building near the center of the explosion is completely vaporized or whether it is simply knocked into a pile of rubble.

To be more specific, a modern





ATTACK

This is the second in a series of AIR FORCE articles on atomic defense. The first article two months ago had to do with the bomb's physiognomy and its peculiar destructive capacities. The story this month goes a step farther—protection of the individual. The statements are official and authentic. They were prepared by the Office of Civil Defense. We urge you to study the next eight pages well, for the information may save your life or the life of someone in your family.

atomic bomb can do heavy damage to houses and buildings roughly 2 miles away. But doubling its power will extend the range of damage to only about 2½ miles. In the same way, if there were a bomb 100 times as powerful, it would reach out only a little more than 4½, not 100 times as far.

And remember: All these calculations of your chances of survival assume that you have absolutely no advance warning of the attack.

Just like fire bombs and ordinary high explosives, atomic weapons cause most of their death and damage by blast and heat. So first let's look at a few things you can do to escape these two dangers.

What About Blasts?

Even if you have only a second's warning, there is one important thing you can do to lessen your chances of injury by blast: Fall flat on your face.

More than half of all wounds are the result of being bodily tossed about or being struck by falling and flying objects. If you lie down flat, you are least likely to be thrown about. If you have time to pick a good spot, there is less chance of your being struck by flying glass and other things.

If you are inside a building, the best place to flatten out is close against the cellar wall. If you haven't time to get down there, lie down along an inside wall, or duck under a bed or table. But don't pick a spot right opposite the windows or you are almost sure to be pelted with shattered glass.

If caught out-of-doors, either drop down alongside the base of a good substantial building—avoid flimsy, wooden ones likely to be blown over on top of you—or else jump in any handy ditch or gutter.

When you fall flat to protect yourself from a bombing, don't look up to see what is coming. Even during the daylight hours, the flash from a





What About Burns?

Flash burns from the A-bomb's light and heat caused about 30 percent of the injuries at Hiroshima and Nagasaki. Near the center of the burst the burns are often fatal. People may be seriously burned more than a mile away, while the heat can be felt on the bare face and hands at 4 or 5 miles.

To prevent flash burns, try to find a shelter where there is a wall, a high bank or some other object between you and the bursting bomb. You can expect that the bomber will aim for the city's biggest collection of industrial buildings.

A little bit of solid material will provide flash protection even close to the explosion. Farther out, the thinnest sort of thing—even cotton cloth—will often do the trick.

If you work in the open, always wear full-length loose-fitting, light-

In all stories about atomic weapons, there is a great deal about radioactivity.

Radioactivity is the only way—besides size—in which the effects of A or H bombs are different from ordinary bombs. But, with the exception of underwater or ground explosions, the radioactivity from atomic bursts is much less to be feared than blast and heat.

Radioactivity is not new or mysterious. In the form of cosmic rays from the sky, all of us have been continually bombarded by radiation every hour and day of our lives. We all have also breathed and eaten very small amounts of radioactive materials without even knowing it. For over half a century, doctors and scientists have experimented and worked with X-rays and other penetrating forms of energy. Because of all this experience, we actually know much more about radioactivity and what it does to people than we know about infantile paralysis, colds, or some other common diseases.

It is easy to understand how radioactivity works if we think of how sunlight behaves.

In the northern part of the world winter's slanting sun rays seldom cause sunburn, but the hotter rays of the summer sun often do. Still, just a few moments in the midsummer sun will not give you a tan or sunburn. You have to stay in its hot rays for some time before you get a burn. What's more, bad sunburn on just the face and hands may hurt, but it won't seriously harm you. On the other hand, if it covers your whole body, it can make you very sick, or sometimes even cause death.

In the same way, the harm that can come to you from radioactivity will depend on the power of the rays and particles that strike you, upon the length of time you are exposed to them, and on how much of your body is exposed.

What Is "Initial" Radio-

Broadly speaking, atomic explosions produce two different kinds of radioactivity. First—and most important in an air burst—is an extremely powerful invisible burst of rays and particles thrown off at the time of explosion. This kind is called "initial" or explosive radioactivity. Its rays and particles fly out quickly, then promptly die. There is danger from them only for little more than a minute. The second type of radio-

activity—lingering radioactivity—will be described later.

The injury range of the explosive radioactivity from a modern A-bomb is a little over 1 mile, if the bomb is exploded about 2,000 feet in the air. If it is exploded much higher, some of the radiation may not reach the ground, so the range may be less. If it is exploded much lower, the radiation also may not reach out as far, because it would be blocked by the ground or by buildings.

A little more than a mile away, the principal effects of the few dying rays that struck you could be seen only as temporary blood changes in a doctor's examination. You probably wouldn't even realize you had

been exposed.

A little less than a mile from the explosion center, if you are unprotected, you are almost sure to suffer illness. Less than two-thirds of a mile away, those caught in the open are pretty sure to soak up a fatal dose of radioactivity.

Still, the possibility of your being caught without some protection is not very great. Even if you are on the street, there is a good chance that a building, or many buildings, will be between you and the burst, and they will partially or completely shield you.

Atomic explosions high above ground cause the most widespread damage. And, as happened in Japan, when an A-bomb goes off in the air you are far more likely to be hurt by the bomb's blast and heat waves than by its radioactivity. At Hiroshima and Nagasaki slightly over one-half of all deaths and injuries were caused by blast. Nearly one-third of the casualties were from the heat flash. Radioactivity alone caused only about 15 percent of all deaths and injuries.

If the bomb were to go off close to the ground, or slightly below its surface, the range of the explosive radiation, as well as the range of the blast and heat, would be reduced. This is due to the fact that all three would be partially blocked by the earth, by nearby buildings and by other obstacles.

In an underwater burst, there would be much less to fear from blast and nothing to fear from heat. Practically all the explosive radioactivity would be absorbed by the water.

What About "Induced" Radioactivity?

If an atomic bomb gets off in the air within two-thirds of a mile or slightly more of your home, there is no practical way of keeping explosive radioactivity out of the above-ground part of your house. It is possible that, at very short range, artificial, or induced radioactivity could be set up in gold, silver, and many other ob-



jects. However, this kind of radioactivity will never offer a great danger, so don't throw away bandages and other first aid materials in the medicine cabinet. They will be perfectly safe to use.

Naturally, the radioactivity that passes through the walls of your

house won't be stopped by tin or glass. It can go right through canned and bottled foods. However, this will not make them dangerous, and it will not cause them to spoil. Go ahead and use them, provided the containers are not broken open.

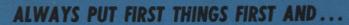
What About "Radiation Sickness?

Should you be caught upstairs or in the open at the time of a bombing,



you might soak up a serious dose of explosive radioactivity. Even so, the first indication that you had been pierced by the rays probably wouldn't show up for a couple of hours. Then you most likely would get sick at your stomach and begin to vomit. However, you might be sick at your stomach for other reasons, too, so vomiting won't always mean you have radiation sickness. The time it would take you to get sick would depend on how strong a dose you got. The stronger the dose, the quicker you would get sick. For a few days you might continue to feel below par and about 2 weeks later most of your hair might fall out. By the time you lost your hair you would be good and sick. But in spite of it all, you would still stand better than an even chance of making a complete recovery, including having your hair grow in again.





TRY TO GET SHIELDED

If you have time, get down in a basement or subway. Should you unexpectedly be caught out-of-doors, seek shelter alongside a building, or jump in any handy ditch or gutter.

2 DROP FLAT ON GROUND OR FLOOR

To keep from being tossed about and to lessen the chances of being struck by falling and flying objects, flatten out at the base of a wall, or at the bottom of a bank.

BURY YOUR FACE IN YOUR ARMS

When you drop flat, hide your eyes in the crook of your elbow. That will protect your face from flash burns, prevent temporary blindness and keep flying objects out of your eyes.

NEVER LOSE YOUR HEAD AND ...

DON'T RUSH OUTSIDE RIGHT AFTER A BOMBING

After an air burst, wait a few minutes then go help to fight fires. After other kinds of bursts wait at least 1 hour to give lingering radiation some chance to die down.

DON'T TAKE CHANCES WITH FOOD OR WATER IN OPEN CONTAINERS

To prevent radioactive poisoning or disease, select your food and water with care. When there is reason to believe they may be contaminated, stick to canned and bottled things if possible.

DON'T START RUMORS

In the confusion that follows a bombing, a single rumor might touch off a panic that could cost your life.

Survival
Secrets
for
Atomic
Attacks



Where Is the Best Place to Go?

If your house is close to the explosion, there is little you can do to protect it from the bomb's blast, or pressure wave. Within one-half mile of the surface point directly beneath the explosion, the shock wave from an atomic bomb is sure to flatten most houses. Out to a distance of about 1 mile, steel, brick, and wooden structures are likely to be damaged beyond repair. Farther out, there is less destruction, but serious damage may be expected to extend as far as 2 miles.

It is only wise to figure that the upper floors of most buildings near the explosion will be pushed in. This means the basement is probably the safest place to be. If you have a basement and time to get down to it, lie flat along the outer wall or near the base of some heavy supporting column. You would be even safer under a cellar work bench or heavy table. Stay away from the middle of the floor where falling beams and other objects are most likely to strike you.

Naturally, you run a risk of being trapped in the wreckage, but your over-all chances of escape from the bomb in most cases are many times greater than they would be upstairs. If your basement has two exits, you will be in less danger of being trapped.

Besides protecting you from blast and heat, basements also provide shielding from explosive radiation. Because, the lower you get, the more barriers against radiation there are likely to be between you and the bursting bomb. Down in the cellar you'll probably be shielded not only



by other buildings, but also by earth and the cement foundations of your own house. Earth, concrete, and steel are good radiation barriers.

If you have no basement, look around your immediate neighborhood for a nearby shelter you can get to quickly in an emergency. Such a shelter might be a culvert, a deep gully, or another building within easy reach. If you live in rolling country, there is probably a hill close to you. Even a high bank will offer some protection from most bursts if it is between you and the explosion. In choosing your shelter, assume that the enemy will aim for the industrial buildings.

If you live in a State where there is danger from sudden storms like cyclones or hurricanes, you may have a "cyclone cellar" or something similar. If so, you have a shelter that will give excellent protection against atomic bombs.

How Should a House Be Prepared?

Starting right now you should go in for "fireproof housekeeping." Don't let trash pile up around your house and always keep it in covered containers.

If you know you have time when an alert sounds, be sure to shut the doors and windows and pull down



the shades. This will help keep out fire sparks.

If you have shutters or venetian blinds, or heavy drapes, they will also provide some protection against harm from flying glass.

Several other household precautions should be taken promptly. Atomic bombs set off high above ground seldom cause breaks in underground gas or water mains. However, shaking and twisting of the buildings by the blast wave sometimes snaps off household inlets at the point where they enter the basement. This may allow gas or oil to flow into your cellar.

To lessen the danger of fires and explosions that could result from this leakage, you should throw the elec-



tric switch that shuts off your oil burner.

Your local utility companies can give you detailed instructions about your gas, pilot lights, and so on.

If you have a coal-burning furnace or wood stove, be sure to close all its fuel and draft doors. In other words, do all you can to prevent sparks and to put out or cover open flames.

Should attack come without warning, take these same precautions right after the raid. Keep at least one flashlight handy and don't strike a match to light your way down into a darkened basement. Gas or oil fumes may be present and an explosion could result.

What About Lingering Radioactivity?

Knowing how to protect yourself from blast, heat, and explosive radioactivity, only one major problem remains: That is how to avoid harm from lingering radioactivity.

Explosive radioactivity bursts from the bomb at the time of explosion and lasts for only little more than a minute.

Lingering radioactivity remains for a longer time, from a few minutes to weeks or months, depending on the kind of radioactive material.

Lingering radioactivity may become a danger when atomic bombs are exploded on the ground, underground, or in the water. Air bursts leave no dangerous lingering radioactivity.

Most lingering radioactivity comes from left-over bomb wastes, or "ashes," technically called fission products. They consist of countless billions of fragments, or pieces, of atoms split up in the explosion. Smaller, and usually less dangerous, amounts of lingering radioactivity may be thrown off by scattered atoms of uranium or plutonium that fail to split up when the bomb goes off.

These totally invisible radioactive particles act much the same as ordinary, everyday dust. When present in any real quantity, they are scattered about in patches and contaminate, or pollute, everything they fall on, including people. While they can be removed easily from some surfaces, they stick very tightly to others. It is practically impossible to get absolutely all of them out of household corners and cracks. Most of the time, it is far easier to prevent pollution than it is to remove it.

What About Radioactive Clouds?

In spite of the huge quantities of lingering radioactivity loosed by atomic explosions, people fortunately are not very likely to be exposed to dangerous amounts of it in most atomic raids.

Since high-level bursts do the greatest damage, that is the kind we can expect most often. When atomic weapons are exploded in mid-air, the violent, upward surge of superhot gases and air quickly sweeps practically all the radioactive ashes and unexploded bits of bomb fuel high into the sky. Most of them are carried harmlessly off in the drifting bomb clouds. High-level explosions definitely will not create "areas of doom," where no man dares enter and no plant can grow. In fact, they will leave very little radioactivity on the ground, even near the point of explosion. Firefighters and rescue teams can move promptly toward the center of destruction with little danger of facing harmful radiation.

And regardless of all you may have heard or read concerning the dangers of radioactive clouds, after the first minute and a half there is actually little or nothing to fear from those produced by high-level bursts. While most of the radioactive materials swept up into the sky eventually fall back to earth, they are so widely and so thinly spread that they are very unlikely to offer any real dangers to humans. Thousands of bombs would have to be set off in the air before serious ground contamination would be found over really large areas. There was no ground-level pollution of any importance following either of the two Japanese atomic bomb-

It was said earlier that 15 percent of the Japanese A-bomb deaths or injuries were caused by radioactivity. But not one of them was caused by the lingering kind. Explosive radioactivity caused them all.

What About Ground and Water Bursts?

Bursts on or near the ground usually will leave a limited area of rather heavy and often dangerous



pollution near the explosion point. In such cases, the possibility of harm from radioactivity falling out of the clouds is greater than in high-level explosions. But even so, a person could escape contamination by simply taking refuge inside a house or even by getting inside a car and rolling up the windows. And even if some of the wastes fell on him, he would lessen his chances of injury if he promptly shed his clothes and took a bath or shower.

In underwater explosions, large portions of the bomb's radioactive wastes will be "trapped" by the water and then spread over the immediate area. Under these conditions, serious ground pollution is to be expected.

After a water or underground burst a cloud of very radioactive mist or dust might form and spread, par-



ticularly downwind, injuring people who weren't sheltered.

If the explosion has been underground, at ground level, or in the water, stay in your shelter. If caught in the open, get indoors right away. Then stay indoors for at least an hour or until you get instructions. It may be necessary to stay inside for three or four hours. The reason for this is that most lingering radioactivity loses its power very fast. So staying undercover for a while will greatly reduce the danger.

Any rain or mist that comes right after an atomic explosion should be considered dangerous, even though it may not always be radioactive. Keep from getting wet if you possibly can.

And remember that an air burst will leave no lingering radioactivity of importance, so after a few minutes it will be safe to get out and help fight fires or to help people who may need it.

How Is Radioactivity Detected?

While we cannot see, hear, feel, smell, or taste radioactivity, its presence readily can be detected with Geiger counters and other instruments. However, you won't have to know how to use one of these. Instead, you can rely on your local radiological defense teams-a small, specially trained corps of "meter readers"-to warn you of the presence of lingering radioactivity. You also can count on them to see to it that firefighters, rescue workers and other people who may have to enter contaminated places do not remain there long enough to be injured.



But always remember our sunlight comparison. There is usually a whale of a difference between *detectable* and *dangerous* amounts of radioactivity. The rays and particles from an ordinary, luminous-dial wrist watch will cause a roar in the earphones of a Geiger counter, as just one example. We must not lose our

heads just because radioactivity is reported as present.

What About Protecting Yourself from Lingering Radioactivity?

While attempting to avoid exposure to the bomb's blast, heat, and explosive radioactivity, also do what you can to keep from being showered by radioactive waste materials. Inside a shelter or building there is little or nothing to fear from this source. But if caught out-of-doors, try to grab hold of something to cover yourself with when you fall to the ground. A board or some sheets of newspaper might help, but a raincoat would be better. The object is, of course, to keep radioactive dust and raindrops off your body and clothing. When it's safe to get up, throw away your covering.

Always do what you can to help other people. There is no chance of your being harmed by radioactivity from the bodies of others, even if they have radiation injuries. Don't leave injured people where they may be burned. Direct rescue workers to persons trapped in the wreckage. If necessary to bandage open cuts and wounds and no standard first aid equipment is available, use parts of your own or the victim's clothing. But tear them from the under, not the outer garments. Underclothes are far less likely to be contaminated by radioactivity.

If you have walked through rubble from a ground burst or water from an underwater burst, be sure to change at least your outer garments and shoes. Outer clothes will automatically serve as a "trap" for most of the radioactivity you may accidentally pick up. By taking them off you will remove most of the contamination. If the clothing is heavily contaminated, it is best to bury it.

You also should manage to take a bath or shower, if you have been in an area of lingering radioactivity. It is important that all radioactive materials be removed as soon as possible from your body, and bathing is the only practical means of getting rid of them. You won't need special cleaning compounds. Warm water and soap are ideal.

In washing, pay particular attention to your hair, for that is one place where the wastes are sure to pile up. Also give your hands a good scrubbing and get all dirt out from under your fingernails. If there is a radiological defense man handy, have him check you with his meter after you've finished your clean-up. Should he find your body still radioactive, again scrub yourself from head to foot.



Then do it a third time if necessary. You can remove practically all of the radioactivity if you keep at it.

Remember all this is necessary only for persons who have come in contact with radioactive materials in heavily contaminated areas.

What About Radioactivity in the House?

A few simple steps will go a long way toward keeping your house from being contaminated by lingering radioactive wastes scattered about in some bombings. As a rule, it is far easier to prevent radioactive pollution of a household than it is to remove it.

Keep all windows and doors closed for at least several hours after an atomic bombing. In fact, better leave them shut until civil defense authorities pass the word that there is no lingering radioactivity in your neighborhood. Should you get an official report that there is serious contamination in the vicinity, better cover all broken windows with blankets or cardboard.

Whenever there is widespread neighborhood pollution, it will be impossible to keep your house absolutely free of it. A little is bound to seep in through cracks or else down the chimney. (By all means close the dampers in fireplace flues and shut off air conditioners and ventilating fans not equipped with special filters.) Unless you are careful, some radioactivity is likely to be tracked in by people or pets. Keep your cat

(Continued on page 44)

Exclusive AIR FORCE Inter

Author of "Air Power, Key to Survival

This is the second in a series of AIR FORCE Mobilization Interviews. It expresses one man's conclusions in light of defeat in Korea and the military buildup in Europe. In a moment of indecision, the voice of Major Seversky speaks of hope through airpower and cries for action before it is too late.

Q. Major de Seversky, the President has indicated this is to be a moment of great crisis in the nation's history. At this late hour what prospect do you see of avoiding military catastrophe, both in Asia and in Europe?

A. As long as we allow ourselves to be drawn into primitive ground fighting on the Eurasian continent, where the enemy has insurmountable advantages in numbers and position, we are headed for defeat. The tragedy of Korea is the result of preparing to fight a new war while our strategic thinking is stuck in the mire of World War II experience, which is utterly irrelevant to the new set of conditions. We won the last war with balanced task forces so we insist upon fighting the new war with bigger and better balanced task forces. Korea has proven that such strategy is fallacious, if we interpret the Korean lesson correctly.

Q. What is this lesson?

A. Our armies can never be big and strong enough to win a ground war on the Eurasion continent. On any continent, a superior army supported by adequate air force controlling the air above, could never be prevented by another army from taking possession of its entire continent. The native (or indigenous) army would never tolerate the creation on the same continent of another army that might eventually challenge its power. Nor would it allow any other army to be brought from over-seas as long as its own air power dominates its own skies. In Korea the communists were able to overcome our ground forces with sheer numbers, even without control of the air. It ought to be clear to anybody how impossible our task would have been if the enemy, in addition to superior numbers on the ground, had also possessed a challenging air force. Our army would never have been able to set foot on Korea.

Q. Are we interpreting this lesson correctly?

A. Hardly. Our reaction to the Korean experience, which so clearly demonstrated that we can never compete in numbers with the Asiatic hordes, is to build bigger ground forces, even though it is conceded that they can never be big enough to match the enemy's.

Q. How can we deal with these "Koreas"?

A. We must rely entirely on airpower if we wish to deal with peripheral little wars of aggression, by imposing an air blockade of suffocation on infected areas. Q. How about Europe? Do you advocate abandoning the ground defense of Europe as well?

A. No, I do not advocate any such thing. But first things must come first. As I said before, Russia will not sit passively by and tolerate our building a European army that eventually will be able to challenge it. Russia will nip that undertaking in the bud, unless we find means of deterring Russia while the reconstruction of European strength is going on. Only American long range airpower which has the vitality to denude Russia of its sinews of war, operating directly from the United States and partially from Great Britain, from bases inaccessible to Russian armies, can deter Russia from interfering with rearmament of Europe.

Q. Do we have any force-in-being that can beat com-

munism?

A. No, we do not. Q. What about our strategic airpower?

- A. Our present Strategic Air Force is so small that it does not have the vitality even to disrupt the economy of Russia, let alone defeat her.
- Q. Even with the A-bomb?

A. Even with the A-bomb.

Q. Do you mean that in an all-out war with Russia our present strategic airpower would be ineffective?

A. Yes, decidedly ineffective. Our present Strategic Air Force is well conceived, well manned and well led, but it is only a token force. This Strategic Air Force will not be able to destroy the Russian industrial complex until it destroys the Russian Air Force and wins command of the air.

There is a clamor in some quarters to send our bombers with A-bombs now. These people do not realize that if we do so we will uselessly expend our A-bombs and destroy the nucleus of our Strategic Air Force without scoring any decision. One of the basic principles of war is to be able to maintain a continuity of effort. To do this, our Strategic Air Force must be expanded to ten times its present strength.

Q. Do you advocate then the building of a great fleet of strategic aircraft regardless of whether or not such a move would result in an "unbalanced" military force? A. If by "balance" you mean dividing our national potential into three equal parts-one-third Army, onethird Navy and one-third Air Force-then I will state without hesitation that such a division is unrealistic and will prove to be disastrous. We must remember that Russia is on a self-contained continent. It does not depend on over-seas supply lines. Therefore it puts only a small fraction of its national effort into sea power. For all practical purposes, it divides its effort only two ways-into land force and air force.

We must stop the anachronistic habit of dividing our defense appropriations into roughly three equal parts. With the Air Force our first line of defense and its action decisive, at least two thirds of our nationaldefense effort must go to the Air Force. Only powerful continental airpower can save American civilization from destruction by atomic and other bombing. Only the deterrent of American long-range striking airpower, operating directly from our shores, can shield any effort to rearm and revitalize Europe. Only airpower can provide an effective answer to a submarine menace. Only under friendly skies guaranteed by airpower can our Navy and naval transport carry out their functions. Above all, only through the air can we marshal a force, superior both in equipment and numbers, for a genuine offensive to destroy the enemy war potential at its source-thus preventing air attacks on America.

In the light of these military facts, its seems to me, we must not assign a single billion dollars for defense on the surface, or for bolstering allied strength, unless we simultaneously channel two billions into the USAF.

Q. Major, what does your statement about "continuity of effort" do to the so-called one-punch theory-the theory of sending General Lemay and his B36s out tonight to finish the Russians off with a single attack?

A. No responsible airman has ever advocated such a ridiculous idea. It is a straw man, set up by opponents of a true airpower strategy in order to confuse the issue. There is no easy way to win a war with Russia and her satellites.

Q. Major, in recommending a large Air Force, you do propose elimination of our Army and the Navy?

A. No, I certainly do not. I do not recommend the abolition of our armies and navies, but since neither of these forces will be able to assume the offensive until the Air Force has won command of the air and destroyed the enemy's power to wage war, their roles in the next war will be purely supporting and auxiliary.

Q. Have we time to build the Strategic Air Force you recommend?

A. Since our rearmament program is only beginning, it certainly will not take any more time to build the right kind of air force than to build the wrong kind of air force plus huge armies and navies. Don't forget that the prototype of interhemispheric aerial warfare is already in the air. I firmly believe that we can implement a true air strategy faster and more efficiently that an unwieldy strategy of balanced forces. But if we insist on building our ground forces just because for long a relentless blockade from the air. the enemy has shown his proficiency in beating them. down, then we not only will find ourselves without time to build a strategic air force, but also without the resources and man power to do the job. The balanced force strategy is so profligate and exhausting that it will lead us straight into economic bankruptcy, and in the process our nation will be regimented and will lose the very liberties we are fighting to preserve.

Q. Then to tie this thing up, Major, it would appear that you advocate a.) the immediate withdrawal of our ground forces from Europe and Asia; b.) concentration of our military productive effort on strategic bombers; and c.) the subsequent employment of those bombers (should all-out war become an actuality) to obliterate the Communist world. Is this correct?

A. You have asked several questions there. I will answer them one at a time.

First, I am in favor of giving all possible effective help to the European nations so that they can rearm themselves. However, this undertaking will be futile unless we can first bring into being a Strategic Air Force operating partially from Great Britain but primarily from our own continent. This Air Force must be able to hold the Russian war machine at bay while

Europe is rebuilding its military strength.

As to the second part of the question, may I quote from my book: "A table of priorities in this crucial period of preparedness . . . would be roughly as follows: FIRST: Long range American strategic air force for direct intercontinental warfare. SECOND: Adequate air force and other defensive means to shield the American continent. THIRD: Reinforcement of the British Isles as our most important (and only tenable) advance air base-and creation of necessary naval forces for that purpose. FOURTH: Rearmament of Western Europe and its industrial rehabilitation to make possible the eventual emergence of independent military strength."

Only when all these objectives are well under way ought we to channel our resources into expanding our

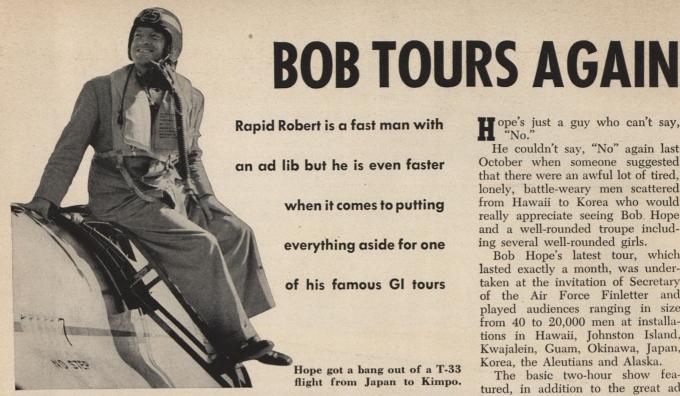
American land army.

Naturally, these objectives must be pushed simultaneously. But in the assignment of money and the allocation of materials and man power, when choices must be made, these priorities should be followed.

As to the third part of the question: Strategic air power properly applied is not an instrument of obliteration. I believe that the lack of appreciation of airpower as a military force lies in the inability to grasp its profound influence on the surface of the earth. Airpower is a very flexible force. Its aim is not to annihilate masses of people. Its aim is to assist these masses to liberate themselves from their Communist masters. It can achieve this by destroying the enemy tir force, attaining complete freedom of movement over enemy territory, disarming the nation and destroying its ability to wage war. It can drive a wedge between the government and its people by destroying all means of communication and transportation. Like sea power in the past, it can impose a blockade by completely severing not only exterior but also interior lines of communication, and bringing national life to a standstill. No nation, no matter how primitive or how advanced its civilization may be, will be able to bear

Appower is thus also a political force. It can dis-regard any iron-curtain and get in touch directly with the people themselves. It can encourage and support rebellion. It can be a powerful force for mercy by supplying food, clothing and medicine to those who join us in the fight against tyranny. It can maintain contact with people and forces who join our side.

The scope of influence of airpower is inexhaustible. It is the only force in our possession and within our means that can deter the enemy from precipitating war, or that can assure us victory if we are attacked notwithstanding. It is the only force in answer to the enemy's unlimited man power. It is the only decisive force that we can create while still remaining a free and unregimented people.



Everybody wants to get into the act. Above, servicemen in Korea spread the welcome banner for the groaner while Hope and company look on good-naturedly. Below, Hope prepares to helicopter from the U.S.S. Valley Forge to mainland.



Hope's just a guy who can't say, "No."

He couldn't say, "No" again last October when someone suggested that there were an awful lot of tired, lonely, battle-weary men scattered from Hawaii to Korea who would really appreciate seeing Bob. Hope and a well-rounded troupe including several well-rounded girls.

Bob Hope's latest tour, which lasted exactly a month, was undertaken at the invitation of Secretary of the Air Force Finletter and played audiences ranging in size from 40 to 20,000 men at installations in Hawaii, Johnston Island, Kwajalein, Guam, Okinawa, Japan, Korea, the Aleutians and Alaska.

The basic two-hour show featured, in addition to the great ad lib himself, blonde Marilyn Maxwell; Jimmy Wakely, cowboy singer; Judy Kelly, acrobatic dancer; the Highhatters, a three man dancing team; the Taylor Maids, three very pretty girl singers; and Les Brown with his 19 piece orchestra. It took two C-54s to transport the entire

From the comparative luxury of Hawaii, where the troupe made its first stop, to the mudholes of Okinawa, the bloody battlegrounds of Korea and the frigid climes of Alaska and the Aleutians, Hope and company played hospitals, hospital planes, ambulances, airports, battleships, the big cities, and, indeed, any place where a bunch of soldiers could be gotten together. The comic was indefatigable. He would never leave a hospital before he had spent some time at the bedside of every patient, and for him and the troupe no audience was too small for an all out effort. As a matter of fact, project officer, Colonel Harold Maddux reported later that one of the most successful shows of the entire trip took place in the hangar of a lonely little Aleutian outpost in front of 40 officers and airmen-the base's entire personnel.

The peninsula of Korea was as rugged as a battleground can be, but nothing could top Wonsan. Through crossed signals, the Hope planes circling over the port thought that the landing craft headed for shore were bringing men in to see the show. But they weren't. They were the show. When the Marines landed for what they thought was an invasion of Wonsan, they found Bob Hope waiting to entertain them.



The sick and wounded received very special attention from the entertainers. Above, Hope and Marilyn Maxwell spend time in a hospital bus. The picture below needs little comment. The gal is Marilyn and the GI appreciates the mud.





Above, the "Tailor-Maids," Judy Kelly, Gloria De Haven (who accompanied the troupe as far as Hawaii), Les Brown, Jimmy Wakely and Bob Hope give out with their version of "Goodnight, Irene," for hospitalized Cpl. Royce De Vaughn.



One of the greatest noses in the business (not counting Durante) compares proboscises with Marine Steven Dembowski, wounded at Seoul. We vote for the marine. Below, somewhere in Korea a sea of GIs laugh as one at Hope gag.





Arnold Air Society Holds Annual Conclave

Arnold Memorial Scholarship established by Cadet delegates from 61 AFROTC units. Gen. Harry Johnson addresses banquet

The largest assemblage of future Air Force leaders was held last month as delegates from 61 AF ROTC units throughout the country gathered November 25 in St. Louis' Melbourne Hotel for the second annual conclave of the Arnold Air Society.

Approximately 350 AF ROTC delegates from universities and colleges throughout the country attended the affair. Representing the four corners of the Society were Loyola University of Los Angeles, Washington State of Seattle, University of Connecticut at Storrs and University of Miami at Coral Gables, Fla.

Highlight of the convention was establishment of the Arnold Memorial Scholarship of \$300 a year. The Scholarship Award was set up as a living memorial to the late General of the Air

Force, H. H. Arnold, for whom the organization was named. It will be donated by the combined squadrons throughout the country and given yearly, beginning September of 1951, to the outstanding junior AF ROTC-Arnold Air Society cadet in one of the Society's six geographic areas.

The First Area, consisting of northeastern states, will be the first to receive the award. During the 1951-52 school year, more than 20 schools in this section will compete for the Award.

Resolution for the adoption of the scholarship was proposed by the Arnold Squadron of the University of Cincinnati.

The conclave was officially opened with a welcoming address by the University of St. Louis' president, The Very Rev. Paul C. Reinert, S. J., and remarks

350 Air Cadets from four corners of U.S. attend the serious business sessions.



Gen. Harry A. Johnson, 10AF CG, addressed closing banquet. L. to R., Cadet Raymond Goelz, Society's Nat. Cmdr., Univ. of Cincinnati; Gen. Johnson; John O'Hare, host sqdn. cmdr.; Neil C. Beck, toastmaster & Parks Air College Dean.

by National Commander Raymond Goelz of the University of Cincinnati.

During the business sessions, squadrons emanating from the former General Billy Mitchell and Prop and Wing societies were formally admitted to the Arnold Society. A Guidon Standard was presented them, and they were assigned a squadron number.

St. Louis University's Cadet William Moorman served as chairman for the business sessions that lasted throughout the day. Resolutions included assignment of the Society's publishing activity for 1951 to the Texas Tech. unit. National Commanders are elected at the beginning of each school year by ballot through the mail.

The convention voted that a seven man committee be named to meet with a similar committee from the Air Force Association for the purpose of furthering the two air organizations' mutual objectives.

Arnold Air Society members are eligible, as AF ROTC cadets, to voluntarily apply for cadet membership in AFA.

Another attraction of the conclave was a cocktail party given cadets and guests by St. Thomas College on Friday evening preceding the opening of the assembly.

The need for military preparedness and development of atomic weapons as a safeguard for peace was emphasized by Maj. Gen. Harry A. Johnson, Commanding General of the Tenth Air Force, who was principal speaker at a formal banquet that marked the close of the convention.

This was the second meeting since the founding of the Arnold Society in 1948 at the University of Cincinnati. Dedicated to national defense and to adequate utilization of air power in defense, the Society was a favorite of the late General "Hap" Arnold. Capt. A. T. Reid of the University of Cincinnati is the Society's present National Advisor, and Cadet Lieut. Col. Jack Snyder serves as the organization's National Executive officer.

Some of the distinguished guests present to observe the operation of the convention were: Col. John C. Pitchford, PAS&T of University of Maryland; Lieut. Col. Clermont E. Wheeler, PAS&T of University of Indiana; Maj. Sylvester Burke, Director of AF ROTC, 10th AF; Maj. Charles H. Green, PAS&T for the University of Cincinnati; Maj. Thomas White, PAS&T for the College of St. Thomas; Maj. Aubrey J. Bouck, PAS&T for the University of St. Louis; and Capt. Melvin J. Spaur, Aide de Camp, Maj. Gen. Henry A. Johnson.

The third annual conclave of the Arnold Air Society will be held at the University of Miami in Florida during the Thanksgiving weekend of 1951.

AFA STATE ROUNDUP



CALIFORNIA

San Francisco: Mr. John Alison, former Assistant Secretary of Commerce, was guest speaker at a recent meeting of the San Francisco Squadron, AFA. The distinguished guest delivered an off-therecord talk on the affairs of the Orient.

Christmas baskets for needy Air Force families were donated by the San Francisco Squadron again this year. Chairman of the committee was Bob Dobbins, who was assisted by Bill Vandenberg, Bob Carlson, Jim Curtin and Maurice Hamilton.

The Squadron publication, "Vapor Trails," is running a new feature, "Squadron Honor Roll," which lists names of members who have received the call to colors. Those recalled to date include Pat Coughan, Frank Flynn, Arthur Habich, Warren Hodgdon, James Johnson, Earl Sobel, and Frank Wall.

GEORGIA

Savannah: Gen. George C. Kenney, commanding general of the Air University at Maxwell AF Base, called recently for a revamping of the entire USAF and said the Russians already are capable of hitting "any point in the country" by air.

Kenney told a Savannah AFA Squadron dinner meeting that the B-29s used in Korea "are now six years old and would not last long against any real air opposition."

Brig. Gen. Haywood S. Hansell (USAF, ret.), a member of the local squadron since its formation, served as master of ceremonies at the dinner meeting. Maj. Gen. Frank O. Hunter (USAF, ret.), 218 E. Gaston St., is commander of the AFA unit.

ILLINOIS

Chicago: Illinois will hold its first State Wing convention in Chicago on February 25, 1951, M. Worshill, chairman of the Convention Committee, has announced.

For further particulars members should contact Mr. Worshill at 2054 Hood avenue, Chicago.

Chicago: Chicago's AFA Squadron No. 41, N. Broadway avenue, cordially invites all members of AFA to its "Hangar" which is located at the above address, Squadron Commander Will H. Bergstrom has announced. The "Hangar" is opened to all every Thursday evening.

INDIANA

Evansville: Dedication of Evansville's Dress Memorial Airport by Board of Aviation was sponsored jointly by the Evansville AFA Squadron and the local Junior Chamber of Commerce on October 29.

The AFA unit furnished an artistic cachet that was placed on several thousand letters that the Squadron had received from collectors who were interested in collecting air mail envelopes pertaining to the dedication of the Airport.

Clifford O. Bicking was in charge of the cachet arrangements.

J. D. Beeler is president of the Board of Aviation, and James E. Rutledge, 1 S. Ruston avenue, is commander of the AFA Squadron.

MARYLAND

Baltimore: The Baltimore Squadron of the Air Force Association, following a

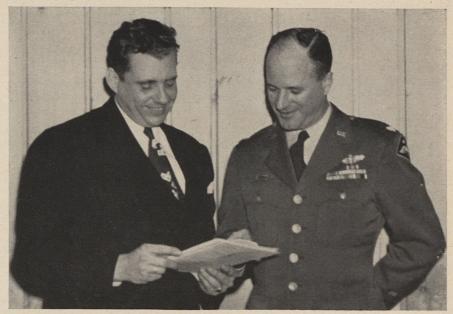
general reactivation recently, will become virtually a civilian component of the Air National Guard, according to plans that will be completed at an AFA meeting to be held soon.

Col. Robert Gould, commanding officer of the 104th Fighter Syuadron, Maryland Air National Guard, has formally offered Charles Purcell, new commander of the AFA unit, the use of all Air National Guard facilities at Harbor Field "short of flying."

(Continued on page 40)



Merrill C. Meigs, Chicago Aero Commission chairman, receives scroll and honorary life membership in AFA for "outstanding services" in furthering cause of airpower. From left, Charles Stebbins, Illinois AFA Wing Commander; Ray Ireland, AFA Vice-President; Meigs; and James Douglas, AFA National Director.



An association Squadron and Air National Guard unit formally join hands in Baltimore as Colonel Robert Gould, C. O. of 104th Fighter Squadron, Maryland ANG, offers Charles Purcell, new commander of the Baltimore AFA Squadron, use of all Air National Guard facilities at Harbor Field "short of flying."



THIS can be an extremely important moment in your career. Read the answers to these questions—and see if they don't apply to YOU.

Q. Am I still eligible for training under the G. I. Bill?

A. Yes, you still have time to participate. But time is short!

Q. Is aviation a good field?

A. It has never offered greater opportunity! Demand for graduates of Northrop Aeronautical Institute in the aviation industry is far greater than the supply! Hundreds of NAI graduates are on their way to Security and Success in Aviation—the Number One essential industry, now and in the future!

Q. Won't my aviation training be wasted if I am called into the service?

A. The trained man gets ahead—gets the promotions—whether in civilian or military life. You become more valuable with proper training!

Q. Where can I get more facts on this subject?

A. Send the coupon today. You will receive the Northrop catalog describing training courses available in Aeronautical Engineering and in A & E Mechanics, and you will also receive additional factual data regarding the possibilities of a career in aviation for you NOW.



1545 E. Broadway, Hawthorne, Los Angeles County, Calif.

	SEND COUPON FOR DETAILED TACIS
	NORTHROP AERONAUTICAL INSTITUTE
L	1545 E. Broadway, Hawthorne, Los Angeles County, Calif.
i	Please send Graduate Employment Report, Catalog,
i	and schedule of starting dates of classes. I am
	interested in: Assessation! Francisco

☐ Aircraft & Engine Mechanics

NAME			AGE
ADDR	ESS	C. Salar	
CITY		ZONE	STATE
Cirr	Check one: VETERAN		



Henry E. King, accepts the Taunton AFA Squadron's annual award, from Mayor John F. Parker. From left, Sqdn. Cmdr. Edwin A. Tomawski; Arnold White, Vice-Wing Cmdr.; King; AFA member Albert F. O'Connell; and Mayor Parker.

Plans for flight training for the civilian members composing the AFA Squadron, however, are also expected to be arranged following a meeting of that group to be held soon at Harbor Field.

"The rental of an Air Force type trainer from a private operator is in the offing," Mr. Purcell states, "and depending on the number who want to do it, the boys can fly and train with the 104th Squadron."

The two air organizations plan to jointly sponsor a winter dance which is scheduled for a date late in January.

MASSACHUSETTS

Boston: The Metropolitan Boston Squadron of AFA held its first annual Christmas party and dance at the Smith House, Memorial Drive, Cambridge, on December 13.

Air Force veterans in the Metropolitan Boston area were invited to attend with their ladies.

The committee for the party was headed by Borris Kleiner, who was assisted by Morris Rabinovitz, Joseph Silvey, Leon Strauss, William Tripp, Arnold Kaufman, Abraham Kaplan and William Welsh.

Alice Spinney, Squadron secretary, 5 Usher road, Medford, handled the reservations and information. William T. Welsh of Belmont is commander of the Squadron.

Taunton: Henry E. King, of King Airport, East Taunton, was presented the annual air force trophy at a meeting of the Taunton Squadron No. 1, AFA, held at the Fox Den recently for his "pioneering the field of aviation which ultimately led to many achievements from the citizens of this community and others in both commercial and

military aviation, in times of peace and war."

Mayor John F. Parker of Taunton presented the trophy. Edwin A. Tomawski is commander of the Squadron.

NEW JERSEY

Poterson: A special drive to recruit a training flight of 75 volunteers from Passaic and Bergen counties during December was conducted jointly by the Military Manpower Committee of Paterson and the Passaic-Bergen Squadron, AFA, according to Harry O. Moore and Commander Robert Westerveld, heads of the respective organizations. Lt. John T. Farady was officer in charge of recruiting.

Present plans call for a big send-off January 2 including a mass swearing in ceremony and luncheon in Paterson following which, the group will depart for San Antonio, Texas, where they will commence their AF basic training together as a unit. AF Headquarters in Washington has promised that all men volunteering for the flight and passing all the necessary requirements will remain together during their basic training which inspired the "Train With Your Buddies" theme of the drive. Although processed and enlisted during December, the volunteers' departure date has been scheduled for January 2 enabling them to spend the holidays at home.

Red Bank: Congressional action was promised on civil defense legislation priority by several members of Congress representing State of N. J. in response to a resolution adopted by the 1950 N. J. Wing Convention.

In a letter received by Wing Counsel Irving B. Zeichner on October 26, Senator Hendrickson said, "... I shall be happy to join with my colleagues from N. J. when the Congress reconvenes on November 27 in an effort to make civil defense the pending business of the

The Wing resolution read: "Whereas, civil defense must take its place along with military defense . . . program for civil defense must be undertaken nationally . . . time is of the essence in establishing a system of civil defense equal to the times; be it resolved, that the N. J. Wing of AFA calls upon members of Congress representing State of N. J. to give top priority to the enactment of civil defense legislation when Congress reconvenes.

NEW YORK

New York City: First Brooklyn Squadron will hold its third annual dance in the Mirror Room at the Hotel Pierrepont on Saturday evening, February 3, 1951. Tickets are \$1.80 per person, tax included.

The dance will be on the usual big scale with such men as John Favorita, Lou Gullo and Joe Grieco on the dance committee, Squadron Commander Lee Kranz, 160 Pierrepont street, Brooklyn, has announced.

The Squadron held a Christmas party on December 13 at its regular meeting

New York City: The Bronx Squadron, AFA, held a reorganization meeting on November 3. Mary Gill Rice, State Wing Commander, was present.

A gratifying turnout of old and new members were on hand, making it a very successful meeting, according to Edward Smith, vice-commander of the

Squadron.

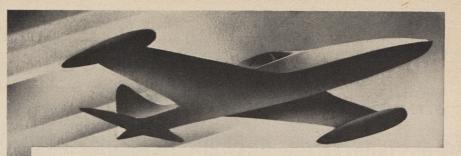
Temporary officers were elected to fill out the terms until the next regular elections in February. Thomas Cosgrove, 1555 Odell street, Bronx, was chosen commander. Committees have been formed, and a program of activities is now being worked out, Mr. Smith has announced.

Regular meetings of the Squadron are held the second Thursday of each

(Continued on page 48)



John Devney accepts Rochester AFA Sqdn. permanent charter from Mary Rice, N.Y. Wing Cmdr., at Sqdn. party.



Alodine®

BONDS PAINT TO ALUMINUM AND PROTECTS THE METAL

EASY TO USE

Process is foolproof and chemical solution can be applied by dipping, spraying, brushing or flow-coating.

ELECTROLESS

Alodizing is a chemical conversion process.

ECONOMICAL

Low chemical cost, short coating time and low temperature keep overhead down.

EFFECTIVE

The tough, durable Alodized surface makes paint stick to aluminum and resists corrosion. "Alodine" meets these Service specifications: MIL-C-5541; MIL-S-5002; AN-E-19; AN-F-20.

Brush Alodine®

Brush "Alodine" is easily and quickly applied to assembled aircraft in the field, shop, or hangar. Cleaning and coating chemicals for Brush Alodizing are shipped in bulk or in the convenient Brush "Alodine" Chemical Kit No. 1. This Kit contains enough chemicals to treat about 1000 square feet of surface and is an ideal package for use at airfields of commercial airlines or of the Armed Services anywhere.

Use "Alodine" and **Alodized Aluminum** for Maximum **Product and Finish Durability!**



Write for Descriptive Folder.

Pioneering Research and Development Since 1914

AMERICAN CHEMICAL PAINT COMPANY

AMBLER, PA.

Manufacturers of METALLURGICAL, AGRICULTURAL and PHARMACEUTICAL CHEMICALS



TECHNIQUE

New Pump Eases In-Flight Refueling Task

Hydraulically-driven Unit Will Replace the 16 Electric Pumps Now in Use and Deliver Fuel From Tanker Planes Twice as Fast

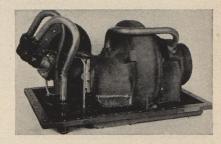
A hydraulically-operated refueling pump that can do the work of eight electric pumps—and do it twice as fast is expected to give a shot in the boom to the Air Force's ambitious in-flight refueling program.

The new pump, designed by the Air Materiel Command's Power Plant Laboratory and the Nash Engineering Company of South Norwalk, Conn., is the first hydraulic refueling pump to be used by the Air Force and represents a great stride forward in the technique which is so important to our whole strategic bombing program. A set of two will replace the 16 electrically-driven pumps normally used in the tanker airplanes used for in flight refueling. Together the two pumps will deliver almost twice as much fuel per minute as all 16 of their electrically-driven predecessors.

Known officially as type A-1, the new pump utilizes a patented feature known as the "centrivac method," and consists of two pumps built into one unit. One pump handles only the vapor emanating from the fuel which boils at the rarefied atmosphere of high altitude. This leaves the other half of the unit free to pump pure gasoline or jet fuel, as the case may be. The system, therefore, in addition to being more efficient, also eliminates the possibility of vapor lock with its resulting engine failure.

The hydraulic driving motor is mounted inside the gasoline tank, and is bolted directly onto the pump drive shaft. The entire unit which is 10 inches high, 18 inches long and 12 inches wide is completely submerged in the tank. It is slated for general use on all new tanker installations beginning with the KC-97A and the KB-29P.

The new pump has many important advantages over the old electric type. Air-to-air refueling is a ticklish business at best and a great strain on the steadiest pilot's nerves. In both the rigid boom and flexible hose air-to-air refueling



New hydraulic pump saves 550 pounds in weight and eases strain on pilot.

methods, precision timing is essential. The new pump can be used in either method and by cutting in half the critical period when the fuel is actually being transferred, it greatly eases pilot fatigue which is an important consideration on long range bombing missions.

Another advantage of the new pump is that its installation will mean a weight saving of 550 pounds over the 16 electric pumps. The new pump, including its hydraulic motor weighs only 51 pounds. The balance can now be made up in an additional fuel capacity. Then, too, the new device will eliminate the serious drain on the tanker's electrical power supply which was one of the big drawbacks of the old system.

New Helmets Stay Put In High-Speed Bailouts

A new Plexiglas visor, just announced by Air Materiel Command's Aero Medical Laboratory, will keep jet-fliers' protective headgear firmly fixed even in the violent windblasts encountered at bailout speeds of more than 500 miles an hour. Without the visor, helmets were always ripped off when bailouts were made at close to the 400 Mph mark, and with the helmet went the pilot's equipment attached to it.

The new visor is of simple spherical design and is constructed of tinted Plexiglas which blocks out the brilliant sunlight found at high altitudes. In bail-out position, the visor locks down over the face like a windshield. It is fastened to the helmet itself by rivets at either side, and can be raised when not in use.

The visor recently underwent successful high speed, high altitude ejection seat escape tests at Holloman AFB.

The crash helmet itself has also undergone some changes in the interests of greater safety and comfort. A new model, known as the P-1A, offers a better breathing seal and less mask tension by bringing the oxygen mask closer to the face.



Greater safety for Air Force fighter pilots making high speed bailouts is assured with the development of a spherical visor which glues helmet to head.

Liquid Rocket Propellant Handlers Get Safety Suit

The men who handle liquid rocket propellants for the United States Air Force are going to find their jobs a lot healthier and safer when they don the new coveralls developed for them by the Clothing Branch of the Air Materiel Command's Aero Medical Laboratory at Wright-Patterson AFB.

Propellant handling is a ticklish job, and the men assigned to it are a skilled and careful lot, but even the best of them are in constant danger from the natural hazards of their daily work. With the new protective clothing these hazards will be cut to a minimum.

The standard liquid rocket propellant is composed of red fuming nitric acid (RFNA) and aniline. Aniline is color-less and odorless and therefore hard to recognize. However, it is easily absorbed through the skin and is highly toxic—and if sufficient quantities enter the blood stream it can be deadly.

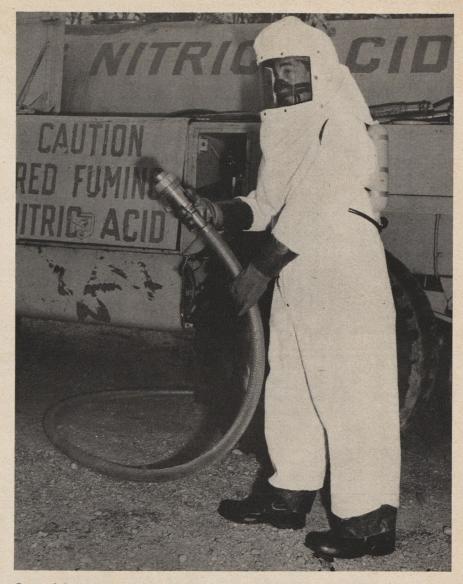
The new safety suit is a one-piece coverall made of vinyl-impregnated Fiberglas and a hood of the same material. A wide plastic visor in the hood provides ample vision for the wearer. Hands and feet are protected by butyl rubber boots and vinyl-coated cotton gloves.

Overheating of the wearer, always a problem in such complete coverage of the body, is overcome by two specific

cooling processes.

In one, an outer shell of mercerized cotton is worn over the protective coverall. This shell is saturated with water and the cooling is taken care of by water evaporation.

In the second method the cooling is accomplished by air circulating inside the coverall.



Covered from head to foot in a suit of vinyl-impregnated Fiberglas, handlers of rocket propellants no longer face danger of absorbing poisons through skin.



Reflecting the expanding activities of the Air Force's B-47 Stratojet program, is this photo taken at Boeing's

Witchita plant where the swept-wing 185,000 pound bomber is being built in quantity for Strategic Air Command.

SURVIVAL UNDER ATOMIC ATTACK

CONTINUED



or dog indoors. And when you come in from outside, leave your shoes at the door, for their soles are likely to be covered with radioactive dusts. Better still, wear rubbers, galoshes or other disposable foot coverings over your shoes. Take these precautions, but don't worry. There isn't much chance really dangerous amounts will pile up in the house.

Should you help to clean up a contaminated area, you might get some radioactive materials on both your body and clothing. So don't go home and sit around in your work clothes. Take off your outer garments outdoors or in the basement. Then wash, if you can, using warm water and plenty of soap. Never fail to launder your working clothes, but don't use the family washing machine. Scrub all contaminated objects in buckets or tubs used for that purpose only.

What About Food and Water?

To prevent harm from accidentally eating or drinking radioactivity, throw out all unpackaged foods that were lying around where dust from ground bursts or mist from underwater bursts might have settled on them. And before opening canned or bottled goods, wash the outside of the containers thoroughly. That will remove most of the pollution that may have gotten on them. Also be sure that all cooking utensils and tableware are scrubbed clean in order to remove any invisible, radioactive dusts. Food and utensils that were in closed drawers or tight cupboards will be all right.

If it was an air burst, don't worry about the food in the house. It will be safe to use.

Be careful of drinking water after atomic explosions. There is little or no chance that water actually inside household pipes at the time of attack will be made radioactive. If a little is drawn off right after the burst and placed in clean containers with covers, it should tide you over the immediate post-raid period.

But even if the water continues running, don't keep on using tap water for drinking purposes unless you have received official information that the city system is safe. This is not only because of radioactivity, but because of other dangers like typhoid that can come from damaged water systems. If you have to use city water before you get official information, boil it. Boiling won't remove radioactivity, but the chances that your water supply will be radioactive are pretty slim. Boiling will



kill most germs that may get into damaged water mains.

What About Radios and Telephones?

Neither explosive nor lingering ra-

Fast Way to Build Fast Fighters!

Special press devised by Northrop cuts production time on single operation for wing leading edges from 8 hours to 2 minutes. Hours saved by special manufacturing techniques at Northrop mean faster delivery of all-weather Scorpion F-89 interceptors for our country's defense. These speedy, heavily-armed U. S. Air Force F-89's, with electronic search equipment, are worthy successors to the hundreds of deadly P-61 Black Widows built at Northrop during World War II.

NORTHROP

Pioneer Builders

dioactivity has any effect on the operation of most mechanical or electrical devices. Unless the wires are down or there is a power failure, both your lights and telephone should continue to work. But don't rush to the phone just to find out how Aunt Susie may have weathered the attack. Leave the lines open for real emergency traffic.

The bomb's radioactivity will not interfere with the operation of your radio. In the event of attack, be sure to turn it on. It may be your main source of emergency instructions. And don't forget: Battery-operated portable sets, including those installed in automobiles, will continue to work even if the city power goes off. Television reception, like radio, won't be jammed by radioactivity.

What About Automobiles?

One more household suggestion: In times of emergency don't park the family automobile on the street. Leave the way clear for emergency traffic. Keep the windows rolled up to prevent possible contamination of the interior by underwater or ground bursts and don't worry whether or not it will run. Radioactivity won't interfere with operation of its fuel or ignition system.

What About Children?

Everything in this booklet holds true for all members of the family, including children, old people, or shut-ins. It would be a good idea to talk over the facts with all members of the family to be sure each understands. People with school children should discuss the booklet with teachers and other parents at PTA meetings and similar gatherings.

You may be sure that, in times of emergency, all schools will be well organized for the protection of children.

Children old enough to understand can be taught to do the right things. Younger children simply will



have to depend on their parents.

To Sum Up

To sum up, always remember that blast and heat are the two greatest dangers you face. The things that you do to protect yourself from these dangers usually will go a long way toward providing protection from the explosive radioactivity loosed by atomic explosions.

While the lingering radioactivity that occasionally follows some types of atomic bursts may be dangerous, still it is no more to be feared than typhoid fever or other diseases that sometimes follow major disasters. The only difference is that we can't now ward it off with a shot in the arm; you must simply take the known steps to avoid it.

If you follow the pointers in this little booklet, you stand far better than an even chance of surviving the bomb's blast, heat, and radioactivity. What's more, you will make a definite contribution to civil defense in your community, because civil defense must start with you. But if you lose your head and blindly attempt to run from the dangers, you may touch off a panic that will cost your life and put tremendous obstacles in the way of your Civil Defense Corps.



AFA HAS YOUR BEST BUYS

We've combed the market to bring you fine books for every member of your family at rock-bottom, non budget-wrecking prices. ORDER YOURS NOW!

Bargains in Books.



1. GLOBAL MISSION

By Gen. H. H. "Hap" Arnold

By Special Arrangement, we are pleased to present one of the most important Air Force books published since the end of the war: The Old Man's own story, "Global Mission," is also the inside story of the growth of American Airpower from the Wright Brothers to the end of World War II. Here is the lowdown on Billy Mitchell's courtmartial, Hap's own exile and how America invented the buzz bomb in 1917. Here is a book you cannot afford to pass up It is yours at a smashing 50 percent discount.

Pub. at \$5.00 NOW ONLY \$2.50

2. AIR FORCE DIARY

Edited by James H. Straubel

WHILE THEY LAST! Publishers overstock of Air Force Diary. Brand new books without dust jackets are being offered to AIR FORCE readers at remarkable savings. Here, in permanent form, are the best stories of your wartime Air Force Magazine. All theaters and all Air Forces are represented.

Pub at \$3.75

NOW ONLY \$2.00

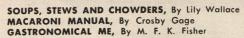
3. ADVENTURE PACKAGE

THE WRATH AND THE WIND, By Alexander Key CUTLASS EMPIRE, By F. Van Wyck Mason VERMILION, By Idwal Jones

Pub. at \$9.00

ALL THREE BOOKS ONLY \$2.75

4. COOK BOOK PACKAGE



ALL THREE BOOKS FOR \$2.50

5. WAR EAGLES

By James Childers

In the early days of the war when England was standing alone against Nazi Germany, the American Eagle squadron blazed a glorious trail across the Channel skies. This is their story, excitingly written by one who knew them well. Pub at \$3.75

NOW ONLY \$2.00

6. JUVENILE PACKAGE

THE OLD SAILOR
THE KING'S BREAKFAST
WINNIE-THE-POOH, and other selections from A. A. Milne

ALL THREE BOOKS FOR \$1.00

7. THE MECHANICS' ENCYCLOPEDIA

Edited by William L. Schaaf

Nearly a thousand pages and more than 700 diagrams covering every possible aspect of woodworking, machine shop practice, electrical work as well as practical mathematics, physics and chemistry.

Pub. at \$3.95

NOW ONLY \$2.75

still great buys

8. THE YOUNG LIONS

By Irwin Shaw (a best-selling war novel)
Pub. at \$3.95
Now only \$2.25

9. THE OFFICIAL PICTORIAL HISTORY OF THE AAF

By the Historical Officer of the AAF
Pub. at \$10.00
Now only \$3.95

10. THE AAF AGAINST JAPAN

By Vern Haugland Pub. at \$5.00

Now only \$1.50

11. THE GERMAN AIR FORCE

By Asher Lee

Pub. at \$3.50

Now only \$1.50

12. AIRCRAFT INSTRUMENTS

By Manuel Stieri

Pub. at \$1.50

Now only \$.95

13. AIR VICTORY

By Harold Hinton

Pub. at \$5.00 Now only \$1.50

14. AIR TRANSPORT AT WAR

By Reginald M Cleveland

Pub. at \$3.50

Now only \$1.50

15. WE'LL SAY GOODBYE

History of the 307th Bomb Group

Now only \$3.00

16. NONE SHALL SURVIVE

By Burton Graham

Only \$1.75

17. A RESEARCH IN MARRIAGE

By Dr. G. V. Hamilton

"A report originally published for professional readers only, made under the same auspices as the Kinsey report, covering emotional and sexual behavior of married men and women." 570 pages.

Pub. at \$5.00

NOW ONLY \$3.00

Buy All Your Books Through AFA

IN BOOKS

Here are the newest books of top interest to Air Force vets and friends of airpower

18. AIR POWER: KEY TO SURVIVAL

By Alexander P. de Seversky

Here is the most important book on airpower as an instrument of war since "Victory Through Air Power" written by the same author nearly a decade ago. It is daring, brilliant and defiant in its approach to the very personal problem of survival in the age of absolute weapons. You will find it one of the most challenging books you have ever read.

Simon and Schuster

\$3.50

" FACE OF A HERO



By Lee Miller

By Louis Falstein

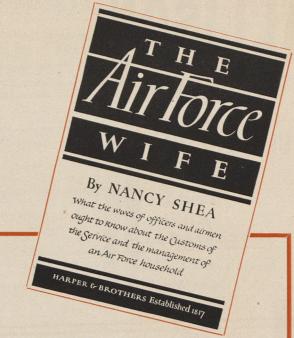
The war novel of 1950 is definitely FACE OF A HERO and it's Air Force all the way. The author, himself a veteran of the 15th Air Force in Italy, has written a powerful saga of an air crew struggling to complete its 50 missions. The language is rough: not recommended for a maiden aunt.

Harcourt, Brace and Co.

\$3.00

\$3.95

20.	THE ARMY AIR FORCES IN WORLD Volume IV, by Craven and Cate	WAR II \$6.00
21.	THE SOVIET AIR FORCE By Asher Lee	\$2.75
22.	MacARTHUR: MAN OF ACTION By Kelley and Ryan	\$2.00
23.	THE AIR OFFICER'S GUIDE	\$3.50
24.	THE AIRMEN'S GUIDE	\$2.50
25.	JET AIRCRAFT SIMPLIFIED By Charles Edward Chapel	\$3.75
26.	THE ARMY AIR FORCES IN WORLD Volume I	WAR II \$10.00
27.	THE ARMY AIR FORCES IN WORLD Volume II	WAR II \$6.00
28.	THE STORY OF ERNIE PYLE	



29. THE AIR FORCE WIFE

By Nancy Shea

A fact-packed book which spells out what the wives of officers and airmen ought to know about the customs of the Service. This book offers a readable, informative and down-to-earth picture of Air Force life in all its aspects. Whether "home" is a steam heated house at Mitchell Field, a Quonset hut on Okinawa, a trailer in Alaska or a castle on the Rhine, the Air Force wife will find invaluable hints in this book.

Harper and Bros.

\$3.00

Publication Date: January 17

of the War

For that very special place on your library shelf, this beautiful book is tailor made. Life's photographers took thousands of fine pictures during the war. The cream of the crop plus 75,000 words of text have gone into this book.

Simon and Schuster

\$10.00

ALLISON RADAR

FOR

MULTI-ENGINED AIRCRAFT

Military Airline Executive

Models E ES ESB 58-65 lbs. Overall Weight

- 1. Long range. 80-150 miles.
- 2. Exclusive scanning method.
- 3. Compact. Sturdy.
- 4. Easy to operate. Pilot control.
- 5. Simplicity of maintenance.
- 6. Gyro-stabilized.
- 7. JAN components.
- 8. RACON beacons.

ALLISON RADAR CORPORATION

11 W. 42 St., N. Y. 18 PEnn 6-5811-12

SPECIAL AUTOMOBILE FINANCING SERVICE AND LOANS

To Commissioned Officers and Warrant Officers Wherever Located



This organization founded in 1924 by a group of retired officers specializes in rendering financial assistance to officer personnel at the lowest possible rates.

Minimum Restriction on the Movement of Cars Overseas

FEDERAL SERVICES FINANCE CORP.

Flome Office
718 Jackson Place Washington 6, D. C.

REPRESENTED AT:

Federal Services, Inc. 7024 Wisconsin Ave. Bethesda, Maryland (unsecured loans only)

Ocean Center Bldg. Long Beach, Calif. 1410 Kapiolani Blvd. Honolulu. T H. Martin Bldg.
Columbus, Ga.
31 Navy Blvd.
Pensacola, Fla.
227 Franklin St.
Fayetteville, N. C.
Wynne Bldg.,
Highway #70
Havelock, N. C.

month at the County Courthouse, 850

AFA ROUNDUP

Walton avenue.

Mr. Herbert O. Fisher, chief test pilot for Curtiss-Wright Aircraft Corp., was guest speaker at a recent meeting of the Bronx Squadron. He spoke on the topic of reversing propellers in flight.

The recent death of Joe Hallek, one of the founders of the First Brooklyn Squadron, AFA, has come as a terrible shock to members of the Association.

Joe was one of the small group who attended the famous meeting at the Liederkranz Club in 1947, where, under the leadership of Casey Jones, AFA was launched in New York City. As a charter member and past treasurer of the Brooklyn Squadron, Joe was one of the leading figures in Squadron activity.

His passing is a real loss to the Air Force Association.

оню

Cleveland: The AFA Ohio Commanders Conference was held on December 3 at Mansfield, Ohio. Executives and group commanders met at Hotel Southern on South Park street.

This was the second of four meetings to be held this year. These gatherings are being held to discuss important operations and ideas for the balance of the year.

Dayton has just been named to hold the Ohio AFA Wing convention for 1950-51 sometime next spring.

PENNSYLVANIA

Philadelphia: Maj. Gen. Norman D. Cota, city director of civil defense, spoke at a recent meeting of the Metropolitan Philadelphia Squadron, AFA, in the Lido Cafe, 3331 Woodland avenue.

State College: Ten veterans from the Altoona VA Hospital were brought to each of Penn State's home football games this year as guests of the Nittany Squadron, AFA.

Funds for this program were obtained through a raffle conducted by the Squadron last spring.

Harrisburg: The grand re-opening of Harrisburg AFA Squadron's Air Force Club was staged on November 18, Commander Robert F. Chidsey, 3111 Schoolhouse lane, has reported.

WEST VIRGINIA

Beckley: A Christmas party was staged in the clubroom on December 15 by members of Beckley Squadron No. 1 Auxiliary. Plans for the party were handled by the Special Projects Committee.

The Auxiliary recently donated two boxes of clothing to the Oak Hill Orphanage.

CREDITS

Cover: USAF. Page 5—British Information Service, Consolidated; Page 6—RAAFA; Pages 11, 21, 22, 23, 34, 35, 40, 41—USAF.

from sound waves and how this vibratory energy is distributed is another line of investigation. The amount of sound energy entering is controlled by the mechanical impedence of the surface. Oddly enough, the higher the frequency of the sound, the more it is reflected by the human body.

But in working with guinea-pigs a problem is encountered when the high frequency sounds that would be reflected by humans are absorbed by the fur of the animal. They may even kill

it by over-heating.

For analyzing the sound, groups of complex instruments called oscillographic sound field analyzers, more commonly known as panoramic sound analyzers, are used. A microphone picks up the sound and through a system of electronic devices, the sound is transferred into a visible graph-like picture on a small screen that looks much like a miniature television set. The pattern for a single frequency tone is consistent while for an ordinary noise the peaks and valleys show all the frequencies that exist within that noise.

The bugaboos that wait to trap the unwary human walking into an intense sound field can strike not only through the ear, by either mechanical damage, loss of balance, nausea, or irritability, but by deafening the ear to other sounds his life may be endangered. Inability to hear warning such as shouting, whistles or sirens because of ears deadened to normal sounds, may result in accidents. Workers in the experimental laboratory either insert ear-plugs that are designed to protect the ears, or wear protection of an "ear-muff" type.

Industrial engineering includes planning for the reduction of noisy areas and inclosing of machines and apparatus that would either jolt the persons nearby by sudden noises, or would gradually deafen them by steady sounds.





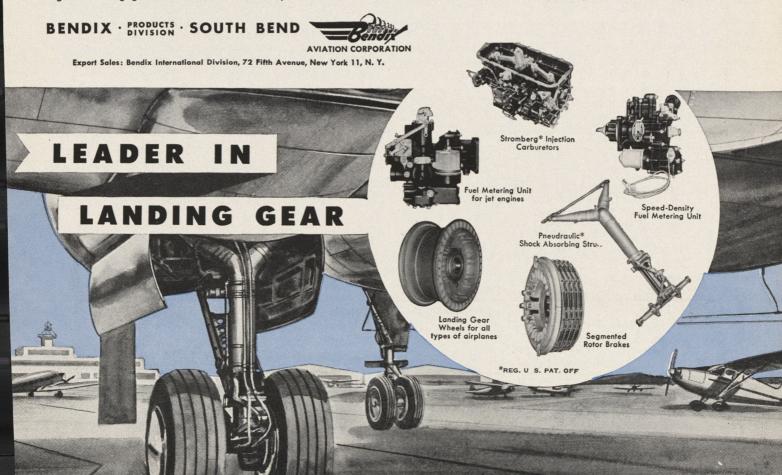
Where Creative Engineering Masters Your Every Problem!

The many contributions to aviation progress, made by the Bendix Products Division of Bendix Aviation Corporation, have resulted from a unique combination of creative engineering and quality production in two highly specialized fields.

It is no exaggeration to state that any problem in fuel metering or landing gear can best be solved by Bendix Products

-first in fuel metering and leader in landing gear.

If you have a special problem in the development of new and more efficient carburetion, fuel metering, shock absorbing struts, wheels or brakes, or if your requirements are merely for standardized equipment of this type, you will find Bendix Products the one source best qualified to serve your needs.





Commitments by the United Nations to stop aggression throughout the world emphasize the desperate need for high-capacity, long-range air-cargo-carriers that can trans-

port vast amounts of materiel where and when they are needed.

Only the C-99 can speed more than 100,000 pounds of weapons or supplies anywhere in the world in time to meet the initial thrust of an aggressor.

IN THE AIR - IT'S

CONVAIR