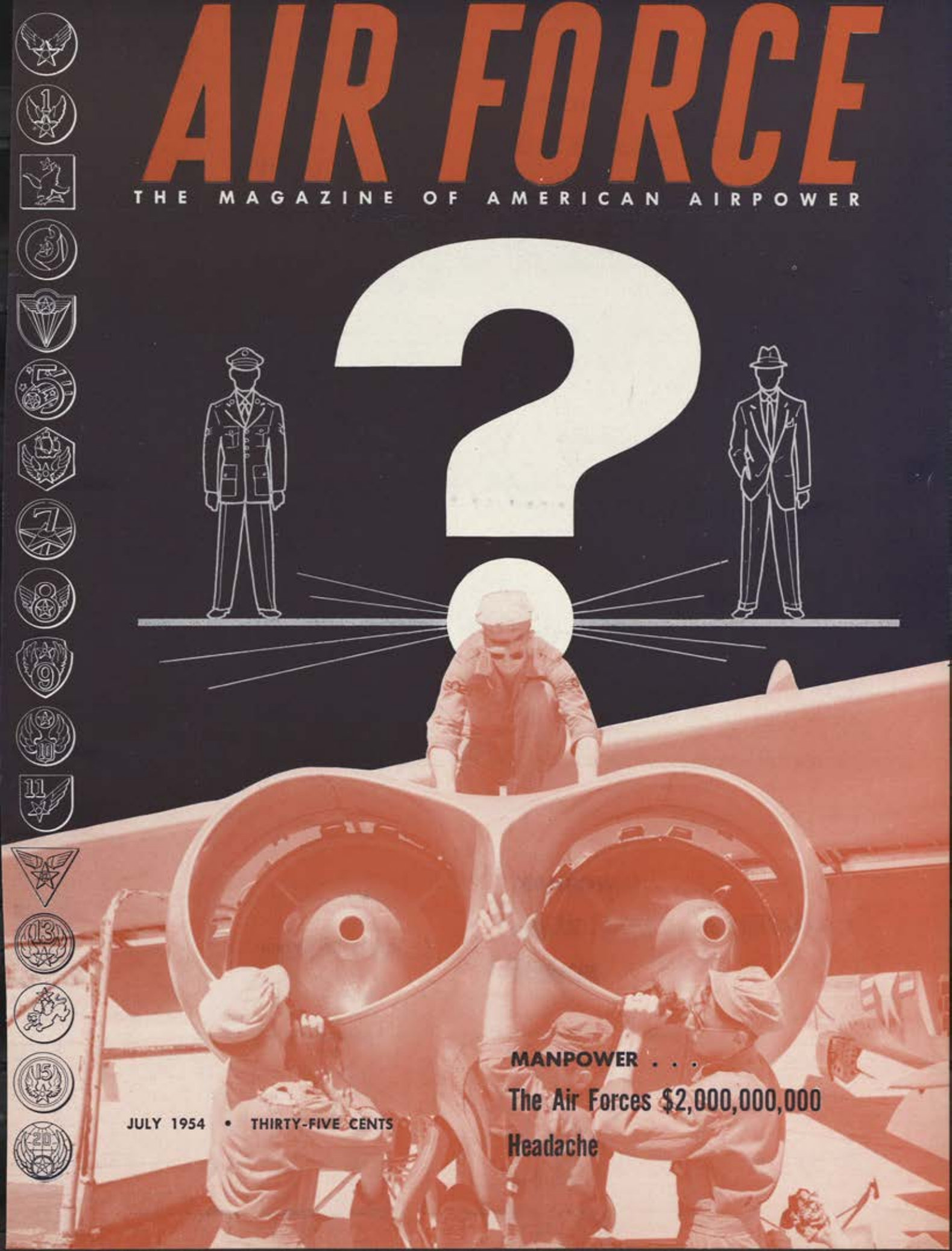
AIR FORCE

THE MAGAZINE OF AMERICAN AIRPOWER



MANPOWER . . .

The Air Forces $2,000,000,000 Headache

JULY 1954 • THIRTY-FIVE CENTS

ENGINEERS—write or visit Arma for complete information on challenging opportunities in our engineering division.

Missile with a "one track mind" ...Bomber Defense

Defensive guided missiles launched from supersonic aircraft will depend upon electronic marvels that come as close to simulating human intelligence as any mechanism ever devised. Important functions of these "weapons of the future" are typical of those entrusted to systems made by Arma Corporation.

Complex electronic and electro-mechanical controls from Arma are an integral part of many of America's most advanced weapons. In basic research, design, development and manufacture, Arma Corporation has worked in close cooperation with the Armed Forces since 1918—and more recently, the Atomic Energy Commission. *Arma Corporation, Brooklyn, N. Y.; Mineola, N. Y. Subsidiary of American Bosch Corporation.*

ARMA ADVANCED ELECTRONICS FOR CONTROL

3 Challenges
to your imagination

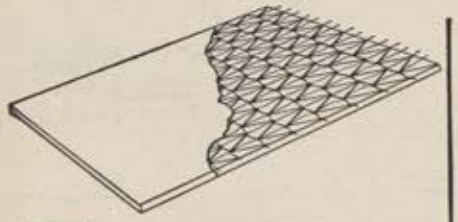
Here are 3 fabulous new materials

HOW MANY WAYS CAN YOU USE THEM?

New problems in a world of new developments call for new materials, so Goodyear has developed 3 new industrial fabrics. Now they can be made available to designers and manufacturers for commercial use.

Chances are their unusual characteristics can answer vexing problems of design which have had you stumped up until now.

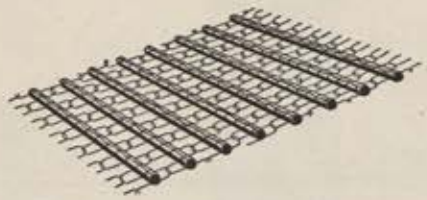
Let us tell you about these 3 new materials;



1 A FABRIC THAT CAN "BREAK" and still retain its rated strength!

New "Double Break" Fabric For Applications Calling For Greater Shock- And Energy-Absorption, Increased Safety Factor.

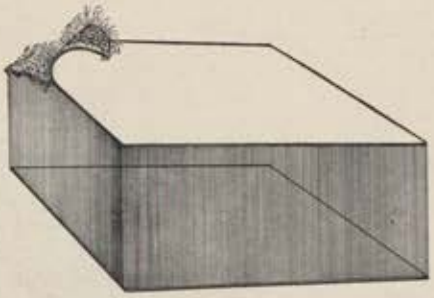
This unique NEW rubberized fabric contains "shock threads" which snap upon absorbing a predetermined load — arresting damage — leaving base fabric unruptured and unimpaired. Possible uses: crash-proof fuel tanks; safety belts; shaping curved, laminated plastics.



2 A FABRIC THAT CAN WITHSTAND a ton per inch

Special High-Tensile Fabric For Construction Requiring a Flexible Material of Extreme Strength.

Feature a fabric which can take more than 2,000 pounds of tension per inch — *a ton to an inch!* Add to this the fact that it can be given any desired coating, and you have a high-tensile, flexible fabric — a great new aid to solving a host of design problems!



3 AN INFLATABLE FABRIC that makes like a beam!

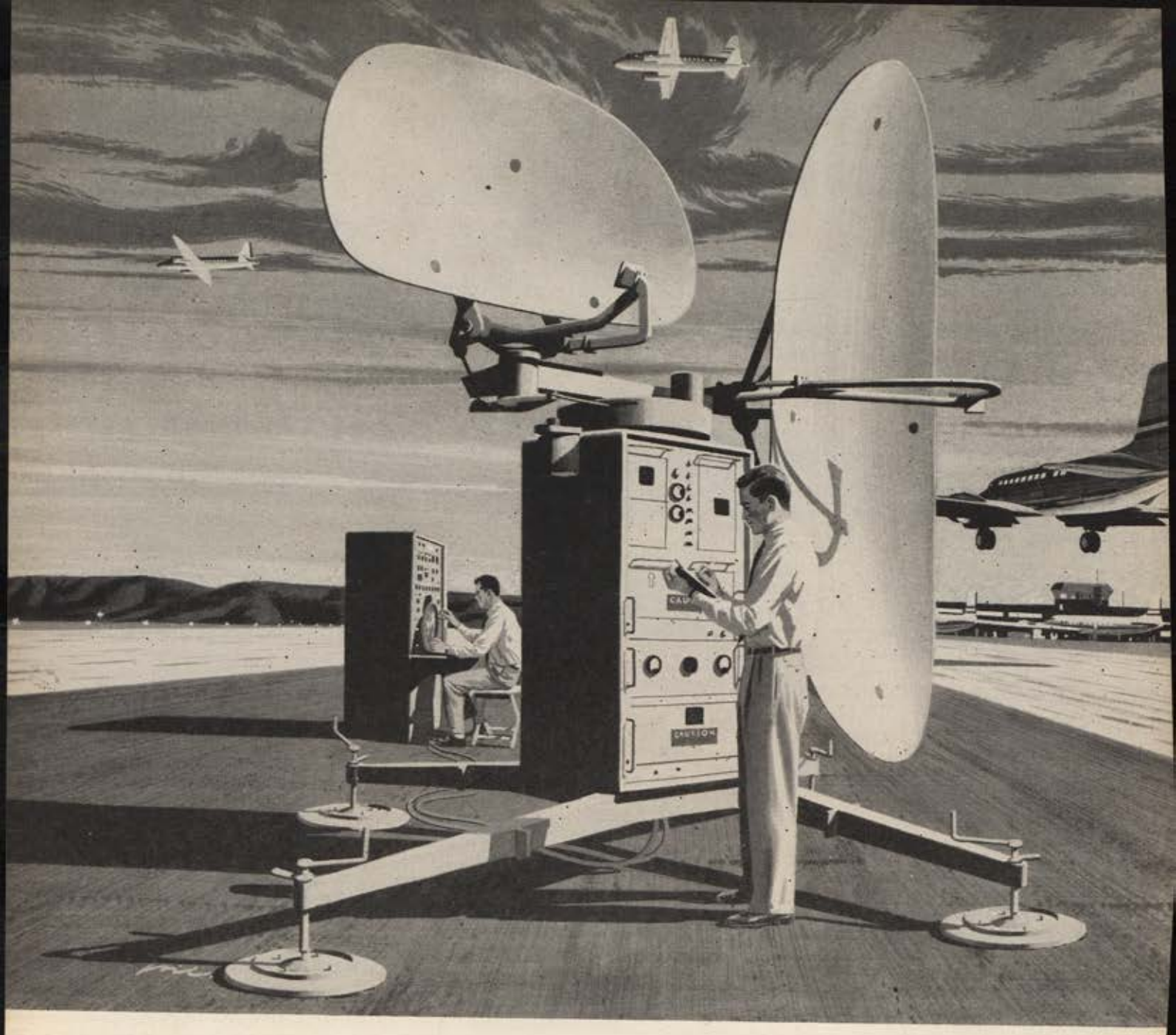
"Air Mat"—A New Structural Material, Lightweight—Collapsible—Portable.

The double walls of this rubber-coated Nylon material are connected by thousands of rugged Nylon "hairs." The resulting "flat air" mat is capable of containing high pressures, provides excellent insulation against heat, cold and vibration — weighs only 2 pounds per square yard. Complete inflatable structures can be built of it, including beams believed to be of the highest strength-to-weight ratio known. Consequently, it is ideal for lightweight, portable scaffolding, shock cushioning, and a limitless range of structural uses.

These wonder materials are in production—yours to use *now*. Want to talk it over, and see how they fit into your plans? Write or wire: Goodyear, Aviation Products Division, Dept. S-1712 Akron 16, Ohio or Los Angeles 54, Calif.

GOODYEAR AVIATION PRODUCTS

FACILITIES + ABILITIES = EXTRA *plus* IN PERFORMANCE



Gilfillan Announces World's First 4-in-1 Radar

New Gilfillan GCA Quadradar provides Surveillance, Final Approach, Height-Finding and Airport Taxi—four radar functions in a simple one-scope equipment weighing less than 1800 pounds.

For the first time, the complete answer to radar traffic control in one light-weight low-cost equipment—the new Gilfillan GCA Quadradar.

One scope provides four radar functions at the turn of a switch—surveillance, final approach, height-finding, airport taxi control.

Superior to all previous GCA radars in altitude, azimuth and range coverage. The full 30° scan of both azimuth and elevation beams is displayed on the new Gilfillan Beta Scan Azel indicator—and the final approach range extended to 20 miles. The new Beta Azel display combined with height-finding to 50,000 feet in a 20-mile slant range provides advantages never before possible with one equipment.

ONE SCOPE

4 Radar Functions at the Turn of a Switch

1. Surveillance: Sharp presentation of smallest aircraft in 20-mile radius to 10,000 feet, large aircraft in 40-mile radius.

2. Final Approach: New Beta Azel Scope gives precision display in 20-mile sector with 30° azimuth-elevation beam.

3. Height Finding: Accurate altitude information to 50,000 feet at 20 miles.

4. Airport Taxi: Needle-sharp presentation of runways, taxiing aircraft, field obstructions.

TACTICAL ADVANTAGES

The new Gilfillan GCA Quadradar weighs less than 1800 pounds, is 12 feet high. Air-transportable by cargo plane or helicopter. Assembles for operation within 3 hours; 50-60 cycle operation; weather-protected; remotable up to 10,000 feet. For the first time, complete, efficient radar control is available for advanced emergency airstrips.

WRITE FOR BROCHURE:
SPECIFY:
Gilfillan GCA Quadradar-M (Military Equipment)
Gilfillan GCA Quadradar-C (Civil Airport)

Complete specifications and detailed advantages in brochure available now. Includes information on simple maintenance, proven components, ease of integrating training. Address Gilfillan Bros., Dept. AF-7, 1815 Venice Blvd., Los Angeles, Calif.

MULTIPLE RUNWAY COVERAGE

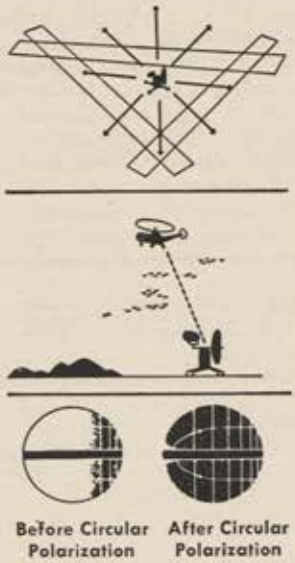
Located near the junction of two or more runways, the Gilfillan GCA Quadradar provides multiple runway coverage without relocating equipment and without expensive turntables. Antennas rotate electrically through 360°, can be set to align instantly with desired runway.

SAFE HELICOPTER LANDINGS

With 30° scan, new Gilfillan GCA Quadradar handles steep-angle helicopter approaches from any direction.

CLEAR, CLUTTER-FREE DISPLAY

X-band throughout, Gilfillan's GCA Quadradar scope presents sharp display. Built-in circular polarization eliminates rain or snow clutter.



Before Circular Polarization — After Circular Polarization

PROVEN EQUIPMENT

It should be emphasized that the new Gilfillan GCA Quadradar is proven practical equipment based on more than 12 years of Gilfillan concentrated experience and research in GCA radar. The Gilfillan GCA Quadradar is composed of Gilfillan-developed components of known dependability, proven in world-wide service and found reliable under the most adverse conditions — plus improvements and refinements based on the experience of 200 Gilfillan field engineers around the world.

Gilfillan **Los Angeles**

AIR MAIL

Protection by World Law

Gentlemen: I was impressed by the reasoned and dispassionate attitude towards the H-bomb expressed by two articles in the May AIR FORCE—that of Messrs. Walkowicz and Loosbrock, and that of Sir John C. Slessor. I also noted with interest the brief reference which each gave to ultimate solutions which must replace our all-essential present efforts to put our military program in tune with H-bomb realities.

The first article said that by devising additional deterrents "we can buy time —perhaps as much as ten years—in which to abolish aggressive war as an instrument of national policy." The Slessor article said "the time will come when . . . we can even look forward to the gradual restoration of sanity to a distracted world, and the dawn of a real international rule of law."

Most of our great military leaders have at one time or another given passing reference to the need for civilizing international relationships. A year before he died I received a personal letter from "Hap" Arnold in which he said, "It is my conviction, and I know it is the belief of the Air Force that permanent peace can only be the result of effective international organization. (In the meantime) airpower *now* is power for an interim peace which we can sustain while the problem of controlling the forces tending toward war is being solved with the patient wisdom it requires."

Who can deny that civilized man prefers enforceable law to violence and the threat of violence? Our Declaration of Independence, while asserting that all men "are entitled to life, liberty, and the pursuit of happiness," also declares that "to secure these rights, governments are instituted among men." Law prevails in our cities, states, and nations, but the international rule of law, of which Sir John wrote, does not yet exist. It will not float in of its own accord —it will come only when enough men work for an end to barbarism.

The Air Force Association could do our country and mankind an immeasurable service by advocating that all possible steps be taken to establish such a rule of international law. There is increasing talk about the possibilities of a United Nations Charter Review Conference to be called by the General Assembly of 1955. Will the United States advocate that steps be taken to delegate power to the United Nations to make, interpret, and enforce world law, under adequate safeguards to prevent it from infringing upon local autonomy? It depends upon the attitude of thinking Americans who are not satisfied that military preparations alone can protect us and our way of life.

The "interim" of which General Arnold wrote has been limited by Walkowicz and Loosbrock to "up to ten years," an appallingly short period for such a tremendous task. Personally I believe we have reason to hope for more time than that, but whatever time exists, there is none to spare, and America can ill afford to delay longer in declaring that she prefers the force of law to the law of force. Under the rule of law, force is an instrument of the law, not an argument.

Col. Ronald C. McLaughlin, USAFR
Minneapolis, Minn.

Reprint Requests

Gentlemen: Congratulations on your excellent editorial in your April issue, "We Are Ignoring Our Best Military Asset." It should be compulsory reading for everyone, civilian or serviceman.

I am teaching in the AF-ROTC program at Dartmouth College, and I should like to have your permission to reproduce the article for our students.

Maj. Roland H. Brady, Jr.
Hanover, N. H.

Gentlemen: As assistant editor of "The Jet Stream," official publication of the 107th Fighter-Interceptor Wing, I am writing for permission to reprint your article "How A Non-Com Sizes Up His Officers," from your March issue.

All of us on the staff of "The Jet Stream" think it is a terrific article and worthy of dissemination to the troops via the paper. Matter of fact, our hat is off to you for a lot of ideas suggested by your mag and utilized by us.

S/Sgt. D. J. Filer
Niagara Falls, N. Y.

Gentlemen: Permission is requested to mimeograph from the article, "What's in a Wing?" (AIR FORCE, September 1953), the block entitled "Definitions" and the chart, "These Are USAF's Combat Wings."

The material would be invaluable for our Air Science I classes during a lesson on "Composition of the US Air Force."

Col. Philip D. Coates,
PAS&T
Cornell University
Ithaca, N. Y.

• *Permissions granted.—The Editors.*

Civil Defense Distribution

Gentlemen: I am always happy to receive my copy of AIR FORCE. It is really one of the most enlightening publications that come in.

Have you ever considered bringing your articles together in a single publication so that the whole story would appear in one consecutive composite spot? I'd like to see a number of these items made up in a book of value to people concerned with civilian and industrial protection.

The May issue has several articles I'd like to see in a reprint for distribution to our members, and to CD and Industrial Protection leaders generally:

"How to Live With the H-Bomb"

"Has the H-Bomb Abolished Total War?"

S. A. Anthony, Jr., Pres.
Civil Defense Research
Associates, Inc.
New York, N. Y.

It Takes Time

Gentlemen: As others have done in their letters to you, I wish to congratulate both you and M/Sgt. Norman Winfield for making available to the public his articles. I have read each one with interest and wait anxiously for the next one. He is accomplishing a great deal by bringing to light some of the inequities and problems in the USAF.

I hope that all of your readers read the very excellent letter contributed by Lt. Col. Uriel P. D'Acosta in the May issue, "Jet Blasts." It is my firm belief that more than fifty percent of the per-

(Continued on page 7)

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nose for trouble

The big black nose of the CF-100—and what's inside it—is truly a mark of distinction. For it identifies the all-weather interceptor from the day fighter and, in the case of the CF-100, as Canada's Aerial Defender against bomber attack across the North.

The "insides", a complex mass of radar and electronic equipment—is designed to guide the CF-100 Mk. 4 unerringly to its target, lock on and destroy it with a formidable armament combination of rockets and guns. The effectiveness of this search and fire-control system is being demonstrated almost nightly during mock interception exercises by R.C.A.F. CF-100 squadrons based at strategic points. With its twin Orendas, also designed and produced by AVRO Canada, the CF-100 Mk. 4 has a greater range and more power than any other fighter-interceptor in service anywhere. The Orenda also powers the Canadair Sabre 5, the outstanding day fighter in service today.

For original aeronautical design, plus efficient production, look to AVRO Canada.

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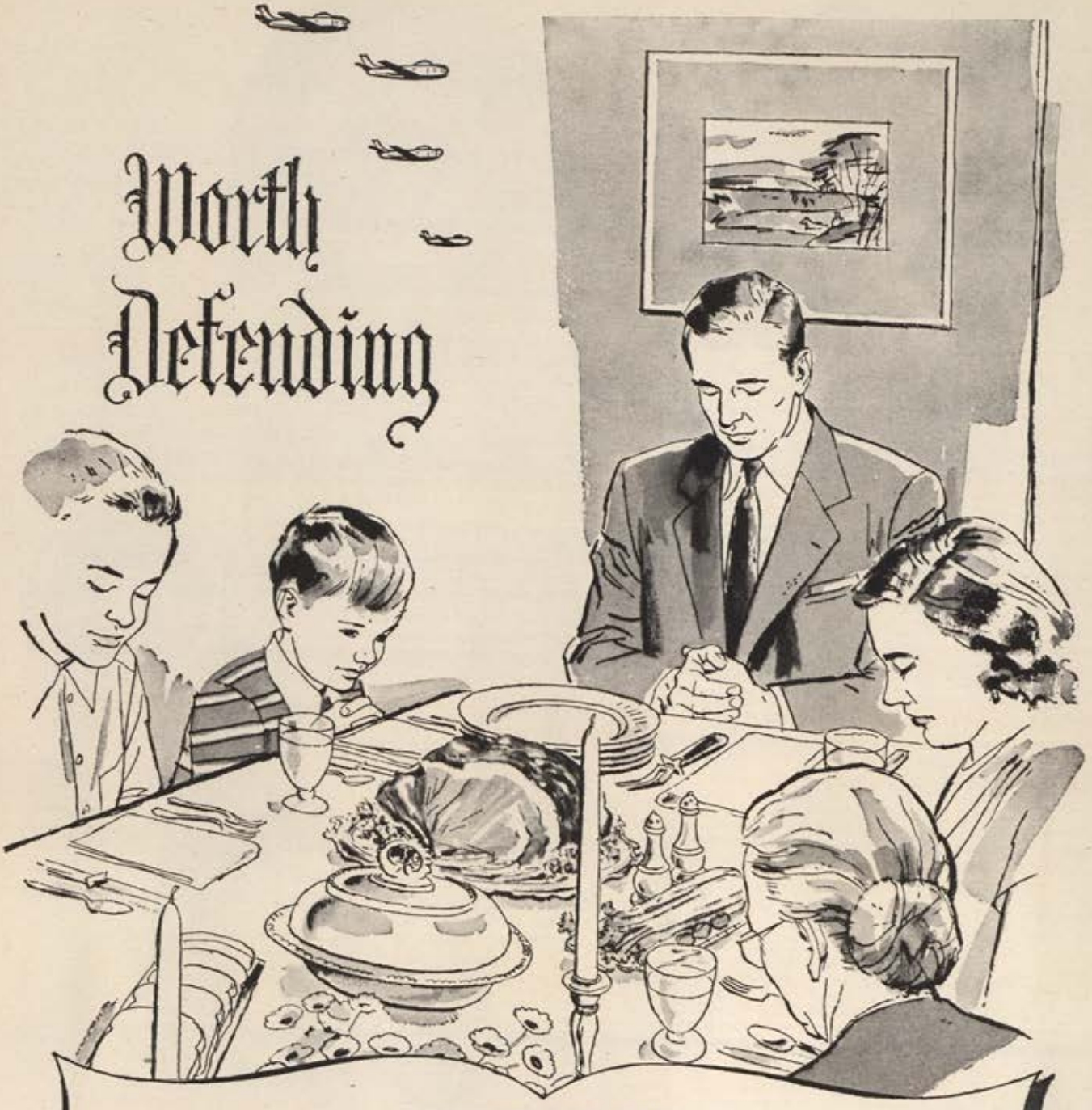
Worth Defending



FREEDOM FROM WANT

Freedom from Want can never apply to a dominated people. History records that any economy built at the price of freedom has always resulted in lowered standards of living . . . and Want is still today the brand on helpless millions.

Freedom from Want is the right of all free people — the goal of every democratic nation. Freedom from Want . . . is *worth defending!*

CA54-13US2

CANADAIR

— AIRCRAFT MANUFACTURERS —

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One of a series dedicated to the survival of freedom — Reprints on request.

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sonnel in the USAF agree with him wholeheartedly. I would like to believe that one hundred percent agree with him. There are, as he states, some errors of commission and omission which could stand correction, but everything cannot be done in one fell swoop, and the dreamers who think it can should take a look back at the history of the USAF and read about its rugged climb to its present status. Those problems were overcome in a matter of years, not days.

My thanks to Colonel D'Acosta for expressing the feelings of "those who want to stay in." I am one of them.

M/Sgt. Clinton F. Cone
Worcester, Mass.

Loss of a Leader

Gentlemen: I want to thank you for your recent article on Gen. Hoyt S. Vandenberg. General Van meant Air Force to me and to millions of other people.

There was a visible feeling of grief here when it was learned that the general was dead. He will always be remembered along with Billy Mitchell and "Hap" Arnold as typifying the USAF he was instrumental in building.

S/Sgt. William L. Denton
San Antonio, Tex.

Gentlemen: Thank you for your timely article on the late Gen. Hoyt S. Vandenberg. All that can be said about General Van has been said very aptly by Air Force Magazine; in fact, could have been said by the one photo labeled "The Crusher." To the young new crop of airmen and officers this places a high target of effort and will that must be achieved if we are to be successful in the discharge of our duties.

1st Lt. Robert C. Huling
Franklin, Penna.

Look Up to 'em

Gentlemen: I am writing in regard to a letter in your April issue criticizing the older non-coms. The writer's name was withheld, and I can understand why. More intelligent men than this individual have realized the importance of the old non-com and try to train the young non-coms to follow in their footsteps to keep the Air Force a good fighting force. I myself have only been in the service five years and I look up to the older men for leadership and training. I haven't got three years of college and I can realize that a man is not born a leader but is made a leader by his own efforts and the advice and help he can most assuredly receive from older and more experienced men.

I myself think that before this individual does any more griping he should give things a lot more consideration. I don't think the "old stupes" are the ones who are ignorant; the really ignorant ones are the ones that the service could get rid of. A college education does not make a leader. Educated dumbbells the service needs no part of.

S/Sgt. B. J. Butler
San Francisco, Calif.

It's here... it's Lear...

IT'S THE NEW remote ADF-R14

HERE AT LAST is a rugged, light weight, compact, remotely controlled automatic direction finder that meets both military *and* civilian operational requirements. The remote controller of this new, high performance unit fits a panel space only 4.5" x 5.4". It can also be mounted overhead.

Outstanding features of the system include "eye-eze" edge lighting... exceptional sensitivity, selectivity, and intelligibility, thanks to an entirely new tuner design... provisions for dual installation... weather-proofed, hermetically sealed transformers... ferro-dynamic® loop... fungus- and moisture-resistant to meet extremes in temperature and climatic change... ruggedized to withstand severe shock and vibrations.

Although it is a triumph of miniaturization, the ADF-R14 meets the most critical specifications, such as MIL-P-7788 Edge Lighting... MIL G-6781 Control Panel... SC-D-15914 Moisture Resistance...SC-D-19999 Extreme Temperatures. The system has also been engineered and built to conform with CAA requirements. Available for 12 or 24 volt systems.

Lear automatic direction finders represent the finest... the only *complete* line available. Thousands of them are in use today... providing safer, simpler, more reliable radio navigation for pilots all over the world. Write today for full engineering data and descriptive literature. LEAR, INC., LEARCAL DIVISION, 11916 West Pico Boulevard, Los Angeles 64, California; Export Distributor: Lear International Export Corporation, Nine East 45th Street, New York City, New York.

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LC-9

Shooting the Breeze

WE'VE welcomed aboard new staff members in the past but never have been able to use that time-honored phrase with all its original, salty connotations until now. But "welcome aboard" to our new associate editor, Lee Klein, takes on real meaning, for it was not long ago that he was flying Navy fighters and anti-sub patrols from carriers in the Atlantic.

And to cinch the deal, in World War II he was a Navy flight radioman in the Pacific and Aleutian areas. Thus, with Managing Editor Jack Loosbrock, a World War II combat veteran of the 1st Infantry Division, AIR FORCE Magazine's unification team stands complete.

A June graduate from Columbia University's Journalism School and with an undergraduate degree in journalism from the University of Nebraska, Lee brings to AIR FORCE a wealth of valued experience that includes a stint as co-pilot for American Airlines. His new job, in his words, enables him to combine his two greatest interests—aviation and writing. In the past decade, he says, he's ricocheted between the two.

His other interests include skiing and photography. The latter will serve him in good stead in his new undertaking, but he'll have to go far afield from Washington to indulge the other. Vital statistics: Lee's 29, unmarried, born and bred in Lincoln, Nebr., and looking forward to AFA's Convention in Omaha in August, for there are only fifty miles between Omaha and Lincoln.—END

AIR FORCE

THE MAGAZINE OF AMERICAN AIRPOWER

Vol. 37, No. 7 • JULY 1954

FEATURES

DEPARTMENTS

THE COVER

The jet mechanics on this month's cover hold the answer to the Air Force's $2,000,000,000 headache—its manpower problem. For airpower nowadays is not merely a matter of enough planes, bombs, and bases. All of these are useless without the trained personnel needed to man them under the pressures of the ever-increasing intricacies of modern warfare. For more about the problem and USAF's plans to solve them, see page 32.

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AIR FORCE Magazine is mailed monthly to all members of the Air Force Association. There are several ways you can become a member. If you were in the Air Force or its predecessor services, you're eligible. The $5 yearly dues include the magazine. Or if now on active duty, you can be a Service Member. Those interested in airpower can become Associate Members for $5 per year. The cost for CAP and AF-ROTC cadets is $3 per year. Details of membership in AFA on page 80.

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Sign me up as marked below. I enclose a check or money order for the amount indicated.

- ☐ Membership in AFA (includes year's subscription to AIR FORCE Magazine) $5
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By Wilfred Owen

The world's airlines carried 52 million passengers last year—compared to 2.5 million in 1937.

° ° °

Chicago's Midway Airport was the busiest airport in the country last year for the second consecutive year. The other ports in the top ten were Miami, Los Angeles, Cleveland, Wichita, Atlanta, New York's La Guardia, Denver, Dallas, and Teterboro, N. J.

° ° °

The Pittsburgh Pirates are the first major league baseball team to contract for an entire season of air transportation.

° ° °

Capital Airlines, which will provide chartered service for the Pittsburgh ball club this year, flew thirteen of the

sixteen major league teams at one time or another during the 1953 season.

National Airlines has issued a report on the drinking habits of air travelers. Out of every 100 passengers, eighty-eight drink

coffee, six drink tea, four ask for hot chocolate, one goes for milk, and one is satisfied with water.

° ° °

Half a million people flew the North Atlantic during 1953 on eleven US and European airlines. US airlines carried forty-five percent of the traffic. Of all North Atlantic crossings, fifty-nine percent were made by air and forty-one percent by ship.

° ° °

Aerial gas stations for commercial aircraft have been proposed by a Massachusetts corporation. The company has requested permission from the Civil Aeronautics Board to sell gasoline to airliners in flight over the United States or at stations in mid-ocean.

° ° °

There are fifteen flying doctor bases scattered throughout the northern half of Australia, serving 800 outposts.

° ° °

On complaint of a Congressman from Maryland, the Navy has promised that naval aircraft will stop scaring wild ducks and geese in the Chesapeake Bay area during hunting season.

° ° °

The 1,001-room Statler Hotel in Dallas, now under construction, will have a roof-top heliport twenty-one stories above the ground floor.

° ° °

Of the 13,990 flights across the North Atlantic in 1953, 7,324 were tourist planes.

° ° °

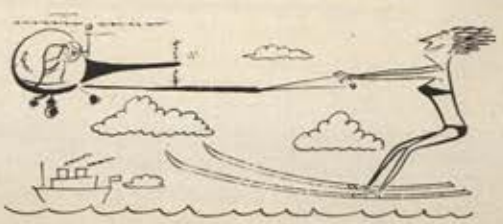
Air travel volume in the United States is now approximately double the volume of rail Pullman traffic.

° ° °

Helicopters now serve eighty-four communities with a population of 16 million. The CAB has certificated forty-six more points to be served as equipment becomes available.

° ° °

At Switzerland's Lake Zurich, water skiers use a Hiller heli-



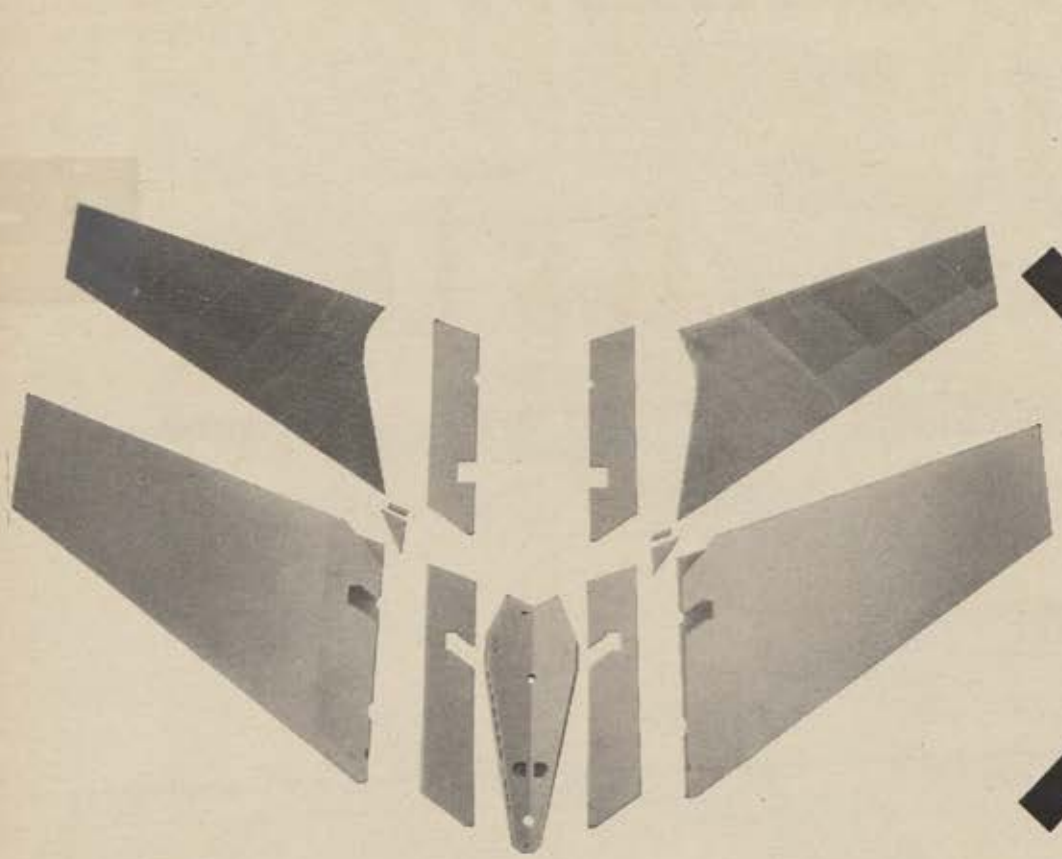
copter as a towing vehicle.

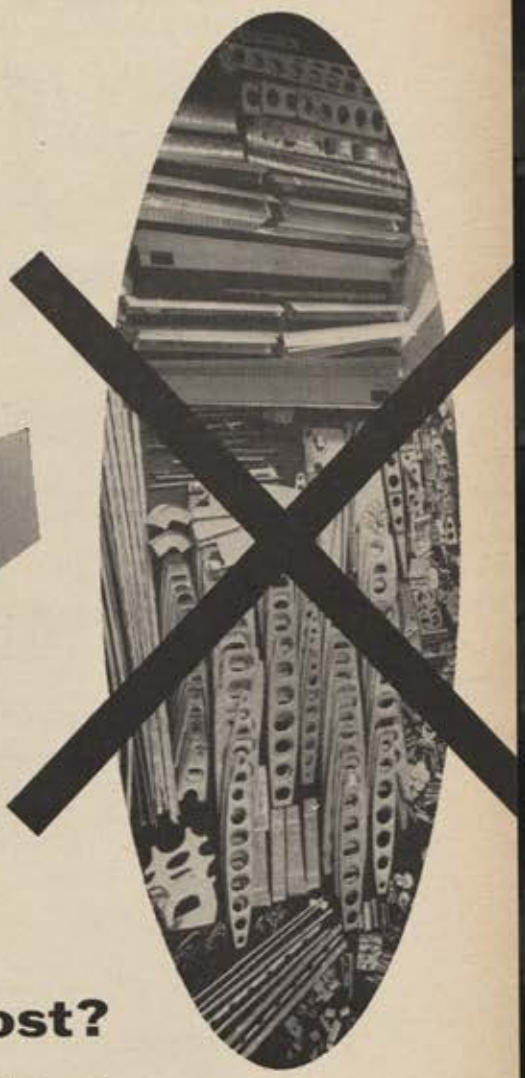
° ° °

In four months of touring the British Empire, Queen Elizabeth did ninety-five percent of her air traveling in American-built aircraft.

° ° °

Every hour during 1953 a total of 1,920 aircraft landed or took-off from airports having CAA traffic control towers. Total landings and take-offs for the year: 16,815,133.





how much less can airpower cost?

With rapidly mounting pressure from business and the public for tax relief—and with the airpower requirements of our security program heavier than ever before—what is our industry doing to lower the cost of taxpaid airpower?

How much less should—and can—our airpower cost?

We at Martin are daily developing dollar-and-cents answers to that explosive question, in every phase of design, engineering and production.

Shown above is a sample from the record of the U.S.A.F. Matador B-61 Pilotless Bomber, top-rated major weapon which was designed, engineered and built, from concept to acceptance, without benefit of precedent.

The stabilizer of the Matador consists of 13 parts. Shown beside it are some of the more than 3,000 parts which would be required to produce the stabilizer for a multi-engine transport by traditional methods.

What of the Matador itself? New Martin processes and methods are producing this major weapons system for a fraction of the cost-per-pound of equivalent piloted aircraft—and to performance specifications more exacting than most.

The dollar-and-cents payoff of Martin Systems Engineering is one of the most challenging stories in the aircraft industry today.

You will hear more about Martin!

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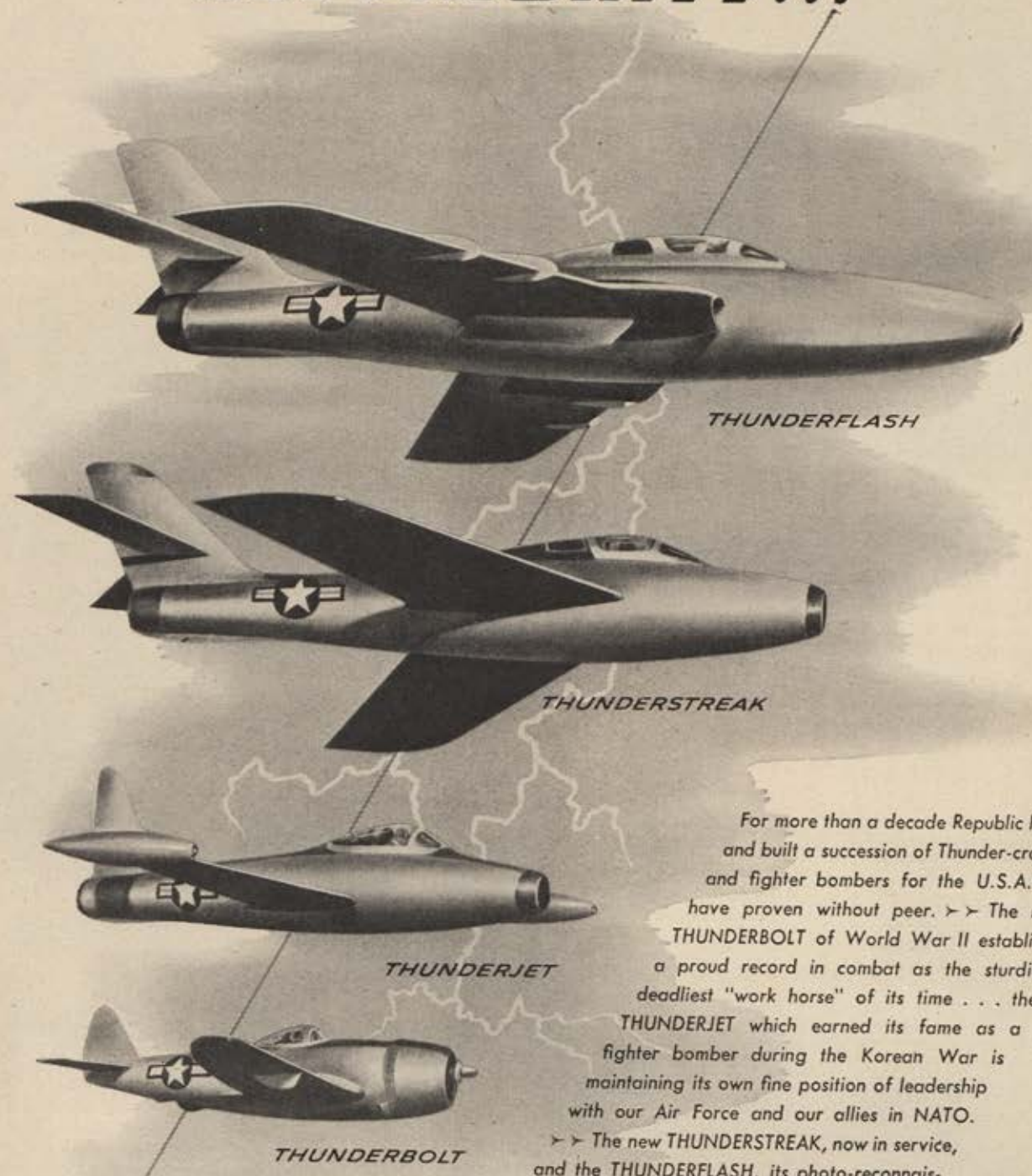
SUPERIORITY...



For more than a decade Republic has designed and built a succession of Thunder-craft fighters and fighter bombers for the U.S.A.F. which have proven without peer. ➢➢ The mighty THUNDERBOLT of World War II established a proud record in combat as the sturdiest, deadliest "work horse" of its time . . . the THUNDERJET which earned its fame as a fighter bomber during the Korean War is maintaining its own fine position of leadership with our Air Force and our allies in NATO. ➢➢ The new THUNDERSTREAK, now in service, and the THUNDERFLASH, its photo-reconnaissance counterpart, with an entirely new range of speeds and effectiveness emphasize that each product of Republic's know-how maintains superiority of performance in its field.

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Builders of the Incomparable **THUNDER-CRAFT**

AIRPOWER IN THE NEWS

The Air Force last month claimed a **new speed record**—on the ground. The claim referred to the 421 mph that **Lt. Col. John P. Stapp** traveled in a rocket-powered sled along a 3,500-foot track at Holloman AFB, N. M. Colonel Stapp, who made the record run in March, had earlier conducted ARDC's human deceleration test program (see "Desert Sleigh Ride," AIR FORCE, May '53). He is now chief of the Aero Medical Field Laboratory at Holloman Air Development Center. The new test series is expected to determine how flyers will be affected when forced to bail out at very high altitudes and supersonic speeds.

The sled, especially built by **Northrop,** is in two parts: a propulsion unit that mounts a dozen 4,500-lb.-thrust, solid-propellant rockets (only six were fired in the record run), and the test vehicle that the rocket-carrier pushes. The unit travels down an extra-heavy railroad track bedded in concrete. Between the tracks is a trough containing water. Metal scoops under the sled hit the water and brake the vehicle at a predictable rate. This is important since it is the G force resulting from the abrupt stop rather than the speed attained by the sled that gives Colonel Stapp and his fellow researchers the needed data. On his record run, Stapp pulled twenty-two Gs, which means that in the braking area his body weighed 3,960 pounds.

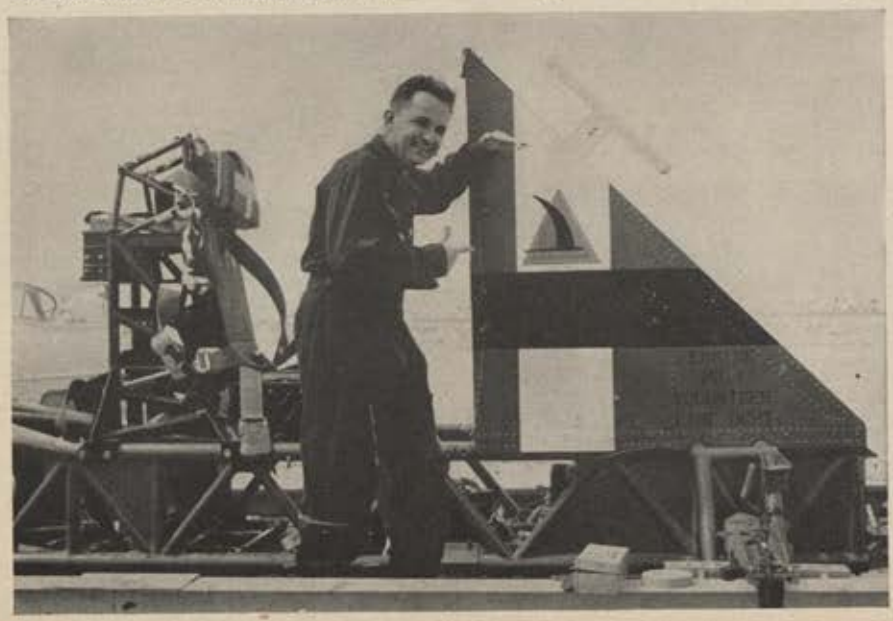
The set of remarkable high-speed photos at right shows Colonel Stapp's **facial reactions** during the record run. The first shows him before the sled starts. Number two shows him as the six rockets fire. The third was snapped as the sled accelerates rapidly. In four and five the sled has begun to decelerate in the water-braking area. And finally, at peak deceleration, the G forces drive Colonel Stapp's chin into his chest pack, which contains instruments. In other experiments with different equipment, the colonel has withstood up to forty-five Gs.

Deceleration is just one of the three forces affecting high-speed bailouts. The others, **windblast and tumbling,** will be investigated after the speed runs have been completed. These may reach 800 mph, ARDC says, which would be the same as 1,800 mph at 40,000 feet. Colonel Stapp can then look forward to the next phase of the tests when he, or whoever rides the sled, will be tumbled head-over-heels 180 times a minute during the run.

At press time, the final choice of a location for the **Air Academy** rested with one man—Air Force Secretary Harold E. Talbott. This situation resulted when the five-man board charged with picking the site failed to agree. The board then gave Secretary Talbott his choice of three possible locations. They are **Alton, Ill.; Lake Geneva, Wis., and Colorado Springs, Colo.** In its hunt for a final location since April, the board traveled more than 18,000 miles, looked at some 400 locations (see "Airpower in the News," May '54). Congress has authorized the Air Force a total of $126,000,000 to build the Academy. Of this amount, $26,000,000 may be spent the first year, while $1,000,000 of this figure may be used to operate the Academy at a temporary location. The first class of 300 is slated to enter the temporary Academy a year from now.

(Continued on following page)

Lt. Col. John P. Stapp can still grin after riding his rocket-sled at 421 mph.



Above, Col. Stapp's facial reactions during deceleration tests. In the last picture, he's pulling 22 Gs making his weight equal 3,960 pounds.

To **Earl T. Ricks** flying was more than either a job or an avocation. It was a way of life. At a time when most youngsters are concentrating on the best approach to borrowing dad's car, Earl Ricks was concentrating on mastering the technique of flying. He was an apt student. At the time of his death last January, he had piled up the impressive total of some 13,000 flying hours in everything from light aircraft to jets.

Earl Ricks went into the Army Air Forces in 1940 as a private. Five years later he emerged as a full colonel. It was Ricks who flew the Japanese surrender party to the Philippines and it was Ricks who took a C-54 into Vladivostok to pick up the Russian delegation to the capitulation of Japan.

After the war he served a term as mayor of Hot Springs, Ark., and later became Adjutant General of that state. From this position he was summoned to active duty by the Air Force as Chief of the Air Force Division of the National Guard Bureau. Soon, a second star was added to his shoulders.

Last summer he went into Walter Reed Hospital for what was supposed to have been a minor operation. The medics discovered cancer. Ailing, in severe pain, he made his last public appearance in August—at the Air Force Association Convention in Washington. He knew then that this would be the last time he would be among those who spoke the language he loved. He told close friends then that he had no regrets; that given his life to live over, he'd have done the same thing—fly.

In May, the Board of Directors of AFA met in the same hotel where Earl Ricks had made his final public appearance. Unanimously, they decided to institute an AFA Airpower Award in the name of this charter member of the Association.

Since General Ricks was so closely associated with the Air Guard, AFA's Directors determined that **the Earl T. Ricks Memorial Trophy** should be awarded to an Air Guardsman or to an Air Guard unit.

The first award will be made this year at AFA's Convention in Omaha, very likely by Mrs. Ricks. It will be made to the winner of a Bendix-type, cross-country race to be held July 24 in conjunction with the International Aviation Expostiion at Detroit.

Six of the **top ANG jet pilots** in the nation will compete. Each jet wing has been asked to nominate one competitor. The final selection of the six will be made in the National Guard Bureau from among those nominated.

To qualify, a pilot must have a minimum of 500 hours' total jet time and 100 hours in the aircraft he intends to fly in the race.

The route will be from Ontario International Airport, Calif., near Los Angeles, to Wayne Major Airport in Detroit. The run will be timed by the National Aeronautics Association, and the winner, as in the Bendix, will be determined on the basis of elapsed time. Refueling stops will be included in the over-all time.

Instituting the award of this trophy does two things: it perpetuates the name of a great airpower advocate. And, at the same time, it recognizes the increasingly important role the Air National Guard plays in the country's airpower. With eighty-seven tactical squadrons deployed throughout the US and a strength approaching 50,000, the ANG is an air force in itself.

The Ricks Memorial Trophy will be AFA's first airpower award exclusively to the Guard. It will be made this year for the kind of event that Earl Ricks very likely would have tried to compete in, for Ricks never lost his enthusiasm for the one-man type of flying.

The career of an able and colorful man, well known in Air Force and aviation circles, came to an end in May when retired **Maj. Gen. Oliver P. Echols,** president of **Northrop Aircraft,** died in California. General Echols retired from the AF in December 1946 after thirty years of service that included an active role in two world wars. He was president of the Aircraft Industries Association, Washington, D. C., before joining Northrop in February 1949, as chairman of the board. He was elected president in November 1952 after the retirement of John K. Northrop. General Echols was commissioned in 1916 and in World War I served as commander of the First Observation Group. A combat pilot, he fought numerous air actions over France and Germany. In World War II he was head of the Air Materiel Command in 1942 and 1943, later was assistant chief of air staff, in charge of materiel, maintenance, and distribution. He served in Europe and became Deputy Commanding General, Office of Military Government for Germany.

Maj. Gen. Oliver P. Echols, USAF-ret., who died recently in California.

STAFF CHANGES . . . The USAF's Surgeon General, **Maj. Gen. Harry G. Armstrong,** becomes Surgeon, USAFE, on July 15. His replacement is **Maj. Gen. Dan C. Ogle** . . . **Brig. Gen. Frank A. Bogart** this month replaces **Maj. Gen. Manuel J. Asensio** as the AF's Director of the Budget. General Asensio becomes Vice Commander of ConAC, replacing **Maj. Gen. Roger J. Browne.** General Browne takes over command of the 1st Air Force from retiring **Maj. Gen. Howard M. Turner** . . . Also this month the AF's Director of Finance, **Maj. Gen. John R. Gilchrist,** transfers his operations to Denver where the AF's Finance Center is, while his deputy, **Brig. Gen. Richard L. Scott,** moves from Denver to Washington . . . **Brig. Gen. Bernard A. Schriever,** former Assistant for Development Planning, Hq., USAF now has the interim title Assistant to the Commander at Hq., ARDC, Baltimore . . . In June **Brig. Gen. Daniel C. Doubleday,** Commander of the Rome Air Development Center, Griffiss AFB, N. Y., was replaced by **Brig. Gen. Stuart P. Wright.**—END

At Armed Forces Day Banquet, Washington, D. C., in May, from left, Maj. Omer W. Clark, Commander-in-Chief, Military Order of the World Wars; E. V. Richards, Jr., President of the Navy League; President Eisenhower; AFA President Gen. George C. Kenney; and Lewis L. Strauss, Chairman of the Atomic Energy Commission, who served as toastmaster for the evening.

"TWO MORE REASONS WHY WE CHOSE A PLANE WITH CONTINENTAL POWER"

After engine dependability, the most important thing to consider in choosing an airplane is the service behind it—the facilities maintained by its makers to keep it in the air at lowest cost. And here, as on the basic score of engine stamina, planes with Continental power rate uniformly high.

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Corporate owners, in particular, appreciate the plan which makes factory-remanufactured engines available on an exchange basis. This Continental-pioneered service, now several years old, practically eliminates dead time when overhaul is required, and provides a guaranteed power plant, with zero hours, at a fixed low cost. Being available through 125 master distributors with dealers at practically all airports, it is truly another good reason for choosing a plane with Continental power.

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434TH BOMB SQDN. REUNION: The 9th annual reunion of the 434th Bomb Sqdn. (M) "Earthquakers," will be held Aug. 31, Sept. 1 and 2, at Steads Ranch, Estes Park, Colo. For particulars write to *Don Hiatt, Otis, Colo.*

USS LST 724 REUNION: Since some of our ex-shipmates have joined the Air Force, I think they will like to know that the crew of the USS LST 724 will have their reunion Aug. 5, 6 and 7 at the Hotel Carter, Cleveland, Ohio. For full information write *Eugene J. Dreger, 568 Manhattan Ave., Brooklyn 22, N. Y.*

376TH VETS REUNION: The 376th Heavy Bomb Group Vets Ass'n. will hold its 8th annual reunion at the Wisconsin Hotel, Milwaukee, Wisc., July 29 to August 1, 1954. Write *Wiley L. Golden, 371 Probasco Ave., Cincinnati 20, Ohio.*

POMIGLIANO AFB PERSONNEL: Wish to contact Operations and Tower personnel at Pomigliano AFB, Naples, Italy, Oct. 13, 1944, when a P-38 was stolen. Also MEMBERS OF CLASS NO. 44-C, at Williams Field, Ariz. Details sought for forthcoming book. *Clint Forhan, P. O. Box 16, Bellingham, Wash.*

BACK ISSUES: Is anyone interested in obtaining back numbers of AIR FORCE Magazine as far back as its inception? *John O. Emerson, 45 Westfield Rd., West Hartford, Conn.*

498TH BOMB GROUP: Has the 498th Bomb Grp., 73d Wing, stationed on Saipan during WW II, ever published a history? If so, where can I obtain a copy? *Wm. A. Bowitz, 43–66th St., West New York, N. J.*

305TH TC SQDN.: How can I obtain a copy of the history of the 305th Troop Carrier Sqdn. or of the 442d Troop Carrier Group, 9th Air Force, World War II? I would also like to know the addresses of Herb Bollum and Ray Ballenger. *George F. Brennan, 8523 Mt. Ranier Ave., El Palso, Tex.*

50TH TC SQDN.: Former members or anyone knowing former members of the 50th Troop Carrier Sqdn. please write to me to receive Association literature. Would like to have the addresses of Dr. L. B. Myrh, Richard Lynch, and Tarr. *Andy Kyle, Rt. 1, Box 56, Liberty, Tex.*

To be sure your Rendezvous item appears in the September issue, we should have your request by July 15.—THE EDITORS.

Double Barreled

Two power-packed jet engines, *two* "decks" of 52 rockets, *two* men at controls and triggers, up to *two thousand* miles of range... and the comforting assurance of single-engine performance if necessary; that's the Northrop Scorpion F-89. These U. S. Air Force interceptors now stand ready for double-duty defense at far-away bases; they can rise in seconds on first radar alert to intercept air invaders, and they can follow, harass and destroy them hundreds of miles before they reach target. The long-range Scorpion F-89 is one of many precision products built by Northrop for all branches of the U. S. Department of Defense.

NORTHROP

NORTHROP AIRCRAFT, INC. • HAWTHORNE, CALIFORNIA

Pioneer Builders of Night and All Weather Interceptors

REPLACES BOATS—Newfoundland fishing areas are now patrolled by helicopter. The Fisheries Department of Canada operates this Sikorsky S-55, leased from Okanagan Helicopters, Limited. The versatile S-55 does more effective work than the several boats it replaces, and is available for official inspections and any emergency use.

AROUND THE WORLD WITH SIKORSKY HELICOPTERS

PIONEERING AIRLINE—Mohawk Airlines has added a Sikorsky S-55 to pioneer scheduled helicopter passenger service on part of its certificated routes. It is the second scheduled American passenger airline to use Sikorskys. Large, twin-engine helicopters eventually may be used by the airline to replace some of its fixed-wing equipment.

COPTERS ON THE MOVE—First helicoptor of the Army's 328th Helicopter Transportation Company comes aboard a Navy Carrier bound for Germany. The Company is the first such Army helicopter unit sent to Europe. Equipped with 21 Sikorsky H-19s, its mission includes medical evacuation, air supply and cargo or troop movement.

WINGS OF MERCY—A Sikorsky helicopter, with rotors whirling, is shown in battle-torn Dien Bien Phu receiving French soldiers wounded in the heroic defense of the Indo-China stronghold. A stretcher bearer (right), rushes off for another casualty to be evacuated to a military hospital at Hanoi. The Sikorsky S-55 helicopter flew mercy missions in the thick of the Indo-China battle.

SIKORSKY AIRCRAFT

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AIR FORCE
JULY 1954

An Air Force Magazine Staff Study

REVOLUTION IN TACTICAL ATOMIC AIRPOWER

Old Jobs ...New Tools

Smaller, lighter nuclear weapons plus technological advances in range and mobility, combine to answer many questions about our ability to win both little wars and the big one

VIRTUALLY unnoticed in the welter of day-to-day events a quiet revolution in the art and practice of tactical air warfare is taking shape. It is marked by enormous advances in the capability of tactical air to do its old jobs, advances predicated on new technology—better weapons and improved methods of delivering them. It is a revolution of particular significance in these uneasy days, when a succession of localized peripheral conflicts may well bleed the Free World to death unless they can be fought and won without precipitating a general nuclear holocaust. The tactical air revolution appears to hold the answers to many of the perplexing questions that today are plaguing the United States and its allies.

There are three trademarks or signposts for the new approach to tactical air war. In order, they are:

- Incredible increases in the destructive power of fighter-sized airborne weapons.
- Advances in the combat range and mobility of the tactical delivery systems for the new weapons.
- Emerging answers to the problem of decreasing the vulnerability of friendly tactical air forces facing the deadly combination of the first two considerations in enemy hands.

The first of these is, of course, a result of the great strides that have been made in the field of nuclear weapon technology. Public statements by responsible government officials have reiterated again and again that our nuclear arsenal is now characterized by a great flexibility in choice of the size of the bang. We have baby A-bombs and atomic artillery. There is nothing which prevents us from making a nuclear device as low in destructive power as we may care to make it. It is now possible to tailor a nuclear warhead to perform virtually any military task. Furthermore, rapid strides in fusion technology can be expected to lead to the development of a baby H-bomb.

As nuclear weapons become progressively smaller in size, they also become lighter in weight. The very first atomic bomb could be carried, with some difficulty, only by a B-29. Now it does not require too great a stretch of the imagination to envisage an F-86 carrying as many as six air-to-ground rockets, each with its nuclear warhead. In terms of striking power, this means that today's fighter will eventually be carrying, slung under its wings, the equivalent of perhaps 500 kilotons of TNT. And the megaton fighter (1,000,000 tons of TNT) is now becoming a distinct possibility.

(Continued on following page)

Keeping pace with this growth in striking power of tactical weapons has been the progressive extension of the range and combat mobility of tactical delivery systems. This is due primarily to the development of two techniques—Ficon, in which an F-84 is carried under the belly of a B-36 to be launched and retrieved at will; and flight refueling, which has made both eight-hour fighter combat missions and over-water flights of thousands of miles by single-engine aircraft possible.

Ficon, of course, has important implications in terms of long-range reconnaissance and adapting tactical aircraft to deep-in strategic missions. However, conventional refueling techniques alone endow tactical air forces with great flexibility and the capability of striking much deeper into enemy territory.

recently F-84Gs of the Strategic Air Command flew 4,400 miles nonstop to England and North Africa, using refueling techniques.

This kind of capability, properly applied, can increase immeasurably our ability to do the tactical air job. Obviously, we cannot keep vast tactical air forces deployed around the globe, hovering watchfully over each potential trouble spot. Yet, events of the past few months have demonstrated that local aggression must be met quickly and decisively, or the eventual cost to us and our allies in blood and treasure is multiplied, as the world-communist movement continues to nibble away.

Now it is possible to reconcile this apparent conflict. The tactical air weapon can be kept ready, widely dispersed here in the United States and on the airfields of our allies

tries, Japan, and the Pacific islands. But more will be needed to make our tactical airpower fully effective on a global scale.

To make these movements practicable, the tactical air forces face the same problems as the airborne divisions. Their TO&E equipment will have to be slashed to the bone. What remains will have to be streamlined, simplified, and lightened to make far more of it air transportable than at present.

But even global mobility is not enough. Tactical atomic airpower must be able to get about freely within the actual theater of operations. It must be able to move to and fro with the ebb and flow of the battle. Nowadays, this kind of battlefield mobility can be achieved only if tactical air can get its feet out of the concrete and divorce itself from

One A-bomb makes the conventional load of a fighter like the F-84F seem puny indeed.

Today's fighters, like this F-86H, could tote the equivalent of 500,000 tons of TNT under their wings.

A striking example occurred last fall as Thailand (not far from Indo-China) celebrated its national Independence Day. A flight of F-84s took off from Japan, made several passes over the crowds at Bangkok as part of the United States tribute, and flew back to land in the Philippines. This is a far cry from the days, only four years ago, when F-80s were trying to support Korean ground action from Japanese bases and had only a couple of minutes over the target area.

As long as two years ago, an entire fighter-bomber wing under Col. Dave Schilling flew from Turner AFB in Georgia to Japan. The flight from Turner to Travis AFB, Calif., was nonstop with one refueling over Texas. The hop from Travis to Hickam AFB, Hawaii, a distance of 2,463 miles, was also nonstop with one refueling over the Pacific. The wing then island-hopped from Hawaii to Japan in easy stages. More

around the world. The combination of increased range and combat mobility would allow us to throw it in, where, when, and as needed, if additional "hot spots" develop. And today, the hot spots are many. Potential tactical air theaters exist almost anywhere on the globe that a blindfolded man might lay his finger.

In this connection, the requirement for global mobility of tactical air forces accents the requirement for adequate air logistic support (AIR FORCE, June '54). For along with the planes and the bombs, the necessary supporting elements must be moved, largely by air, if we are to capitalize on the new combat flexibility of the tactical arm. Stockpiles of bulky items, not susceptible to aerial movement, such as fuel, must be maintained at strategic locations around the world. Here bases would be set up to serve as refueling sites. The skeleton of such a system now exists —in North Africa, the NATO coun-

dependence on elaborate bases. This consideration leads smack into the third facet of new developments in tactical air—the vast increase in vulnerability of opposing tactical air forces which the combination of new weapons and delivery systems brings about.

When one fighter can carry the rough equivalent of a megaton, the best way to lose your air force is to tie it to long prepared runways and elaborate permanent installations, crowded with aircraft. The answer to this problem is the same as the answer to any kind of nuclear attack —reduce vulnerability by dispersal. This means scattering your aircraft and their supporting facilities over a wide enough area that no single base presents a lucrative target which can be knocked out entirely with one weapon. Scattered bases also mean smaller bases, because we can't go on indefinitely covering the countryside with 10,000-foot runways. This,

in turn, means great emphasis on reducing take-off and landing distances of tactical aircraft. There are several ways in which this can be done. All have their merits; all have their disadvantages—logistic, operational, economic—or in compromising the performance of the aircraft. Some possibilities, all of which are in one stage of development or another, are rocket-assisted take-off, catapults, thrust augmentation, drag parachutes, arresting gear, reverse-thrust devices, and landing mats.

The ideal solution, of course, is to go a step further and reduce landing and take-off space to zero—that is, to take-off straight up and land straight down. Then no prepared field at all would be needed beyond, at most, a few square yards of concrete pad. Any backyard, highway, field, or clearing in the woods would thus become a potential air base.

The Russians seem to think VTOL is the answer, for it has been known for some time that they have such an interceptor design (AIR FORCE, February '53). In this country, two Navy VTOL projects were recently publicized, one at Lockheed and one at Convair. Both of these are experimental aircraft, powered by turboprops. And it has been reported that the Air Force has its own VTOL projects—one at Bell and one at Ryan. Once the bugs are ironed out, it would seem logical that the turboprops will be discarded in favor of turbojets, rocket, or even more advanced propulsion systems, to yield that combination of supersonic speeds and long range that will be required in the tactical air battle.

Merely reducing the take-off and landing space requirements for our tactical aircraft is not enough. This alone will prove of small value if maintenance and logistics facilities remain bulky and immobile. Much remains to be done in this field. Huge hangars, elaborate shops, and bulky maintenance equipment will have no place in a truly mobile force. Maintenance must be simplified, its gear built into trucks which can speedily evacuate the airdrome when it comes under attack, and return to do the maintenance job after the attack.

Perhaps the prime characteristic of tactical air is variety—geographical variety, in the sense that it must be prepared to operate on little or no notice in virtually any section of the world; variety in the numbers and kinds of targets which it must be prepared to attack; and variety in the types of aircraft it needs.

In the tactical inventory — the Martin B-57, AF's version of British Canberra.

The FICON technique greatly extends the range and combat mobility of modern fighter planes.

In the tactical inventory we find fighters, fighter-bombers, light bombers and night intruders—plus reconnaissance and logistic aircraft. Right now the combat planes consist of the North American F-86, Republic's F-84, North American's B-45, Martin's B-57, and the obsolete Douglas B-26, the latter now being phased out. Soon to come into the inventory are the North American F-100, Republic F-105; and the Douglas B-66. The latter is interesting because it is the Air Force version of the Navy A3D, and is indicative of the growing area of overlap between the Air Force and Navy air, particularly in the tactical field. The Navy has just unveiled a new baby attack bomber, the Douglas A4D, which weighs only 15,000 pounds and has a thirty-foot wingspread that allows it to be stored in a carrier hangar deck without need for folding the wings. It is capable of carrying nuclear weapons, and a ground-based version of it is likely to see service in the Air Force.

In the tactical missile field, the Martin B-61 Matador pilotless bomber is the only type that is operational to date. A Matador squadron is now deployed in Germany as part of the defenses of Western Europe.

These then, are the principal elements of the revolution in tactical atomic warfare: vast increases in striking power, combat range and mobility, and reduced vulnerability. Added to these, of course, are commensurately significant advances in communications equipment, intelligence and reconnaissance capabilities, and tactical-control techniques, to keep pace with the new dimensions of tactical operations. But what is the significance of all of this? How do you take full advantage of these

(Continued on following page)

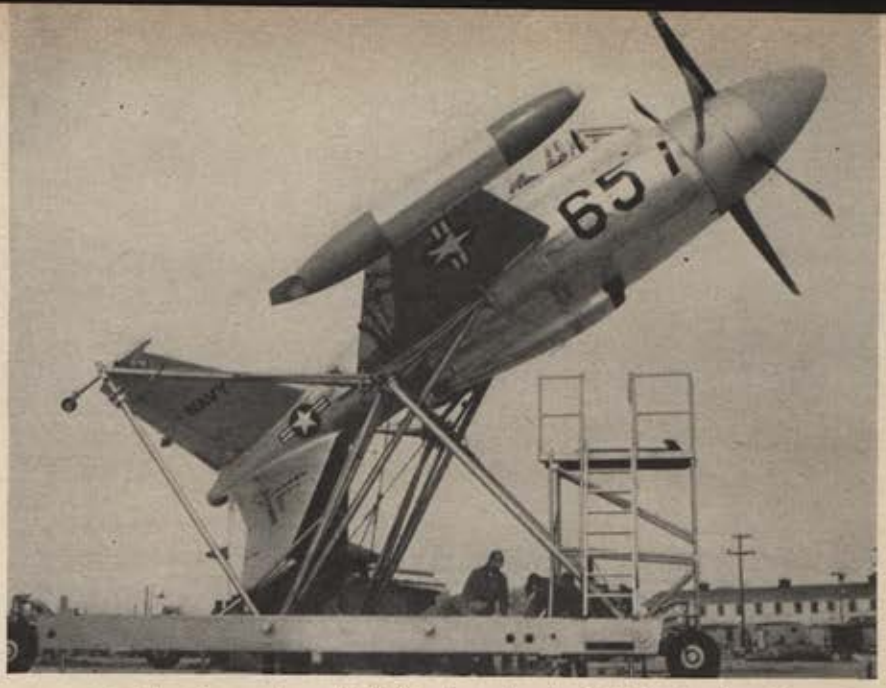
tailor-made nuclear weapons and this new delivery capability in pursuit of tactical aviation's threefold mission—air superiority, interdiction, and close support of friendly ground forces?

To lick the other fellow's air force, you obviously have to destroy his airplanes. But blasting one aircraft out of the skies with another is an extremely inefficient way of attaining air superiority, even though nuclear weapons may also eventually have an impact on air-to-air combat. However, for the time being there must be an easier way. And there is. A combat aircraft spends roughly ninety percent of its time on the ground. So the first target of tactical atomic airpower consists of the enemy's airbases. You not only knock out his aircraft but you destroy the facilities which support them. The enemy has to start from scratch. In the case of a typical airfield, the over-all destruction caused by one eighty kiloton bomb might be achieved only by the delivery of some 16,000 tons of conventional bombs. It is readily apparent that the sortie requirements for equivalent destruction with conventional bombs are completely impossible. It would be practical to attack parked aircraft only.

If the enemy counters this with dispersal of his airfields, we must answer, as is entirely possible, with so wide a range of nuclear weapons that no target is too small to be lucrative.

The number of sorties required to do the job of interdiction is likewise reduced almost immeasurably through the employment of nuclear weapons. If the enemy resorts to widely-dispersed operations, nuclear warheads are becoming plentiful enough and can be tailored to make even the attack of individual tanks wise and feasible. However, it would make a lot more sense to expend the nuclear weapons on more lucrative targets in the rear areas, like POL (petroleum-oil-lubricants) and supply dumps, bridges, tank parks, rail marshaling yards, fuel storage areas, large convoys, and the like. Some place behind the battle zone, the enemy must occasionally concentrate his military forces—and tactical-atomic forces can now sweep deeply into enemy territory to destroy them there. In a typical example of an interdiction target, a steel-truss bridge which formerly required several hundred tons of high-explosive, now can be rendered permanently useless with a modest-sized A-bomb.

The targets associated with the close support mission—the enemy's forces on the ground—are likewise vulnerable to atomic attack. For example, it is comparatively easy to spot artillery emplacements from the air, but not so easy to knock them out with conventional bombs. With nuclear weapons the need for accuracy is not nearly so great. Close is good enough. The same is true for troops whether massed for an assault or widely dispersed. For example, a division—widely dispersed as it would be when faced by an atomic threat—would suffer heavy casualties and severe damage to divisional equipment if attacked with a one-megaton bomb.



Lockheed's version of VTOL aircraft, the XFV-1, developed for the Navy. We know that Russia has a similar design.

These specific examples indicate the major impact which nuclear weapons can have on tactical air warfare, both increasing its striking power and reducing the force requirements. Thus, tactical air-atomic operations have been endowed with new dimensions of military effectiveness and logistic feasibility. And the meaning of this is that we can now fight and win decisively any local conflict the Soviets care to start.

The Red forces in Korea could have been annihilated, for example, if the Inchon landings had been accompanied by simultaneous atomic bombing. True, the Inchon landings did rout the North Korean armies—but tactical atomic annihilation would not have left these armies the option of regrouping and fighting the UN forces again. And perhaps the commanding general of the Chinese Peoples "Volunteers" would have then encountered some difficulties in getting his "recruits" to cross the Yalu.

Had we fought decisively in Korea, there might be no acute crisis in Indo-China today. There again, the gallant garrison at Dien Bien Phu could have fought to a gallant victory—instead of a gallant defeat—if we had given it timely tactical atomic support. Alas, today Korea is a stalemate and each passing day makes Indo-China more difficult to save. But there is no reason to compound these errors in future local conflicts only to gain cold comfort from the bromide that "history repeats itself."

There are those who maintain that the decisive use of nuclear weapons in local wars is impossible, that nuclear weapons cannot be localized,

The Convair XFY-1 could make any small field an air base.

and that their use would inevitably mean an all-out conflict. This argument assumes that the Soviets would enlarge a "brushfire" into total nuclear war before the time when the Reds are sure they can strike a decisive, initial nuclear blow against SAC and major US cities. Furthermore, those who caution us not to use nuclear weapons decisively in local wars now have advanced no sound proposals for dealing with the Soviet menace in the time period just ahead, when the Soviets—as well as the US—will have great numbers of nuclear weapons. They forget about a warning by Sir Winston Churchill, who said, years ago:

"What will happen when the Communists get the atomic bomb themselves and have accumulated a large store? You can judge yourselves what will happen then by what is happening now. If these things are done in the green wood, what will be done in the dry? If they can continue month after month disturbing and tormenting the world, trusting to our Christian and altruistic inhibitions against using this strange new power against them, what will they do when they themselves have large quantities of atomic bombs? . . . No one in his senses can believe that we have a limitless period of time before us."

We must face this situation squarely. The longer we wait to use the first tactical nuclear weapon, the more difficult it may become for us to do so. We must know the locations of "profitable" military targets in areas where the Soviets are fomenting trouble, we must anticipate and be prepared to accept and overcome such world censure as we may initially receive, and we must have our Allies in accord with the use of nuclear weapons by making them understand that their survival is also at stake. In this way our mounting tactical strength could be used to shut the door firmly to future local thrusts by the Soviets, terminating the present permanent drain on Allied military and economic strength.

But is there a greater dimension of the revolution in tactical air-atomic warfare? Will this revolution, in its fullest sweep, lead to any basic changes in the doctrine and concepts of tactical warfare? There is one school of thought in the Air Force, a minority but growing, which believes that the answer is: "Definitely yes!" And the key to the answer, this group says, lies in the increasingly deep penetration radius of range-extended tactical aircraft.

Just unveiled—the Navy's new baby attack bomber. The A4D has a 30-foot wingspan, eliminates folding.

If this group is right, the ability to destroy targets progressively deeper within the Soviet Union brings tactical aircraft into an ever-closer partnership with the long-range bomber. Thus, tactical airpower has acquired usefulness far beyond its ability to localize and win peripheral wars and, in fact, has become at least a junior partner of strategic air in the role of deterring all-out war, and winning it should it come.

In Western Europe, for example, tactical atomic airpower, well dispersed and armed with nuclear weapons, could act as the same kind of deterrent to the westward sweep of the Red ground forces that SAC does against the Soviet intercontinental bombers. And its growing ability to penetrate the enemy heartland could reinforce the deterrent ability of SAC, in that, to launch and win a decisive victory and avoid instantaneous and overwhelming retaliation, the Soviets must not only knock out SAC, but might have to knock out our tactical atomic airpower as well.

Of course, no one claims that tactical airpower can become our prime deterrent. There will always be an over-riding need for an intercontinental US strategic force with such overwhelming capability that the Soviets will have no room to speculate about the outcome of launching a surprise attack against the US. But US tactical air-atomic power, based on European soil is convincing evidence of our determination to hold Western Europe. As such, it helps overcome some of the present apathy and fear in Europe that "liberation" in the next war would come only after the present West European regimes are liquidated and European cities destroyed.

Let's inform our Allies that, in addition to devastating the Russian bear's lair, we are also able to kill the bear itself.

To achieve these greater objectives, we must exploit fully every delivery capability for striking back in a variety of ways, should the Soviets attack.

Thus, if properly exploited, the new striking power, range, and mobility of tactical air-atomic power measurably raises the ante in the gigantic poker game we are playing, with the destiny of the world at stake. The revolution in tactical warfare may give us one more deterrent with which to buy the time we need to abolish aggressive war entirely as an instrument of national policy. Then, and only then, will mankind move out of this dark age of peril and learn at last the meaning of "Freedom from Fear."—END

A Pulitzer Prize-winning Editorial

From *The Boston Herald*, November 12, 1953

Defense in an Air Age

By Don Murray

Editorial Writer, *The Boston Herald*

DEFENSE Secretary Charles E. Wilson told his press conference that "new strategic plans" might bring an end to the "balanced forces concept."

This is the best news we've had in a long time. We'd like to see him take the lead in destroying that dated and dangerous idea that the services should get an equal share of defense appropriations.

We have long argued that the only way this nation can have an adequate defense and a sound economy is by the establishment of radical priorities between services.

We felt that the Truman administration budget, although it recognized the dominant position of airpower, did not go far enough. We felt that the first budget under the present administration slipped back to a more traditional balance between services, making easy, middling economies instead of difficult, radical economies.

Mr. Wilson now has said in part, "The relative military strength of the services in military equipment, personnel, or cost will depend upon the changing world conditions that must be met, the strategic plans, the deployment of forces, and the roles and missions of the services. It must also include the effect on all services of new weapons and what is often referred to as changing technology."

These are words of wisdom which will anger all conservative military leaders, the strategists who are preparing to fight the Japanese at Guadalcanal or the Kaiser at the Marne.

Our potential enemy is a great land power whose greatest asset is manpower—manpower in the scores of millions, elemental manpower bred to live off the land, moving forward with primitive means and almost primeval determination.

The leaders of Russia plot from the center of a great circle. They can apply pressure out wherever they wish and have no fragile supply lines to protect, as we do. They are aware that their immoral system—and fanatic faith in the end justifying the means—gives them the advantage of initiative.

Can we restrain this force? Can we eventually make the circle of their power shrink? Yes, most certainly. But we must take advantage of our technology to do it.

We must match their mass with our mobility, counterattacking like a swarm of bees, not like a steam roller. We must be able to react to their inevitable initiative with globe-shrinking speed. We must be able to deliver paralyzing blows to the solar plexus of their great land mass.

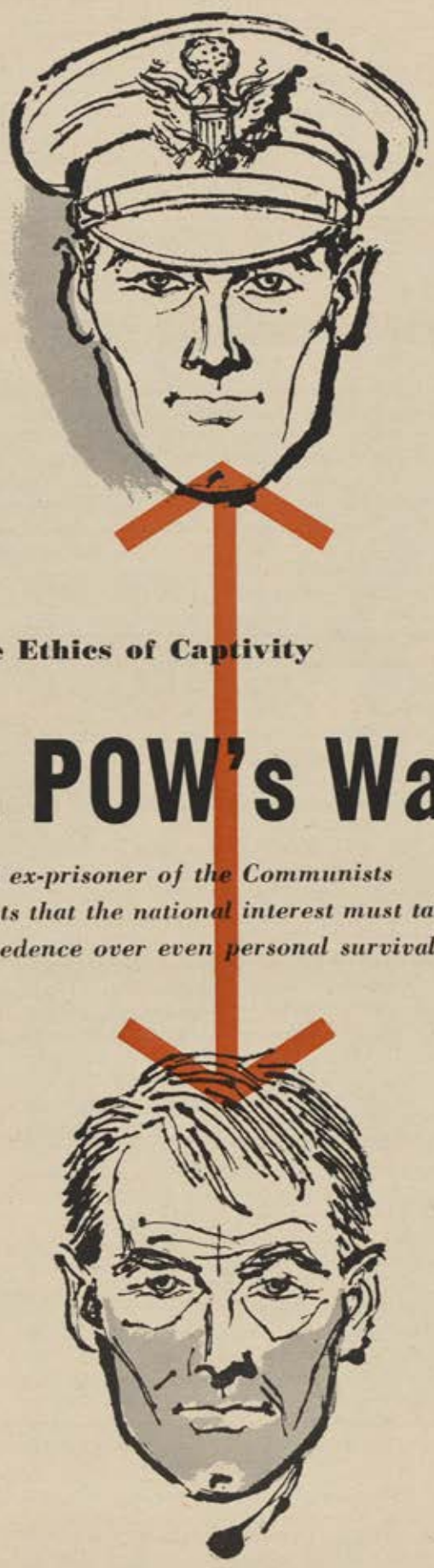
We can do these things only through the full utilization of airpower armed with atomic weapons. Our offensive striking power must have first priority, and our defense against Soviet airpower must be second.

Both the nature of our enemy and the progress of our technology have dictated that strategy. And the nice thing about it is that military power which fulfills that concept of modern war can be achieved through a financial and manpower saving if the obsolete, the traditional, the unessential is ruthlessly subjected to unemotional examination.

We want the best force, not the best balanced force. We're with you, Mr. Wilson.

Editor's Note:

Don Murray, whose editorials on national defense in *The Boston Herald* won him a Pulitzer Prize in May, is a precocious fellow. Only 29, he got his military indoctrination the hard way, as a paratrooper in the 17th and 82d Airborne Divisions in Europe. Here he rose, as he says, "to the exalted rank of PFC." After the war he resumed his interrupted education and finished three years' work in two at the University of New Hampshire. He started at the *Herald* as a copy boy, in the time-hallowed newspaper tradition, went through the reporting mill and by December 1951 was writing editorials. The one we reprint on this page is part of the series which received the Pulitzer Prize. It appeared in the *Herald* on November 12, 1953. His material has also appeared in *The Saturday Evening Post* and will, we hope, appear in future issues of Air Force Magazine. He's from Quincy, Mass., now lives in Wellesley, a Boston suburb. No ivory-tower editorialist, he gets around the country for his background, including a tour of SAC bases last summer.



The Ethics of Captivity

A POW's War Is Never Over

This ex-prisoner of the Communists insists that the national interest must take precedence over even personal survival

By Maj. David F. MacGhee

ONE OF the major worries plaguing military personnel, should they become prisoners of war of the Communists, is that of the relationship between military responsibilities and personal survival. The problem of survival in POW camps borders on basic animal instincts. There is no other situation in the world where human association produces more inhumane treatment of men by his fellowman. The ethical behavior of personnel in the hands of the enemy is a grave responsibility which no American can ignore, if human values and standards of conduct are to contribute further to the greatness of our nation. During the 1,030 days that I was a prisoner of war in Communist hands in North Korea, it was not food, nor medical care, nor clothing that was our greatest need. It was the need for devoted, utterly unselfish leadership.

Confusion about a complex problem in human relations has been created in the public mind simply because the American press has focused attention on the cart instead of the horse, on human interest and sympathy stories instead of what is required in the national interest. This misdirection of public opinion has rocketed the cart into the horse, and unless a halt is called, the deterioration of leadership potential in our armed forces will continue to grow as the cart pushes the horse further down the hill of moral bankruptcy.

We as Americans are guilty of confused thinking on two counts in the battle for men's minds: first, that we can be neutrals or participants as we see fit; and, second, that this battle ends when we can no longer shoot at each other. It is this latter fallacy that has created a considerable part of the current misunderstanding of the problem and resulted in misguidance of public opinion. Von Clausewitz has said that war is a continuation of diplomacy by other means. The Communists have stated that war is the highest form of struggle and that a man must be on one side or the other. What do these concepts mean to you and me? They mean that the struggle for men's minds and for the supremacy of a "way of life" is a continuing struggle of varied means, weapons, and intensity.

The well-armed and supported soldier is capable of participating in the struggle with maximum individual intensity and effectiveness. The burning question is whether his capture relieves him of responsibility for continuing the struggle by other means, and alone if necessary. Of course you will answer this question in the negative, for to answer it otherwise is to yield to the enemy, to desert the principles for which you were militarily willing to sacrifice your life a short while ago. If our way of life was worth fighting for on the battlefield, it is no less worth fighting for now that you are on the wrong end of the gun, surrounded by superior numbers, unarmed and totally without external support!

"How can I continue to fight?", you ask.

Herein lies the answer to the problem of conduct of captured personnel, past or future, as well as a basis for better training of future personnel. Did the captive continue to defend our way of life, or did he take a neutral position or aid the enemy for purely personal reasons? Personal apathy toward the enemy is the line of separation, the line where moral principle is yielded to the desire

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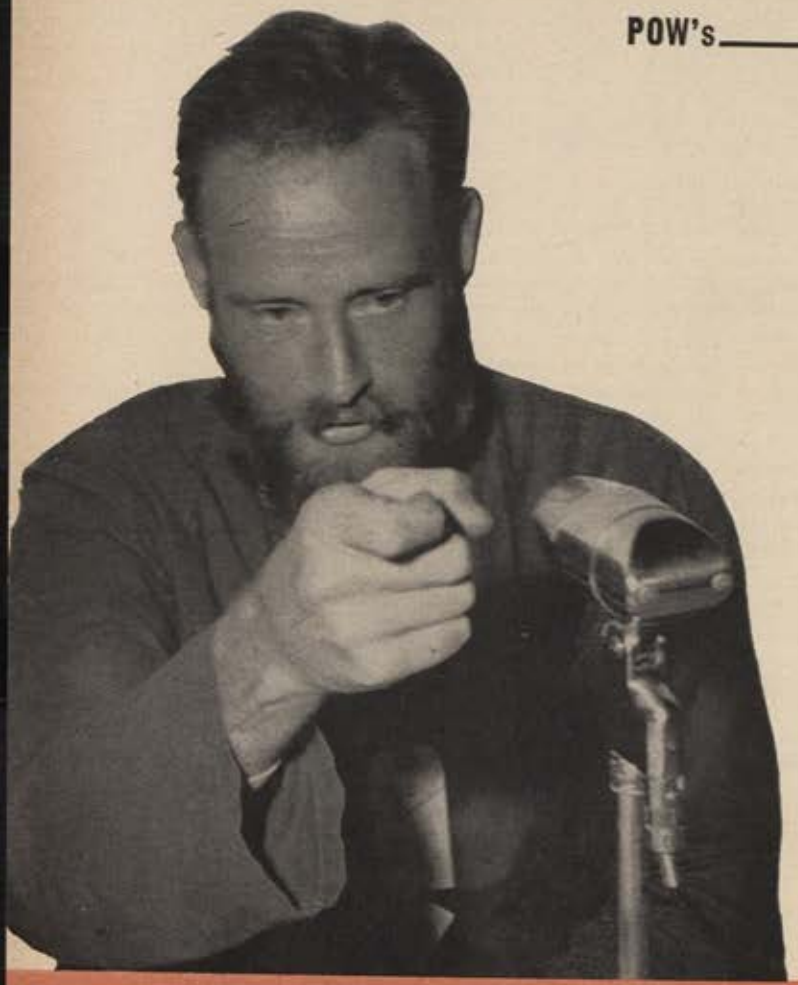


The author, here shown at a press interview immediately after repatriation, was an observer on the first B-29 that was shot down in Korea, November 10, 1950.

for personal survival, the dividing line between positive and negative leadership, between resisting the enemy and helping him.

Life in a Communist POW camp offers many means for continuing the struggle: by examples of the superiority of the principles of the American way of life in action in day-to-day prison camp life, by acting and taking stands in accordance with what is morally right for us as Americans.

Ingenuity, cleverness, intelligence, resourcefulness, patience, and courage are the weapons. The battle will usually have tangible form as it reflects preparations for an escape, open resistance to propaganda demands, or ideological argument. Defeats and retreats will occur—but the important thing is: that the struggle be continued by whatever means are feasible at the moment and under the given conditions. May I give an example of what I mean—the enemy will respect you only so far as you respect yourself. He will test your moral fiber to the maximum and exploit to his benefit any weaknesses he finds. Your peace of mind and degree of success will be directly proportional to the strength of your moral principles.

An officer was captured after his surrounded unit had run out of ammunition. His Communist captors asked if Gen. George Marshall was a good man or a bad man? The officer replied that General Marshall was a great American general. He was immediately knocked to the ground by a blow with a rifle butt. After he had picked himself up, he was asked the same question over again. His answer was the same: "General Marshall is a great American general." He was not subjected to further mistreatment; and, what is more important, he had established the level of his moral integrity. It was only a little battle, but he had won respect for himself, his service, and his country.

Throughout the next three years, this officer followed the course that thirty years of life in America had taught him to be morally correct for Americans. Sure, he lost battles. Once when food was cut off to his group of fifty POWs for refusal to go along with a Communist propaganda measure, he retreated, and as a command decision, ordered the men to sign, meanwhile taking full leadership responsibility as a commander. To him it was a humiliating defeat, but the important thing was that he never quit, that he continued to give leadership! He fought the ideological battle at every opportunity. He helped sparkplug resistance to the Communists' forced study program which resulted in a victory of principle when the Communists abandoned it in the spring of 1952. He struggled for better living conditions for the POWs and simultaneously helped guide actions aimed at defeating military interrogation, making the Chinese look down on the Koreans as inferiors, and making the Koreans hate the Chinese as conquerors—"Oriental Ayrans"—to drive a wedge between them. He fostered a will to mass resistance. There were successes and defeats. Finally he became a casualty. The Communists isolated him from the body of the POWs. But still the battle went on.

By the impact of his personality and actions while being disciplined, he established respect for himself which resulted in one of the Chinese "peons" ushering him into the "hancho's kitchen," pushing aside Chinese officers and interrogators while proclaiming his American "guest" as a "Number One, Ding How" as they proceeded to the head of the chow line. It was a small victory for our American way of life, and a humiliation for the Chinese brass who promptly retaliated by placing the officer in solitary confinement. Defeats? Yes, he had them, but the important thing is that he continued to fight for what he believed in with the means at hand. He had been willing to sacrifice his life on the battlefield, and after capture he was still willing to sacrifice and suffer while following to the best of his ability the course morally correct for Americans.

There was an agonizing shortage of leadership which not only reflected poorly on the armed forces but degraded the armed forces in the eyes of officers and enlisted men. It played directly into the hands of the Communists—facilitating humiliation of our way of life and increasing materially Communist ability to split us, and to minimize or divert the strong undercurrent of resistance so noticeable among the non-field grade element. On the whole, conduct evidenced not only a fear of punishment by our captors and an unwillingness to lead resistance, but on innumerable occasions, an eagerness to take the easy way out, to avoid personal risk and discomfort.

The conditions of life as a prisoner of war under the Communists emphasize the need for leadership development predicated upon the ability to acquire and hold the support of subordinates on the basis of an individual leader's character, emotional stability, the logic of his thinking, the impact by example of his conduct, his personality, judgment, and powers of persuasion. The Communist authorities can be expected to do everything possible to invalidate distinctions of rank or service, courtesies between ranks, and to destroy national pride. In addition, any action initiated by a person having more rank than his supporters will "bring the roof down on him" if the Communists can

establish that he is supported only because of his rank, or if he is supported because of threats, or fears on the part of recalcitrant POW elements, of subsequent military court-martial. Leadership of resistance based on sound arguments with a clear definition of the position as one morally correct for Americans in the long run engendered respect by the Communists for the view of that leader and usually a willingness to hear those views. On some occasions the Communists altered their demands. On other occasions they just made it plain that they were the ones holding the gun, and the leadership was isolated from the body of the POWs as the only method of invalidating that leadership.

Our discussions of this problem of leadership produced the following observations. Weak or opportunist captured personnel almost invariably showed lack of confidence in themselves, emotional instability, erratic judgment, a desire for personal survival more intense than any moral principle, personal fear of pain or solitary confinement, and above all else, a longing to avoid making decisions. Captured commanders' performance, prior to and then subsequent to capture, when viewed by subordinates present under both conditions, evidenced the same shortcomings in leadership under both sets of conditions. Leadership predicated on the "I am not running for mayor" principle usually had the unstinted support of the POWs and fostered an utterly unselfish willingness—first, to "take it"; and second, to enlist supporters who would immediately step forward and pick up leadership, when leaders were lost as a result of Communist counteraction.

Finally it was obvious that a considerable number of officers were being elevated to grades which should consist of the highest degree of leadership potential, and yet when viewed from below, these men obviously lacked that leadership potential, be it evidenced by either a willingness to sacrifice "wing men," a continual "buddying up to higher commanders" or "chickening out" in a POW camp.

Since my repatriation I have talked to many people. Invariably their approach to this problem of leadership and the national interest has taken on subjective considerations to justify their failure to come to a clean-cut, personal decision on the knotty question of conduct of captured personnel. Why? Because they fear public opinion? Because they are ignorant of the leadership requirements involved? Or because they prefer to avoid making a decision for which they might be subject to criticism until they have to! This shirking of responsibility is an acknowledgment of moral bankruptcy. The actions of a few individuals must never be allowed to outweigh the national interest nor to encourage deterioration of the moral fiber of our people due to misguided humanitarianism. To excuse ourselves on such grounds as "I wasn't there," "Maybe I could not have taken as much as he did before I broke," etc., is an escapism which really constitutes dereliction of duty. It is the duty of every officer and NCO to know

(Continued on following page)

About the Author

The Spartan overtones of Major MacGhee's philosophy of prisoner-of-war behavior might come with ill grace from someone who had not experienced personally the horrors of Communist captivity. But Major MacGhee knows whereof he speaks. He spent almost three years in POW camps, subjected much of the time to the physical and mental tortures to which others unfortunately succumbed.

Thirty-four-year-old David Forrest MacGhee entered the Army Air Forces as a cadet back in 1941, was commissioned as a navigator. Twenty-five missions in B-17s with the 8th Air Force earned him a Distinguished Flying Cross, the Air Medal with three clusters, and a trip home, where he instructed in combat crew training. Along the way he picked up a Soldier's Medal for rescuing crewmen from a crashed B-24.

He stayed in the Air Force and went to Korea as a B-29 observer in September 1950. On November 10, 1950, he bailed out of the first B-29 to be shot down by MIG-15s and was not repatriated until September 5, 1953. He now is on duty in the Psychological Warfare Division, Directorate of Operations, Headquarters, USAF. He's from Moorestown, N. J.; has a wife Betty, two sons, and a daughter.

Highlight of MacGhee's captivity came in May 1951, when he and two others escaped and came within inches of getting away, via boat, to the UN-held island of Cho Do, off the mouth of the Taesong River. Recaptured, MacGhee and his companions were brutally beaten, burned with cigarettes, and MacGhee actually had his toenails and fingernails torn out.

Far from cooperating with his captors, MacGhee became one of a slow-growing ring of organized POW resistance to Communist propaganda. These hard-bitten die-hards were contemptuous of the "progressives" who collaborated with the Reds, and dubbed them "canaries." Each time a "canary" was summoned to camp headquarters, the die-hards would chant in unison, "Let's all sing like the birdies sing." They circulated false information, like the story about the super-long-range B-108, which landed only once every three years so the crew could reenlist. They started their own anti-indoctrination group.

As a result of the latter conspiracy, MacGhee was sentenced to death before a firing squad. He was blindfolded, forced to kneel, and heard the bolts click on the guards' rifles.

But it was a bluff to force a confession to his anti-Red activities. He finally wound up in the camp for incorrigibles, "No-Name Valley."

Major MacGhee is frank to admit that, since he was captured before January 1952, he escaped becoming involved in the germ warfare confession hoax. But he does point out that there were those who took from twelve to nineteen months of the treatment and did not confess.

What his thesis boils down to is a plea for leadership and a sense of responsibility to one's self and to one's country. We think his ideas bear repeating and pondering on the part of all Americans, and particularly those in the uniformed services of their country.—The Editors.

At Tachikawa Air Base, Japan, on the long road home. Major MacGhee is officer kneeling. Flag was handmade in prison camp.

POW's

CONTINUED

clearly in his mind and to demonstrate clearly by his actions his grasp of the elements of national interest and security entrusted to him by the American people who pay his salary.

Past and future conduct of captured personnel must be analyzed exclusively on the basis of national interest and security and not on personal survival considerations. Human sympathy must not be allowed to pervert principle nor excuse weakness nor bad judgment. "Brainwashing," "menticide," and a multitude of other psychiatric rationalizations for improper conduct must not be allowed to mask weak moral fiber or facilitate further its malignant development.

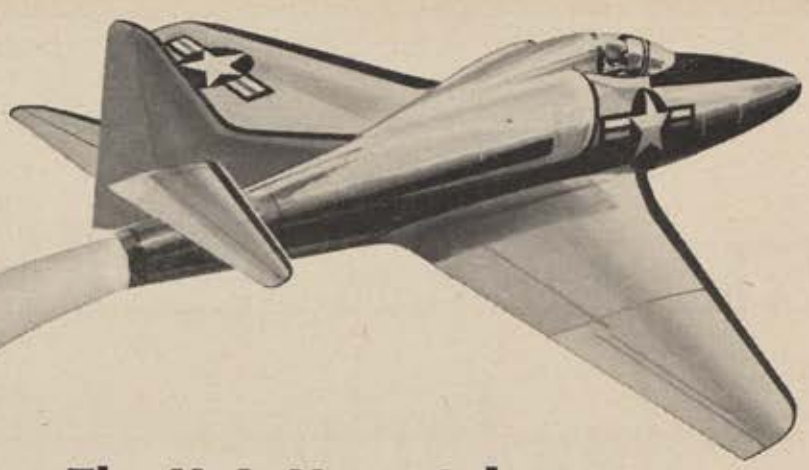
Our country has become great because the principles underlying our moral fiber are based on the ideal of human dignity and freedom. The preservation of this concept dictates that national interest and security must be paramount over selfish interests of any individual or group of individuals in our society. If an action aids or abets or gives comfort to an enemy, our national interest has not been properly supported.

The officer corps of the armed forces of our country in theory is made up of the cream of the leadership crop of our nation. The more rank the individual has, the greater his leadership responsibility, and the greater the requirement for positive and affirmative demonstration of that leadership. The demonstration of that leadership has not only a valid requirement in a given situation, but also as it affects future leadership. The demonstration must reflect backwards to compatibility with service honor and tradition, and into the future in such a fashion that our senior officers may be looked up to by our children with a justifiable trust that they will be led by men of high moral courage following time-tested service traditions in protection of the interests of the American people. The failure of leadership, rationalized as a desire for personal survival, cannot be condoned in our armed forces.

When an individual exercises his right to wear the uniform of a member of the armed forces of the United States, he also accepts the possibility that at some indeterminate date he may lose his life while defending the interests of the American people. What seems to be forgotten is that the oath of allegiance does not have any blank spaces for the individual to fill in, stating his preferences as to when, where, or how he prefers to die! He knows that if he is deployed against superior enemy forces in protection of an element of the national interest, he must defend that position and the principles for which it stands, even to possible sacrifice of his life in that defense —be it by "calling down our artillery" upon himself at his outpost or alone in the hands of the enemy, as the conditions of the struggle demand. To place individual survival or comfort above principle is to destroy our nation.

"Where do my rights fit in?", you ask. They say that the instinct for personal survival is the strongest of all animal instincts. The answer is simple. The line of separation between man and animals is conscience—the ability to determine right from wrong. I have yet to meet a POW who was unable to tell right from wrong. However, I've met a few who knew wrong, and did wrong, because that was the easiest course of action. Whenever a man allows an animal instinct to subvert his religious principles or his code of honor so that he dishonors the uniform he wears or his country, his conscience will make the rest of his life one of hell on earth! There are many, many men who would gladly die for their country. But it takes little courage to die instantly.

For men who failed to measure up to the stature of the cloak of responsibility with which they were clothed, we should show unlimited Christian compassion and understanding, and assist in their rehabilitation to positions of use in the American community. But to ignore our national interest and subvert leadership responsibilities to psychiatric rationalizations or to individual considerations of human desires of personal survival is to embark on a course of national moral bankruptcy.—END



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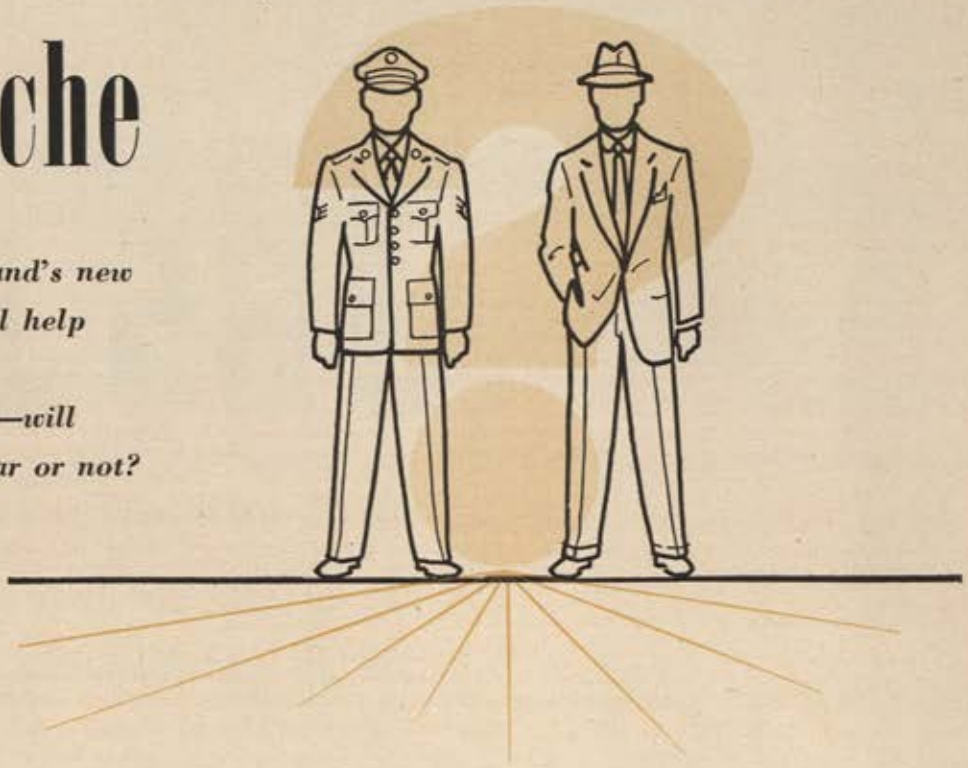
The Air Training Command's new recruiting assignment will help provide the aspirin, but the big question remains—will that airman re-up this year or not?



A Special Report

IT HAPPENED in an advanced electronics course at Keesler Air Force Base, Miss. An airman was making himself quite a reputation as a brilliant student. The instructor supervisor, a major, came by one day to see for himself.

"You seem to have a genius for electronics," the major said after watching the airman for a while and asking him a few incisive questions. "You've got a real future in the Air Force."

"Maybe so, sir," the airman replied. "But I'm getting out as soon as my enlistment is up."

The major shook his head in resignation. "I suppose one of those civilian firms has already got to you," he said, referring to a practice among some manufacturers of keeping tabs on promising students and offering them jobs as soon as they can leave the service.

"No, sir," the airman retorted emphatically. "I'm going back to selling real estate!"

This case highlights many of the elements in the manpower problem the Air Force faces in the coming months. In fiscal year 1955, beginning this month, USAF expects to lose almost 200,000 people. The great majority are at the airman first class and staff sergeant level, skilled men who cannot be replaced overnight.

This represents the biggest exodus from the Air Force since the demobilization stampede of 1946. By particularly unfortunate timing, it occurs at the same time that the Air Force labors, under austere financing, to build our air strength to a point which will raise the odds on our national safety and lend authority to our international commitments. Yet this loss of skilled men and their replacement by individuals of lesser capabilities reduces the combat effectiveness of the Air Force.

The Air Force operates on a four-year enlistment for its airman personnel, and it was just four years ago this month that USAF got the green light to expand its forty-eight group Air Force to mount the air war in Korea and strengthen our air units at home and on overseas bases.

Now with the Korean battles ended, or at least dormant, and with the Air Force not actually engaged elsewhere in a shooting war as of this writing, the first of the 1950 enlistee crop is eligible for discharge. Indications are that some ninety percent of this group has decided to get out of the service.

The task of minimizing the inevitable damage to the Air Force is shared by all its major commands. But the one primarily responsible for refilling the ranks with individuals as well prepared as they can be to take over the jobs of those who are leaving is the Air Training Command. This month ATRC observes its eleventh anniversary, the appointment of a new commander, and assumption of a new mission.

ATRC was born on July 7, 1943, with the merger of the AAF's Technical and Flying Training Commands. Its new commander, fourth

(Continued on page 35)

NORTH AMERICAN HAS BUILT MORE AIRPLANES THAN ANY OTHER COMPANY IN THE WORLD

A new F-100 *Super Sabre* in level flight smashes through the sound barrier over a remote test area creating a gigantic shock wave—the Sonic Boom.

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Called "mysterious thunder" when first heard, Sonic Booms have demonstrated to Mr. Average Citizen the fact that we have entered the era of everyday supersonic flight. The mere idea that an airplane flying through the air can produce a sound "like thunder on a clear day" may seem fantastic. Actually a Sonic Boom is a perfectly natural occurrence . . . a sort of gargantuan "pop"... brought about by a jet plane flying faster than sound. Very much like waves made by a motorboat on a lake . . . a jet creates gigantic shock waves in the air . . . so immense, that when they reach us on the ground, they sound like thunder or a rumbling explosion.

Once a surprising new sound . . . the cause of Sonic Booms is now understood, and positive steps minimize the probability of Booms over our homes. For instance, North American began early testing at supersonic speeds over remote areas. These experiments have led to rigid control of all flights. Today, the aircraft industry and the Armed Forces prevent disturbing Booms by making supersonic flights at extreme altitude or away from our cities and towns.

While you read these words, planes designed and built by North American . . . like the F-86 *Sabre* Jet and the new F-100 *Super Sabre*—America's first operational fighter to fly at supersonic speeds in level or climbing flight—fly vital defense missions without disturbing your daily life.

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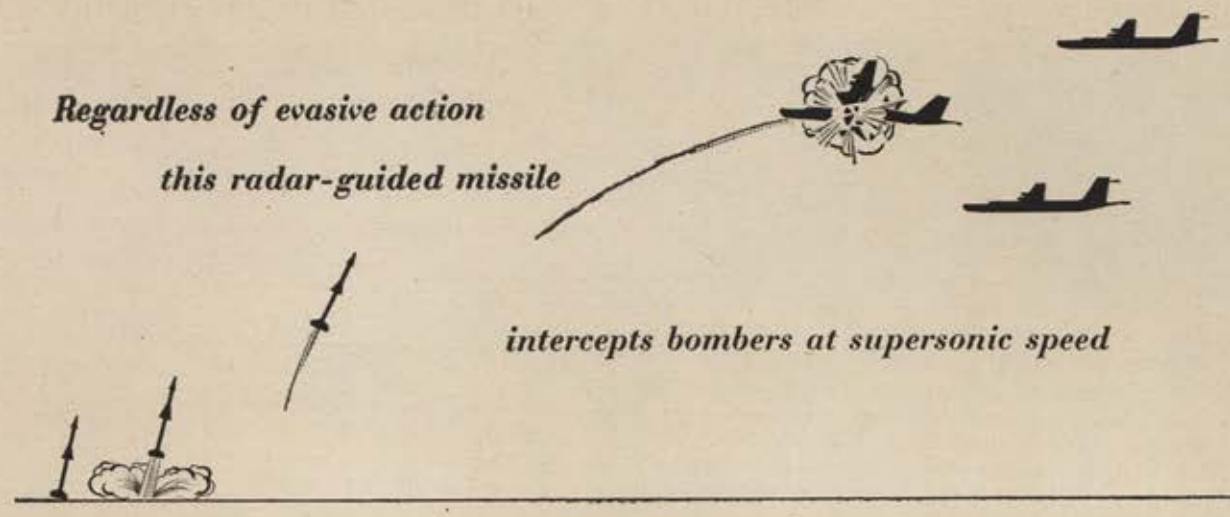
years ahead in aircraft . . . atomic energy . . . electronics . . . guided missiles . . . research and development.

Regardless of evasive action

this radar-guided missile



intercepts bombers at supersonic speed

—the Douglas-built Nike

Now going into service as part of our nation's air defense system, the Army's *Nike* has already brought down high-flying, radio-controlled bombers during simulated attack.

The Nike missile, now in volume production at Douglas, is directed by a guidance system which keeps it "on target" despite any evasive action.

At the micro-second of intercept, Nike's warhead explodes. The target is destroyed. Highly mobile, the entire system can be moved by air, used with troops in the field, or to replace anti-aircraft guns in defense of fixed installations.

Selection of Douglas to design Nike recognizes leadership in missile engineering. Selection to build the missile in volume recognizes another Douglas "plus" —manufacturing dependability.

Depend on *DOUGLAS* First in Aviation

in its history, is Lt. Gen. Charles T. Myers, just back from the Northeast Air Command, who takes over this month following the retirement of Lt. Gen. Robert W. Harper, ATRC's commander since October 1948. ATRC's new mission is to take charge of all Air Force recruiting. (As of July 1, the Army-Air Force Recruiting Service was split up, although Air Force and Army continue to share joint examining and processing facilities.)

In terms of personnel strength, number of aircraft, and physical inventory, ATRC is USAF's biggest command. Its strength, currently in excess of a quarter million, consistently runs from twenty-five to thirty percent of the USAF total. It has 5,500 operational aircraft, of which some 2,200 are jets.

This considerable investment is the inevitable result of ATRC's mission to fill the Air Force's need for skilled personnel. It costs from $3,000 to $15,000 to give an airman formal training—most of it only to the apprentice level—and from $25,000 to $75,000 to train combat-ready pilots, observers, and other air crew members. It is with these figures in mind that Air Force Secretary Harold E. Talbott has, perhaps conservatively, placed the Air Force's loss in skills alone this year at about $2 billion.

What can the Air Force do to cut this loss? The obvious answer is to get more airmen to reenlist. If this could be done, the individual skill level would rise and, with only a small turnover each year, the training requirement would be considerably reduced.

In approaching this objective, USAF has attuned itself to the gripes of departing airmen and is seeking to make Air Force life more attractive and rewarding. Secretary Talbott has plunged into a vigorous defense of fringe benefits and an attack on short-sighted or unthinking actions at all levels of command which give cause to legitimate complaints.

But it will not solve the problem exemplified in the electronics genius who would rather sell real estate. Some personnel experts, while they applaud the Secretary's determination and praise the salutary effect it will have in handling of airmen, believe he has set for himself and the Air Force an impossible, frustrating task. No matter what the Air Force does to make service life more attractive, they believe new gripes will appear to replace the old ones.

In substantiating this view, they point to opinion polls which showed that a big segment of the American public was never sold on the principles of our intervention in Korea, and an even greater percentage is opposed to our getting involved in Indo-China. In short, the public is not convinced, as the President and the Joint Chiefs of Staff appear to be, of the urgent necessity to develop and maintain a global Air Force, ready for immediate action.

In wartime no one, in uniform or out, argues about fringe benefits. Now, however, it seems almost everyone weighs the pros and cons of service in terms of personal gain instead of in terms of the serviceman's contribution to national defense. We are not in a war now, but there is every reason to believe that if war comes it will come on extremely short notice or none at all. In that event, the decisive air phase will be fought in a matter of days, or hours, with the men then in uniform. Hence the military's determination to build our strength-in-being and to keep alert.

To put this point across to the American public is far from simple, for Americans are weary after fifteen years of war and crisis, and disillusioned that despite sacrifices of men and resources, we seem no closer to a peaceful world than before. But until the point is well understood, by men in the military establishment as well as by the general public, the Air Force will continue to experience difficulties in gaining and keeping qualified men.

In this national climate, characterized by a civilian economy that offers almost unlimited job and career opportunities, too many intelligent and enterprising youngsters—the ones the Air Force has and would like to hold—consider uniformed service restrictive and a waste of time.

They would rather sell real estate, or make refrigerators, or build roads than participate in what they visualize as a series of dry runs against a day whose catastrophic possibilities they would rather ignore, and they envy their civilian counterparts who have avoided or minimized their service tours.

It is no secret that among the Air Force's volunteers are many who chose the Air Force blue to lessen the danger of being shot at, and to acquire skills useful in civilian life rather than those valuable primarily on the battlefield. This, they felt, was worth the four years they would have to serve as Air Force volunteers rather than the two-year tour as draftees. In one survey conducted during the Korean war, the USAF found that more than sixty percent of its "volunteers" chose the Air Force only as an alternative to less inviting military service. Now that the Korean war has ended, a higher percentage of American youth is willing to wait for the draft and a two-year tour, gambling that we won't be involved in another shooting war during that period.

This choice of alternatives exists even among many aviation cadets, traditionally a select group who volunteer both for the Air Force and for flying training. The attrition, or "washout," rate, which normally runs from twenty to twenty-five percent, has gone above fifty percent in a recent class. The classes filled by AF-ROTC graduates who volunteered for flying training in order to qualify for commissions this spring may show an abnormally high attrition rate, too.

Normally these new lieutenants will spend almost a year in pilot training, followed by a three-year active-duty tour, or four years in all. But many of them have discovered that, if they are eliminated from flying training, they are entitled to keep their commissioned status and yet are required to serve only *two* years on active duty.

FlyTAF has records on some AF-ROTC graduates who have developed a fear of flying after only a few minutes of dual instruction. Others have discovered physical defects that they withheld or ignored in earlier exams to qualify for commissions.

Those who take advantage of this loophole probably don't consider themselves unpatriotic or dishonest. They justify their actions to their own satisfaction and perhaps that of their friends on the basis that the Air Force wasn't entirely fair with them in its unilateral action to revise the AF-ROTC contract as they understood it.

The last-minute deal arranged between USAF and the Air National Guard to commission the rest of the 1954 AF-ROTC class who would otherwise have gone into service as airmen third class may also affect the attitude of those who applied for flying training in the belief that this was the only way they could get commissioned EAD. USAF has refused to permit them to accept the ANG agreement in place of flying training.

Worried about the high cost of high attrition, ATRC is seeking means to plug this loophole, possible by having eliminees reduced to airman third class, but this would undoubtedly cause a new flood of criticism, particularly since it is often difficult to determine genuine reasons for elimination from simulated ones.

(Continued on following page)

These are the circumstances under which ATRC takes on its newest mission, that of recruiting airmen, WAF, and aviation cadets for the Air Force. Despite the headaches in store, ATRC sought the job and accepts it readily because it is convinced that the recruiting function is an essential step in its job of preparing individuals for Air Force careers.

In its intra-command language, ATRC prefers the term *selection* to recruiting, which is indicative of the approach it would like to use with prospective airmen. Armed with up-to-the-minute information on priorities in each of its 200 training courses, ATRC's recruiters will theoretically seek out individuals qualified for training in the higher priorities; in any event, they will be unlikely to promise new recruits training in a field they know to be of relatively low priority. The result should be a smoother, better integrated reception for new Air Force personnel.

Under present conditions, however, this concept appears to be a luxury well beyond USAF's means. In fiscal 1954, with a recruiting goal of 100,000, USAF came up short by about 4,000. This year, even if ATRC "selects" every recruit it can lasso, it faces an almost impossible goal of more than 190,000, or an average of about 16,000 a month.

USAF recalls with bitter humor the men it lost early in 1953 when the Administration's budget retrenchment forced a cut in recruiting quotas to 3,000 a month at a time when, according to the late Gen. Hoyt S. Vandenberg, then Chief of Staff, the USAF could have acquired 12,000 a month. The men it was forced to pass up then would be eagerly welcomed now, but by now most of them are irretrievably lost, having been swallowed up in America's tight manpower market.

What are the alternatives? Either the USAF will have to get along with fewer men, which, under present austerity standards, means sacrificing the 1957 goal of 137 wings, or—for the first time since World War II—it will have to resort to the draft.

Since 137 wings comprise a rock-bottom Air Force in the view of the Joint Chiefs, the draft seems the only alternative. This will relieve the pressure on one element of ATRC only to magnify it many times in its training programs.

But here at least ATRC is on familiar ground. In its eleven-year history it has never had an opportunity to settle down to a predictable future. The result is that it has the experience and the confidence to adapt to constantly changing needs.

During the period of the Korean war, ATRC not only expanded from nineteen to a peak of forty-three bases, but it achieved almost a complete turnover in its training programs to keep pace with USAF's modernization. As an example, Sheppard AFB, Tex., where ATRC trains mechanics for conventional aircraft, soared to a strength of more than 20,000 early in 1951. Today Sheppard's reciprocating aircraft courses are down almost to skeleton strength while Amarillo AFB, Tex.—reopened in 1951 as an offshoot to Sheppard to train jet mechanics—is running close to capacity.

"ATRC is organized, staffed, and equipped better than ever before in its history," said one top staff officer in Washington recently. "They can't overcome entirely the loss of skill the Air Force faces this year, for skill is a combination of training and experience. If training alone could do it, we'd have no problems there. It's in the experience factor that we'll be hurting."

If its recruiters deliver four-year men, ATRC need make only minor changes in its programs to turn out men qualified to fill apprentice level jobs throughout USAF. It is also prepared to assist other commands in speeding the upgrading of airmen through on-the-job training and special instructions by means of mobile training units.

These latter techniques will inevitably be expanded in the coming year because budget considerations will limit ATRC's formal training load to about sixty percent of new men entering the service. The remaining forty percent will be assigned from basic training directly to helper level duties in operating units where on-the-job training will be provided to bring them up to apprentice and senior skill levels.

If, however, USAF must turn to the draft to meet its requirements, ATRC has ready at least two alternatives. The first is to offer formal technical training to four-year-enlistment men only, funneling draftees directly from basic training to operating units for on-the-job training. Should some draftees later desire to enroll in tech courses, they would presumably have to agree to a four-year enlistment first.

The second alternative, one which ATRC is already contemplating for some of the more complex career fields and those with high training costs, is to shred out the courses to train students only in certain phases of the field. For example, where it now takes twenty-two weeks to train an all-around electronics technician, ATRC would split the course into two or more sections of from eight to ten weeks each, which would turn out graduates qualified in only those phases of the work. One disadvantage of this plan is that two or more men would have to be assigned in teams to maintain the equipment. Another is that each shred-out skill would have to be identified with an additional letter or digit in the airman's AFSC, which would multiply classification and other problems.

The advantages, of course, are that an individual could be trained at less cost and in shorter time, giving USAF more time to use his abilities. Another advantage noted by one ATRC officer is that civilian industry might not be as eager to entice away from the Air Force an individual trained in only part of a skill.

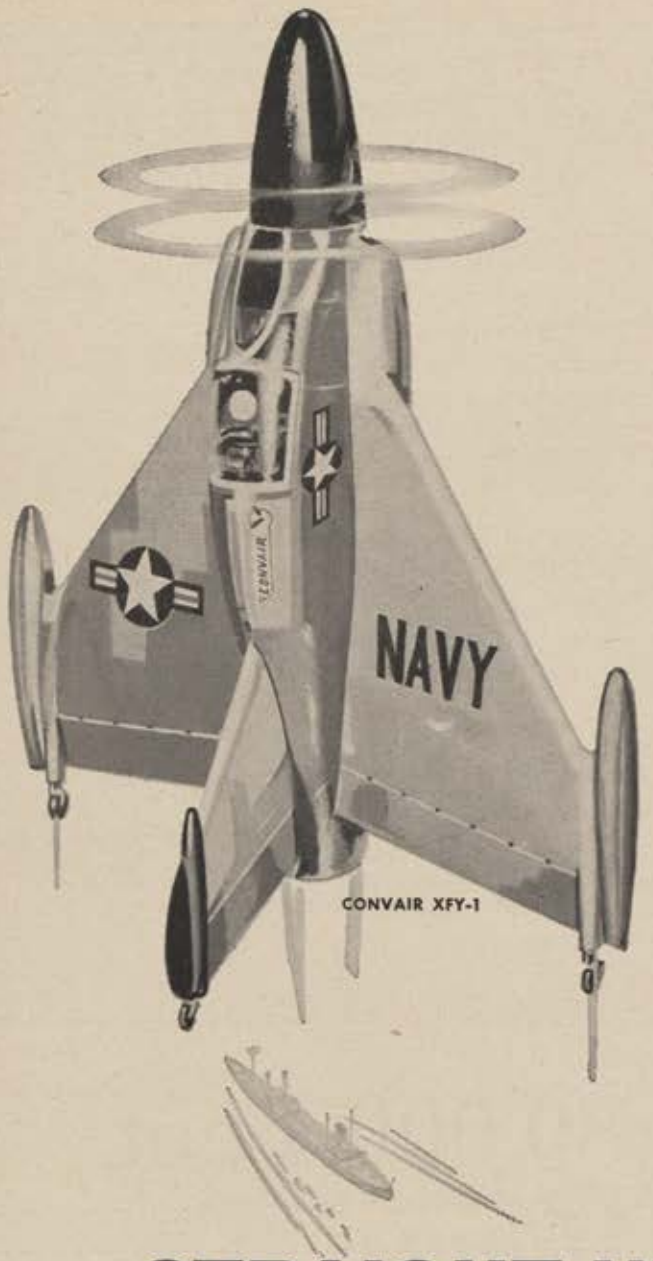
Whatever the restrictions that may be built into its activities, ATRC is confident that it has the know-how to work out ways to meet USAF's training needs.

In many other ways, too, ATRC is better prepared for its mission. As a result of a long and insistent campaign, it is now in on the earliest stages of development of new aircraft and equipment, both to remind designers and manufacturers that new materiel must be capable of being operated and maintained by individuals of average intelligence, and also to prepare training courses to teach the operation and maintenance of the equipment.

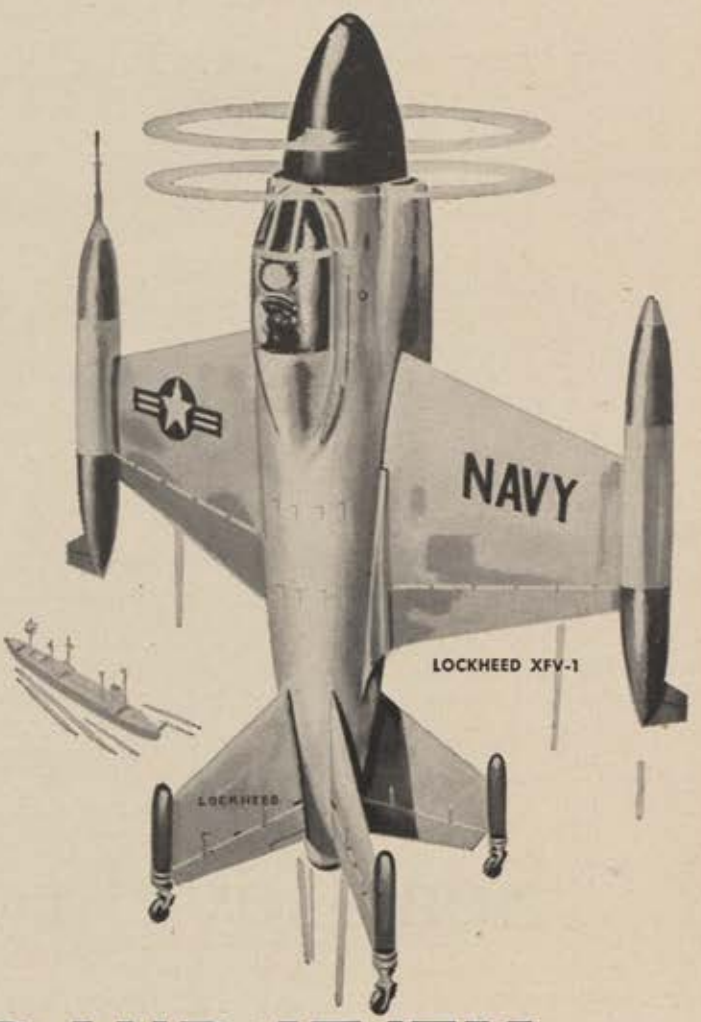
Both of these measures are more and more essential as the USAF progresses deeper into the electronic-supersonic air age. Until we develop hermetically-sealed mechanisms that will function properly for the life of the equipment, we must rely on the average American youngster to maintain them. This youngster is capable of developing a high degree of skill in his job, but only if he gets a thorough background in it. Lead time in training is growing longer and longer. ATRC will have to start early if the Air Force is to have people available when the new materiel goes into operational use.

To keep pace with modern design of combat equipment, ATRC—working with the Air Research and Development Command and various manufacturers—is helping to develop training devices which make full use of American ingenuity to demonstrate the theory and techniques of handling our newest air weapons. What Ed Link pioneered in the way of flight simulators is now being duplicated for all air crew assignments, and in addition special de-

(Continued on page 39)



CONVAIR XFY-1



LOCKHEED XFV-1

STRAIGHT UP AND AT 'EM

U. S. Navy VTO Fighters powered by ALLISON Turbo-Prop Engines

HERE you see the Navy's approach to the problem of providing protection for wartime convoys – two revolutionary new interceptors that take off vertically and can operate from the deck of a freighter or from any ship the size of a destroyer.

Both the Convair XFY-1 and the Lockheed XFV-1 are powered by an Allison twin-power section Turbo-Prop engine delivering more than 5500 horsepower.

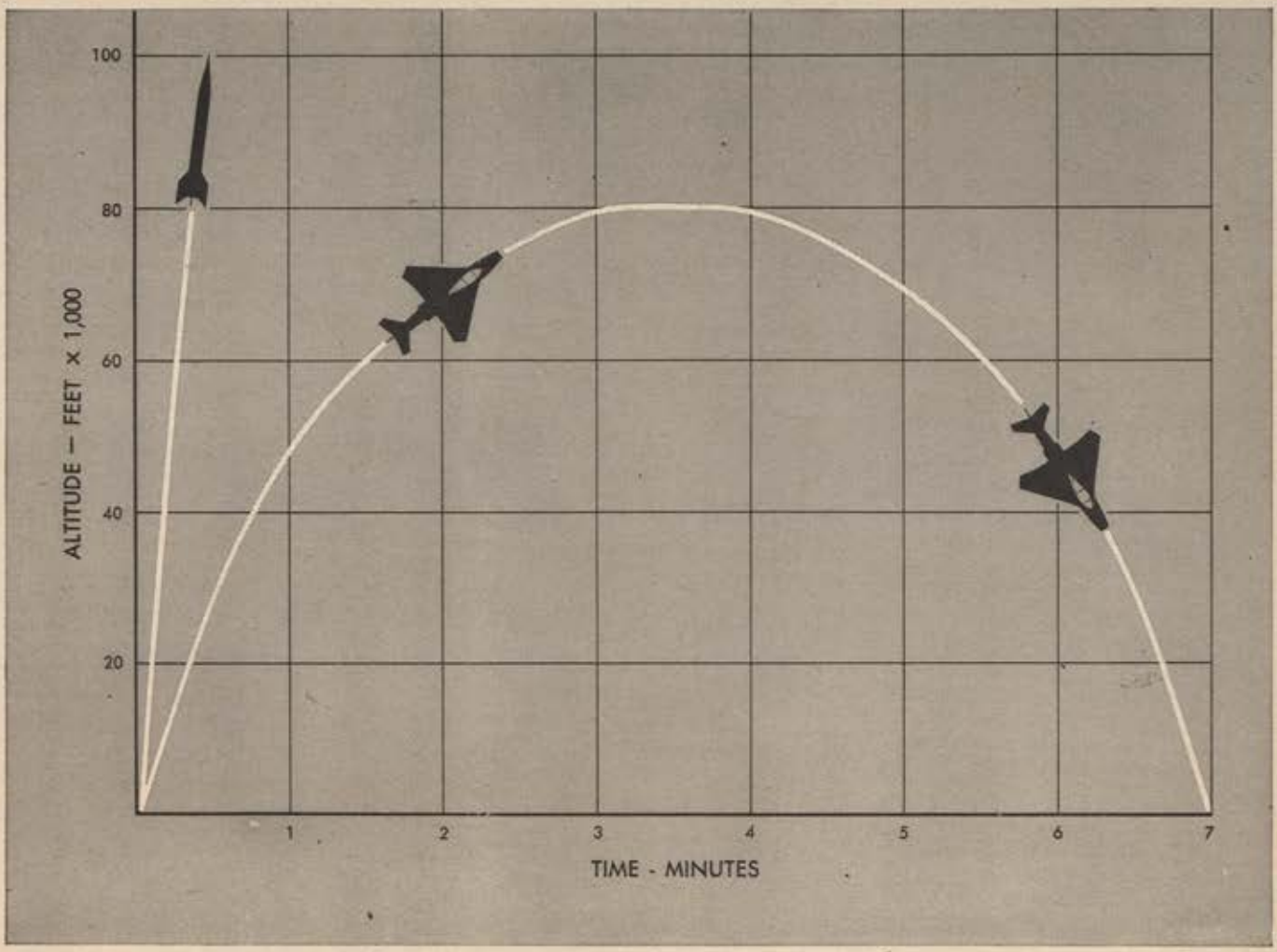
These new planes combine the take-off and landing features of a helicopter with the high-speed performance of a fighter plane. They require no runways, can land in a very small area. Without the dual rotation feature of the Allison T40 Turbo-Prop engine, flight control would be impossible during take off and landing.

Now undergoing preliminary testing, these experimental VTO fighters are further evidence of the far-sighted policy of the Bureau of Aeronautics in sponsoring Turbo-Prop development. Allison is proud to be supplying the engines for both of these planes—proud, too, of its leading role in the design and manufacture of this promising new type of aircraft power.*

**Also Builders of T56 Turbo-Prop engines and J71, J35 and J33 Turbo-Jet engines.*

GM GENERAL MOTORS Allison

DIVISION OF GENERAL MOTORS, INDIANAPOLIS, INDIANA



Sea Level to 80,000 Feet *in Three Minutes*

One of the many successful applications of Hagan Automatic Control is simulating flight conditions for testing jet engine components.

The automatic control system changes test chamber pressure (on a programmed basis), from sea level to 80,000 feet in three minutes. The program can be stopped at any altitude setting, for automatic control of a steady test chamber pressure.

For this installation, a programmed pneumatic signal dictates test chamber pressure to a regulator for conversion into a controlling signal to a hydraulic pilot valve. This, in turn, directs high pressure oil to a linear travel power unit for extremely fast and accurate operation of the controlling damper.

This Is Important

The same Hagan Automatic Control System is ready now for simulating flight to 80,000 feet in six seconds.

With the equivalent system utilizing Hagan electronic control elements, programmed trajectories from sea level to 100,000 feet in three seconds are obtainable.

HAGAN
HALL
BUROMIN
CALGON

Hagan Corporation

AERONAUTICAL AND SPECIAL PRODUCTS DIVISION
HAGAN BUILDING, PITTSBURGH 30, PA.

Control Systems for Automotive andAeronautical Testing Facilities
Ring Balance Flow and Pressure Instruments
Metallurgical Furnace Control Systems
Boiler Combustion Control Systems

vices are being developed to cut through problems of trouble-shooting and maintenance. These devices are also entering other fields of training in skills needed back of the flight line.

A good many problems remain to occupy the talents of ATRC's new commander. The instructor skill level isn't what it should be. ATRC still has need for more combat-experienced non-coms to teach in its tech courses, a problem it has pretty well licked in its flying and combat crew training courses.

In collaboration with ARDC's Personnel and Training Research Center at Lackland AFB, Tex., ATRC continues to work on basic research designed to improve the ways in which it transfers information from instructor to student, and to seek more effective means to make people efficient.

To assist him in unraveling difficult problems, General Myers may call on his civilian advisory board, made up of twenty-four outstanding leaders in the fields of education, business, and industry under its chairman, Dr. Samuel N. Stevens, president of Grinnell (Iowa) College. This board, which includes six committees to study and comment on aspects of ATRC's mission, was organized by General Harper. It is now preparing recommended solutions to problems presented to it by General Harper and his staff at its first joint meeting in April.

Despite its size, ATRC has a relatively small headquarters staff, numbering about 800 officers, airmen, and civilians. They are housed at Scott AFB, Ill., one of ATRC's technical training bases, about twenty miles southeast of St. Louis and not far from one of the three recommended Air Academy sites, at Elsah, Ill., near Alton.

From his headquarters in Yount Hall, named for the late Lt. Gen. Barton K. Yount, ATRC's first commander, General Myers and his staff exercise only policy and planning supervision over the command. Operational aspects are directed by ATRC's three Training Air Forces—FlyTAF, commanded by Maj. Gen. Gabriel P. Disosway at Waco, Tex.; TechTAF, led by Maj. Gen. Eugene L. Eubank at Gulfport, Miss.; and CrewTAF, whose combat training specialists are under Maj. Gen. Charles F. Born at Randolph AFB, Tex. The chart on pages 40-41 shows this organization in detail, together with the bases of each TAF.

This is the organization developed in the early days of the Korean emergency. "Training makes the difference," General Vandenberg often said in referring to our successes in the Korean air war, and ATRC has adopted that phrase as its unofficial motto. This accolade might lead to a complacent attitude about its training responsibility. ATRC prefers to regard it as assurance that it is on the right track and that it can carry on with full confidence in evolving still more effective techniques to prepare young Americans for Air Force careers.—END

ATRC's new recruiting organization, the 3500th Recruiting Wing, starts off with a truly man-sized task. Its first year goal is to recruit almost 200,000 people including 158,600 recruits, 24,000 people with prior service (other than reenlistees), 2,400 WAFs, and 7,600 aviation cadets.

This represents the biggest input since fiscal 1951 for the Air Force, and the biggest ever in a year when USAF has not been engaged in a shooting war.

The 3500th's headquarters is located at Wright-Patterson AFB, Ohio, a point which makes it readily accessible to a majority of the six group headquarters it supervises. Though termed a wing, it's on the same level as the three Training Air Forces, and its commander, Brig. Gen. Arno H. Luehman, reports directly to the ATRC commander.

The new wing has absorbed both the organization and the functions of the 3500th Personnel Processing Group at Waco, Tex., which formerly handled aviation cadet recruiting. Col. Willard G. Woodbury, former group commander, is now General Luehman's executive at wing headquarters.

The wing's six group headquarters operate within geographical boundaries identical to the Army areas in which they are located (see map, above). Though USAF is now exclusively responsible for its own recruiting, it continues to share with the Army joint facilities for examining and processing recruits; thus for administrative reasons it was decided to set up common boundaries. Group headquarters are located at Mitchel AFB, N. Y.; Olmsted AFB, Penna.; Chanute AFB, Ill.; Robins AFB, Ga.; Lackland AFB, Tex., and Parks AFB, Calif.

To save manpower, the squadron level has been eliminated and groups directly supervise recruiting detachments, roughly comparable to the Army's main stations, which in turn direct activities of recruiting teams, ranging from one to ten men each.

Based on an experience yardstick that one recruiter will sign up an average of eight people a month, General Luehman estimates that he will need some 2,000 recruiters at the doorbell level, plus administrative, technical, and supervisory personnel at detachment, group, and wing level. Total wing strength thus will be slightly above 3,000.

To train recruiting personnel and to make certain that they understand Air Force requirements, ATRC has already put into operation a recruiter's school at Lackland AFB, Tex. In an eight-week course, under direction of Lt. Col. Marvin Alexander, prospective recruiters are taught salesmanship, speaking, counseling, public relations techniques, and administrative procedures. When it gets into full operation, the school will graduate about 200 recruiters each eight weeks.

The AIR TRAINING COMMAND

1 **Commander**
Lt. Gen.
Charles T. Myers

2 **Vice Commander**
Maj. Gen.
Glenn O. Barcus

3 **Chief of Staff**
Brig. Gen.
Augustus M. Minton

4 **DCS/Personnel**
Col.
William H. Leach

5 **DCS/Operations**
Brig. Gen.
George P. Schlatter

6 **DCS/Materiel**
Col.
Kenneth A. Cavenah

7 **DCS/Comptroller**
Col. Victor H. King

8 **DCS/Programming**
Col.
Thomas E. Moore

9 **Inspector General**
Brig. Gen.
Frank H. Robinson

10 **Surgeon**
Brig. Gen.
Clyde L. Brothers

11 **Chaplain**
Col. Palmer P. Pierce

12 **Judge Advocate**
Col. Joel B. Olmsted

13 **Adjutant**
Lt. Col.
Francis T. Butler

14 **Information Officer**
Lt. Col.
James K. Bryan

15 **Headquarters Commandant**
Maj. Cloud L. McIver

3500th Recruiting Wing

16 **Commander**
Brig. Gen.
Arno H. Luehman

17 **Executive**
Col. Willard
G. Woodbury

TECHNICAL TRAINING AIR FORCE

18 **Commander**
Maj. Gen.
Eugene L. Eubank

19 **Chief of Staff**
Brig. Gen.
William E. Rentz

20 **Assistant Chief of Staff**
Lt. Col.
Andrew P. AuBuchon

21 **DCS/Personnel**
Col.
William E. Meyer

22 **DCS/Operations**
Col. George
D. Campbell, Jr.

23 **DCS/Materiel**
Col.
Francis H. Matthews

24 **DCS/Comptroller**
Col.
George W. Davis

25 **DCS/Installations**
Col. Nicholas Kane

26 **Inspector General**
Col. Harry
G. Montgomery, Jr.

27 **Chaplain**
Col. Leroy R. Priest

28 **Surgeon**
Col. Robert E. Lee

29 **Judge Advocate**
Col.
Charles L. Dollerhide

30 **Adjutant**
Maj. J. E. Wyatt

31 **Information Officer**
Maj. Vernon H. Hunt

32 **Headquarters Commandant**
Capt.
Frank O. Henley

FLYING TRAINING AIR FORCE

33 **Commander**
Maj. Gen.
Gabriel P. Disosway

34 **Vice Commander**
Brig. Gen.
Russell L. Waldron

35 **Chief of Staff**
Col.
Arthur T. Learnard

36 **DCS/Personnel**
Col.
Alexander W. Bryant

37 **DCS/Operations**
Col.
James C. McGehee

38 **DCS/Materiel**
Col.
Robert O. Butler, Jr.

39 **DCS/Installations**
Col.
Paul C. McBride

40 **DCS/Comptroller**
Col.
Dwight H. Bridges

41 **Inspector General**
Col.
Robert B. Collins

42 **Surgeon**
Col.
William H. Lawton

43 **Judge Advocate**
Col.
Albert T. Hayes

44 **Chaplain**
Lt. Col.
Russell L. Blaisdell

45 **Headquarters Commandant**
Maj.
Clarence A. Bingman

46 **Information Officer**
Capt.
William A. Day

47 **Adjutant**
Capt. Elmer L. Greek

CREW TRAINING AIR FORCE

48 **Commander**
Maj. Gen.
Charles F. Born

49 **Deputy Commander**
Brig. Gen.
Henry R. Spicer

50 **Chief of Staff**
Col.
Winslow C. Morse

51 **DCS/Personnel**
Col. Ellis B. Craig

52 **DCS/Operations**
Col.
Stanton T. Smith, Jr.

53 **DCS/Materiel**
Col.
Randolph L. Wood

54 **DCS/Installations**
Col. Stewart
A. Marshall, Jr.

55 **DCS/Comptroller**
Col. John E. Bodle

56 **DCS/Programming**
Col. Rex D. Fryer

57 **Inspector General**
Col. Calvin E. Peeler

58 **Chaplain**
Col.
Eugene Graebner

59 **Surgeon**
Col. Nuel Pazdral

60 **Judge Advocate**
Col.
Thomas R. Taggart

61 **Adjutant**
Col.
Emory W. Cuneid

62 **Information Officer**
Maj. John G. Rose

63 **Headquarters Commandant**
Maj.
Sherman S. Reed

TECH-TAF BASES

64 **Amarillo AFB, Tex.**
Brig. Gen.
Walter R. Agee

65 **Chanute AFB, Ill.**
Maj. Gen.
Byron E. Gates

66 **F.E. Warren AFB, Wyo.**
Col. William
A. R. Robertson

67 **Keesler AFB, Miss.**
Maj. Gen.
Harlan C. Parks

68 **Lackland AFB, Tex.**
Maj. Gen.
John H. McCormick

69 **Lowry AFB, Colo.**
Brig. Gen.
John T. Sprague

70 **Parks AFB, Calif.**
Col.
William T. Carpenter

71 **Sampson AFB, N.Y.**
Brig. Gen.
Wycliffe E. Steele

72 **Scott AFB, Ill.**
Col.
Carlisle J. Ferris

73 **Sheppard AFB, Tex.**
Maj. Gen.
William D. Old

74 **Bryan AFB, Tex.**
Col.
Arvid E. Olson, Jr.

75 **Craig AFB, Ala.**
Col.
Edward F. Rector

76 **Ellington AFB, Tex.**
Col.
Norman L. Callish

77 **Gary AFB, Tex.**
Col.
Stebbins W. Griffin

78 **Goodfellow AFB, Tex.**
Col. Robert B. Davenport

79 **Greenville AFB, Miss.**
Col.
Vincent W. Howard

80 **Harlingen AFB, Tex.**
Col. James F. Olive

81 **James Connally AFB, Tex.**
Col. Ralph Rodieck

82 **Laredo AFB, Tex.**
Col.
Weldon M. James

83 **Mather AFB, Calif.**
Col.
Sam Maddox, Jr.

FLY-TAF BASES

84 **Reese AFB, Tex.**
Col. Casper P. West

85 **Vance AFB, Okla.**
Col.
Chester P. Gilper

86 **Webb AFB, Tex.**
Col. Fred M. Dean

87 **Williams AFB, Ariz.**
Col.
George S. Brown

CONTRACT FLYING SCHOOLS

88 **Bainbridge AS, Ga.**
Lt. Col.
William A. Gunter

89 **Bartow AB, Fla.**
Lt. Col.
Donald E. Deffke

90 **Columbus AFB, Miss.**
Lt. Col.
Ethel B. Branham

91 **Graham AS, Fla.**
Lt. Col.
Evans Stephens

92 **Hondo AFB, Tex.**
Lt. Col.
Earl V. Riley

93 **Malden AS, Mo.**
Lt. Col.
Lewis S. Beale

94 **Marana AB, Ariz.**
Lt. Col.
Charles W. Sawyer

95 **Spence AB, Ga.**
Col.
William S. Chairsell

96 **Stallings AB, N.C.**
Lt. Col. Charles
B. Lingamfelter, Jr.

CREW-TAF BASES

97 **Laughlin AFB, Tex.**
Col.
Thomas L. Mosley

98 **Luke AFB, Ariz.**
Brig. Gen.
Turner C. Rogers

99 **McConnell AFB, Kan.**
Col. Louis E. Caira

100 **Moody AFB, Ga.**
Col.
Robert F. Worden

101 **Nellis AFB, Nev.**
Brig. Gen.
James E. Roberts

102 **Perrin AFB, Tex.**
Col.
Eugene D. Fletcher

103 **Randolph AFB, Tex.**
Brig. Gen.
John W. Persons

104 **Tyndall AFB, Fla.**
Col.
Bingham T. Kleine

An ***AIR FORCE*** Magazine Chart

THE END OF THE EARTH

THULE

By Edmund F. Hogan

Here's what life's like for our servicemen now on their year's tour at the USAF's Far Northern outpost. It's not Main Street but there could be worse duty

You have to get used to seeing the first sunrise of the year, not on New Year's Day, but around noon on February 23. In winter Thule has nearly total darkness but catches up in summer months when it's daylight around the clock.

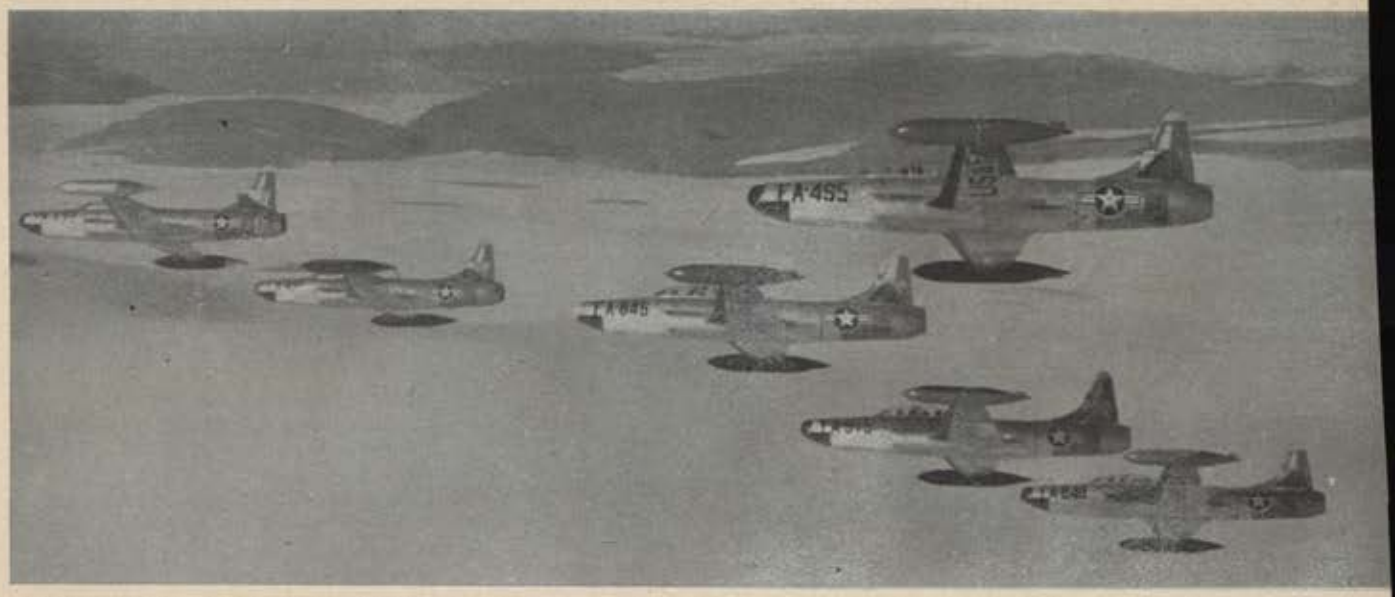
IN THREE brief summers an army of construction men built a $300 million air base some 700 miles above the Arctic Circle and only 2,200 miles from the heart of Russia. It lies in a great glacial valley in Northern Greenland and it is called Thule, which means literally, "end of the earth."

To some 4,000 persons, including army engineer and ack-ack troops as well as Air Force, Thule is home. Everything possible has been done to make things comfortable. But Thule is a long way from Main Street, USA, by any yardstick.

The tour at Thule is one year for everyone, although recently the stay of the 318th Fighter-Interceptor

(Continued on following page)

Airlift plays an important part of life at Thule, since in the winter surface ships can't use the ice-locked harbor. Above, a MATS Globemaster.



Lockheed F-94 Starfires of the 318th Fighter-Interceptor Squadron guard North America's vital northern air approaches. Pilots based at Thule face the twin hazards of fog in the summer and vicious winds that lash the land in the winter.

A polar bear and an iceberg decorate the sign over the entrance to Base Ops.

Construction at Thule presented unique problems due to a permanently frozen layer of earth called "permafrost." Foundations must be insulated from it lest buildings melt it and sink.

AF nurses are the only American women at Thule. At far right is Lt. Christine Stevens, who doubles as disc jockey answer to Red radio's "Moscow Molly." On her right, USAF Surgeon General, Maj. Gen. Harry G. Armstrong.

Squadron was extended by two months. You can't take your family and you soon learn that your biggest struggle is not against the Arctic elements but against loneliness.

Within two weeks after reaching Thule, you get a complete orientation on "Why You Are Here." Among other things, you're told "your wife, your sweetheart or your parents can't be with you. Don't brood about it. It won't do you any good. Find stimulating company and enjoy it."

So, recreation is stressed. The base hobby shop is equipped for about any hobby you might have at home. The library is large and well-stocked. It is also well-populated in off-duty hours. And Maryland University professors are sent to Thule as part of an educational program often termed the "best bargain" in the world. (See "Largest Campus in the World," AIR FORCE, May '54.)

This program permits high school graduates or those who have passed an Air Force General Educational Development Test to enroll in University of Maryland courses. Air

(Continued on page 46)

The READY ROOM

RESERVE AND AIR GUARD NEWS

For months what to do with some 4,800 **Air ROTC graduates** of this year had bedeviled the Air Force, Congress, and the students themselves. Air Force manpower ceilings precluded their being called to active duty as second lieutenants. Further, Air Force felt it would be unwise in any event to take them on in non-rated positions at a time when it is stressing pilot training to the ROTC. A decision was reached that would require the 4,800 to serve on active duty as airmen for two years. This was the situation a month ago.

Now, everything has changed 180 degrees. The Air National Guard surveyed its future requirements for non-rated officers and learned that at a future date it could use approximately 4,800—or the same number as there were ROTC graduates available.

The Air Force Division of the Guard Bureau sent this word to USAF through John I. Lerom, Special Assistant for Reserve and ROTC Affairs. It was a tailor-made solution to a knotty problem.

ANG commissions were offered to all ROTC graduates who would accept them. To date, some 3,500 have. All will be commissioned in the District of Columbia Air National Guard, purely to simplify administrative procedures.

These graduates will be ordered to active duty for training for three years. They will be sent to such schools as engineering, supply, administration, finance, and maintenance. Upon completing their schooling and qualifying for an AFSC, the ROTC grads will be assigned to Air Force organizations for on-the-job training.

After three years—or unless sooner relieved from active duty—these lieutenants will be required to serve three years with an Air Guard unit. If the total active duty time is under three years, the time to be spent in the Guard would be lengthened correspondingly. In all, it will work out that the ROTC graduates will have a six year obligation: three on active duty and three in the Guard.

Those who did not elect to take the Guard commissions will be required to serve the two years on active duty with the Air Force as airmen third class.

• • •

Air Force **Reserve nurses** have been authorized to train with hospital units of the ANG, the first time in the Guard's long history that women have served with it in time of peace. Six nurses in each of ANG's twenty-seven tactical hospitals will fill mobilization assignments. They will retain their Reserve status while training. There is a bill in Congress to authorize nurses to become members of the ANG but it is holed up in committee. The Guard's fifty-bed tactical hospitals are authorized fifteen officers, including the six nurses and sixty-seven airmen.

Some 180 Lockheed F-80 jet fighters assigned to the ANG are being modified at the plant. Above, work in progress.

Notes on the back of a Form 175 . . . Puerto Rico's "little air force," the 198th Fighter-Interceptor Squadron, has received its first T-33s and soon will be equipped with F-86s. The outfit has been flying the War II F-47 Thunderbolt . . . To improve ANG supply and administrative procedures, ConAC plans to create teams in each numbered Air Force which will work with units needing help . . . NGB says payment of airman's quarters allowance is authorized for periods of field training, despite absence of instructions to this effect from AF Finance Center. The authority is contained, however, in a ConAC letter of instruction on field training . . . ANG's annual gunnery exercise will be held this year at Gowen Field, Boise, Idaho, October second through ninth.

• • •

Some 22,500 Air Force Reservists will participate in fifteen days of **field training**, beginning this month. Approximately 14,000 will take their training as members of the twenty-three flying wings and two air depot wings. Another 8,500 officers and airmen will go on active duty in the US and overseas in individual assignments with Air Force units.

Thirteen of the flying wings will train at their home stations. Four wings will train at Atterbury, AFB, Ind.; two at Clinton County AFB, Ohio; one at Selfridge, one at New Castle, Del.; one at Larson AFB, and one at Norton AFB.

• • •

Some confusion surrounds the payment of the **uniform allowance** authorized Reservists under the Armed Forces Reserve Act of 1952. Only those who are active in the Reserve can qualify, according to the Pentagon. The allowance amounts to $50 and is payable every four years. However, between payments the Reservist must accrue fifty points per year and each year he must spend at least fourteen days on active duty. Reservists eligible for this allowance must apply through the units to which they are assigned.

• • •

The long-awaited study on the **new Air Force Reserve program** was still being awaited at presstime. The study moved to the Office of Defense Mobilization but that organization's Manpower Policy Committee tabled the recommendations which had been made. Net effect is that ODM must review these recommendations, after which they go to the National Security Council. Observers believe that the program will be released for public consumption this month.

• • •

Meantime, virtually all legislation affecting the Reserve is stymied in Congress. Legislators are not prone to move until they've had a look at the Administration's recommendation of the Reserve of the future. One bill, H.R. 9160, offered by Rep. Leroy Johnson, Calif., would permit the Reserve to enlist men before they reach the age of eighteen years and six months. The Guard can now do this and the young man is deferred from the draft so long as he remains a member of the Guard unit in good standing. Mr. Johnson's bill would put the Reserve on an equal footing with the Guard in the competition for recruits.

• • •

Recent inquiries on **promotions in Reserve T/O&E units** indicate that some Reservists believe the Records Center in Denver has the final say. Not so, report Reserve Affairs people in the Pentagon. The recommendation originates in the unit, they say, and moves through the normal chain of command to the numbered Air Force. There, the promotion is made or turned down. After the numbered Air Force okays a promotion, it sends the paper work to the Records Center which makes a final screening to see that all forms have been filled out properly and then cuts the order. The Records Center, therefore, serves an administrative—rather than a promotional qualifying—function.

• • •

A new Air Force Reg 45-10 sets up the procedures pertaining to **inactive duty training pay** and allowances for the Air Force Reserve. The reg supersedes one of the same number drafted more than a year ago and includes changes made in 1953.

Permafrost also means that pipelines must be enclosed in heated conduits above the ground, and sewage disposal calls for the use of heated trucks.

Pilots run into two hazards to flying. Fog is prevalent in the months of June, July, and August when warm, moist air circulates over the open water of North Star Bay. Winter brings the vicious winds, which pick up snow from the icecap and drive it furiously across the base, limiting visibility to near zero and causing great drifts.

Another phenomenon is the constant darkness of the winter months. From November until February it is night, no matter what your watch says. Mid-February to mid-April is the period of dusk. Then the sun rises and it's daylight all the time until mid-August.

The base has a few neighbors—in the former Thule Village—where there is a sprinkling of Danish homes housing the commissioner of North Greenland, a doctor, clergyman, nurse, radio operator and their families, including a few small children. But the village is off-limits, except by invitation. The Danes have graciously offered the commercial service of their Thule radio station to the Americans and will accept radiograms which are filed via Copenhagen and New York to families in the States.

Otherwise, there is isolation and confinement. In the winter, the hobby shop, the gymnasium, the library and the educational opportunities are stressed to dissipate boredom. In the summer there is some fishing, hikes and special service tours to the icecap. But no one wanders off alone and all who decide to inspect are cautioned to check in with the Air Police when they leave, report their estimated time of return, and announce their arrival when they return to the base.

The Officers Club is as finely-appointed as any in the States and the Airmen's Club was equally nice until it burned down last winter. One of the construction projects this summer calls for rebuilding a new Airmen's Club on the same site. It will be ready for occupancy when the long night comes again.

Why must 4,000 Americans spend a year in such a far-off place? The Thule orientation says "essentially, to provide our country with a base as close to home as possible from which our long-range aircraft can strike at a potential enemy and return."

But there are other reasons. Thule also contributes to giving the US an early warning radar sentinel. It serves as a classroom for cold weather operations; it teaches the methods of maintaining isolated sites in the worst of weather conditions. It provides on-the-spot training in Arctic experience, and if the Russians precipitate World War III, Air Force—and the nation—will have need of all the Arctic experience that can be mustered.

Despite the isolation and the danger of succumbing to claustrophobia, Thule does serve a useful purpose. I'm convinced of this, even after having been exposed to claustrophobia on a recent visit to our northernmost base.

Lt. Col. Paul Dorney of Air Force Logistics Plans in the Pentagon and I spent three days in our nine-by-twelve rooms in the transient barracks, prisoners of those vicious winds mentioned earlier. In that seventy-two-hour period we emerged from our building only long enough to struggle through the wind and blowing snow about two blocks to the mess hall.

When the winds get up in the 100-mile-per-hour class even the mess halls close. On these occasions no one moves outside. Each building has its own water supply, individual heating system, and a cache of emergency C-rations. These latter, it might be said in passing, still taste like the C-rations of World War II and Korea.

We learned that a radio is an indispensable item of equipment at Thule. The telephones in the barracks went out during our stay and principal contact with what was happening was through the base radio station. The fine PX stocks radios but if anyone is headed that way and has a small set, he'd be well advised to take it along. Colonel Dorney and I learned this the hard way. We first learned the mess halls were open by deciding to reconnoiter.

If ever you do get pinned down by the winds at Thule, you'll have plenty of time to inspect the plumbing system. This is probably the most ingenious that man has ever devised.

There are five main tanks: a fresh water tank, holding 1,000 gallons, including the pressure tank; a sump pump and tank, holding twenty gallons; a waste tank of 1,200 gallons; and a sewage tank holding 850 gallons.

The fresh water is hauled in trucks from a lake about five miles beyond the base and pumped into the fresh water tank. An electric pump lifts it into the pressure tank. The pressure tank feeds the showers and wash basins. This water then drains back into the sump and is lifted into the waste tank. The water from the waste tank flows into the toilets, which are equipped with the bathroom version of a wobble pump.

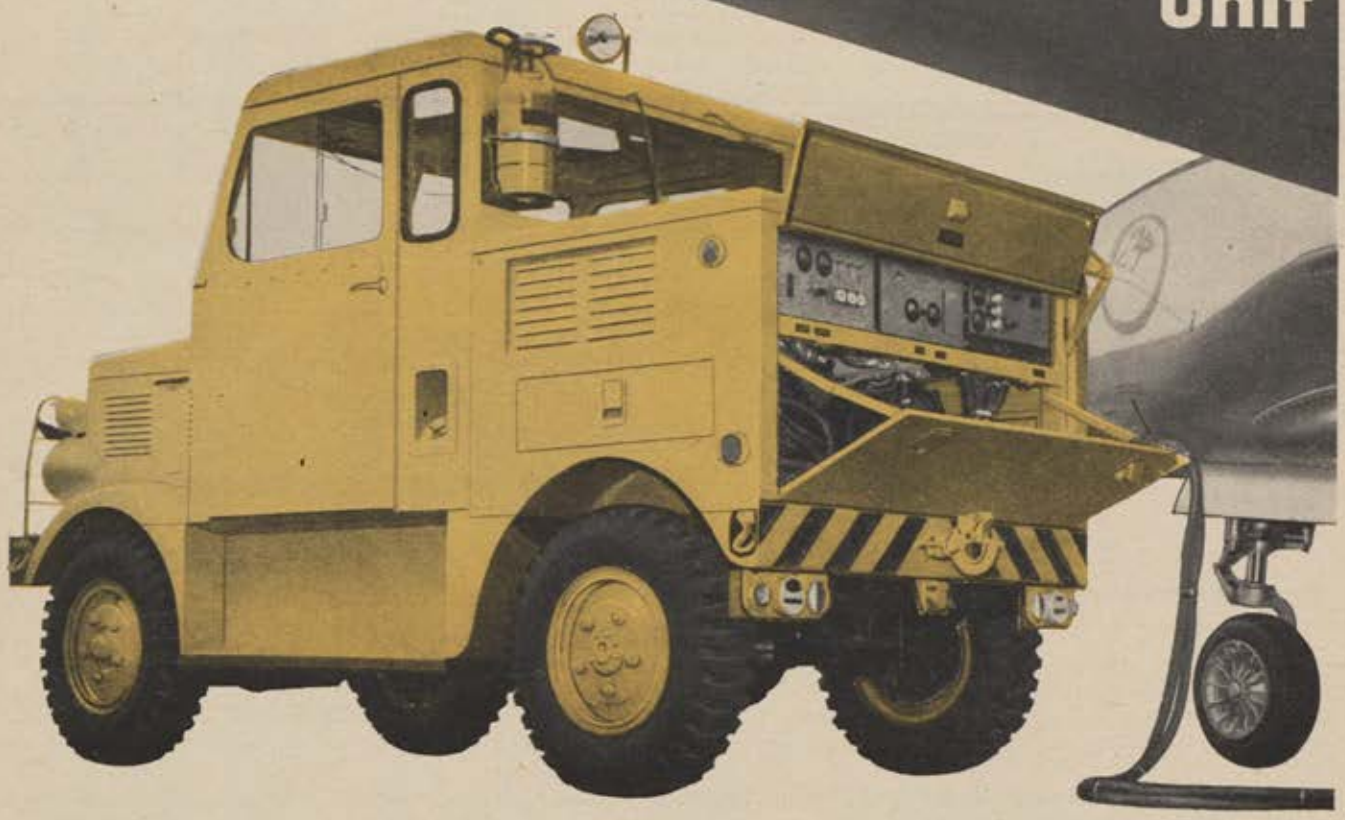
One thing is for sure at Thule: you won't have to write home for food. The chow at this most northern air base will rank with any served anywhere in the world.

Thule is isolation, but important isolation. Everything that can be done to make our people there healthy, happy, and alert is done.

A year at Thule is the sacrifice demanded of 4,000 Americans in the hope that the cold war will not turn hot but in the knowledge, too, that this springboard to the heart of Russia at the "end of the earth" could be worth all it has cost in money and lonesomeness, if it becomes necessary to use it.—END

"Breaking the ice" in Greenland is more than a polite social expression. Here an ice-breaker reaches Thule during the June "thaw."

one multi-purpose unit



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Life at Thule picked up some when General Myers opened the new Post Exchange last summer.

You don't have to sit around and whittle when hobby-shop tools are at your disposal.

THULE——CONTINUED

Force pays seventy-five percent of the tuition. The student pays the remaining twenty-five percent and a $10 enrollment fee.

Another off-duty spot is the gymnasium. It's a monstrous building, better equipped than many stateside counterparts. It has four basketball courts, eight bowling alleys, squash and handball courts, and rooms for boxing and wrestling. The frosting on this cake is a fine Turkish bath.

Once the biggest complaint was that there were no women on Thule. Now there are four—all nurses in the modern fifty-bed hospital. One, Lt. Christine Stevens of Arlington, Va., is probably the most popular person on the base.

Lieutenant Stevens doubles as a disc jockey on the base radio station KOLD. Her half-hour program is known as "Dreamland Rendezvous," and features jazz and popular musical favorites. Before Lieutenant Stevens arrived, the most popular artist at Thule was "Moscow Molly," the name given to the anonymous English-speaking gal who runs a disc jockey program beamed from Moscow especially to Arctic installations. The American nurse is a welcome change from Molly, who larded her program with commercials attempting to "sell" Russia.

The physical plant at Thule is a tribute to American construction genius. There are 114 barracks, forty-three heated warehouses, seven refrigerated warehouses, six large mess halls, two miles of runway, six hangars capable of holding the largest aircraft, vehicle storage buildings, and sundry others.

The Danish Government authorized construction of the base, and work began in 1951. The area had virtually nothing to offer except strategic location. The frozen soil is 1,000 feet deep. The summer lasts about four months. The balance of the year the region is bitterly cold, and winds sweep off the icecap at velocities up to 125 miles per hour.

The buildings are actually refrigerators in reverse. They keep heat in and cold out. An adaptation of insulated plywood panels used to line refrigerators is the standard building material. Known as "clements" panels, these are made by sandwiching fibreglass or rockwool insulation between two sheets of plywood faced with a skin of aluminum or stainless steel. More than 200 separate types were developed and more than three million were used.

The most serious construction problem had to do with laying foundations on permafrost, which is a permanently frozen layer of earth. Permafrost makes it impossible to use conventional methods of constructing foundations. It can be countered only by insulating the permafrost layer and building the foundations on top of it.

The huge hangars, with their requirement for concrete floors, presented a special problem. This was whipped by placing the concrete atop insulation which rested on pipes circulating cold air beneath the thick floors. If this were not done, heat from the buildings would melt the permafrost and the hangars would have settled and cracked.

(Continued on page 49)

The old bowling wisecrack, "Don't forget to let go," retains its savor when keglers gather at one of Thule's eight alleys.

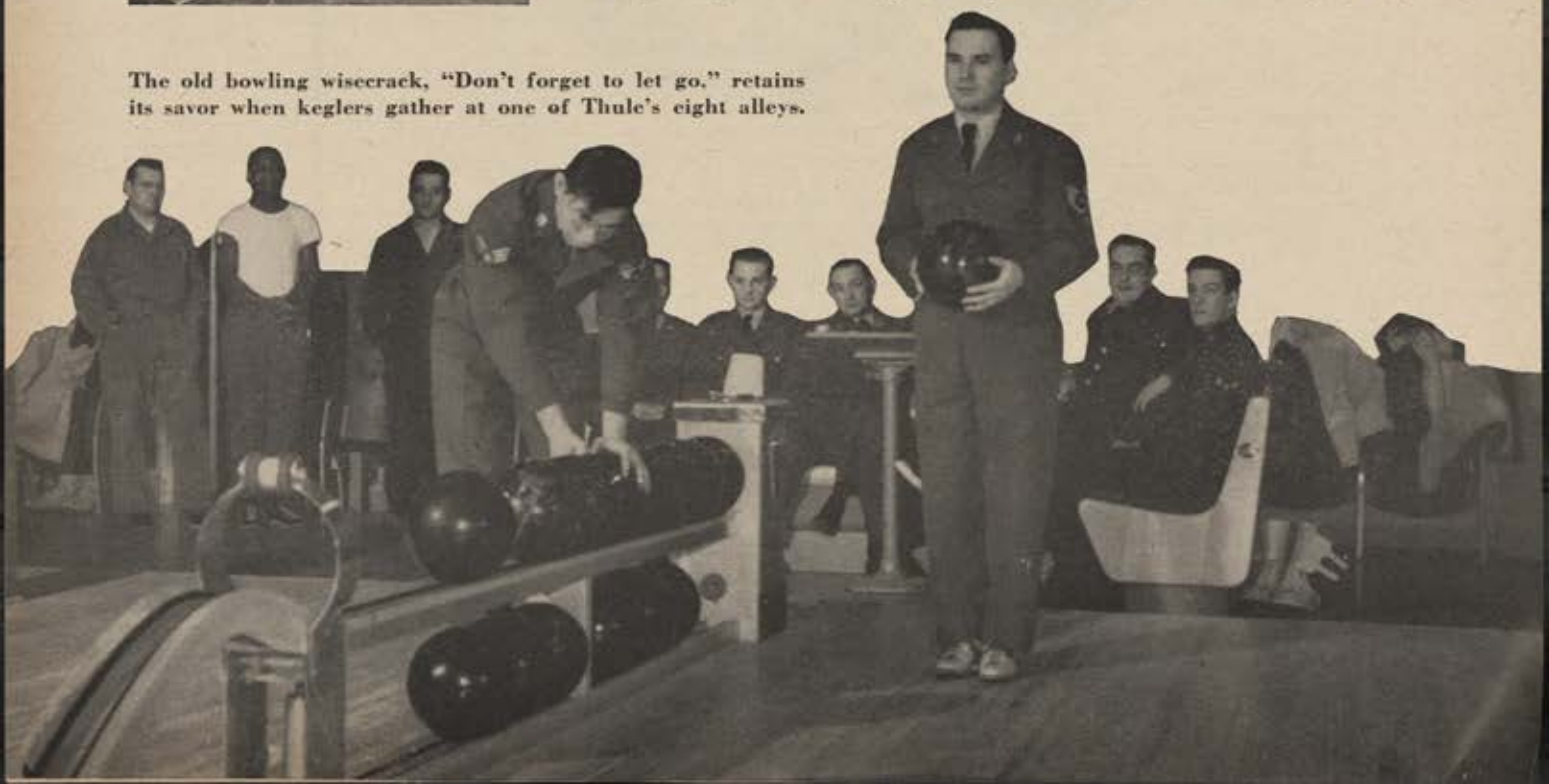

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Photo courtesy Boeing Airplane Co.

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LET'S RESURRECT THE DIRIGIBLE

Can the rigid airship fit into the air defense picture in a way that bolsters our early warning system?

The two essentials of air defense—early detection and continuous surveillance—get more important as bomber and missile speeds increase. We have over 3,000,000 square miles of continental USA ten miles high to defend, plus Alaska and Canada and many commitments around the world. That's a lot of territory.

One answer to effective and inexpensive early warning has been with us for some time, but has been generally neglected in our thinking and planning. Present airborne radar equipment is limited in range and effectiveness compared with larger and more elaborate ground-limited electronic devices on an aerial platform—the rigid airship, better known as the dirigible or zeppelin.

This suggestion may seem an effort to revive a "dead past," but the proved performance of the dirigible is still on the record. Technical developments now here, and others envisaged for the near future, make the dirigible more effective for certain purposes than it has ever been before. Let's look at a few angles.

Terrain obstacles often interfere with ground-based radar. A more serious drawback is the curvature of the earth, which leaves an uncovered gap beyond the horizon up to about 4,000 feet at present radar ranges. Airborne radar equal to ground-based equipment would wipe out most of this particular deficiency in performance.

There is nothing much one can do about the curvature of the earth except to get up high enough partly to nullify it. If that can't be done, more ground stations, more ships, more men, and more money—a lot more, are needed. At present, no heavier-than-air craft can carry radar equipment comparable to that of a ship or ground station. The dirigible can.

A major technical development to increase the usefulness of the dirigible is nuclear power. Because of the rigid airship's lifting capabilities and its comparatively large storage areas, it is more suited to the airborne atomic engine than any other aircraft.

At the request of the US Air Coordinating Committee, the Atomic Energy Commission recently made a brief study of the application of nuclear power to the rigid airship. A memorandum report of July 15, 1953, indicated that there would be major advantages in improved performance and longer range through the use of nuclear power.

The fuel cost of using nuclear power would be practically the same for any distance flown, whether 1,000 or 50,000 miles. More hours of flight do not require extra tons or even pounds of fuel. An atomic-powered dirigible could cruise for weeks without resupply.

In a magazine article Gordon Dean, a former chairman of the AEC, wrote:

"One place where the atomic engine can come into its own is in the now all-but-forgotten dirigible. A dirigible could carry aloft the heavy shielding required for an atomic engine much more easily than could the airplane. The danger of fire would be greatly reduced by the use of atomic fuels, for they will not burn in the sense that gasoline or oil will."

Radar-equipped dirigibles could patrol an area for weeks on end without need of resupply for either stores or fuel. Compact but comfortable crew quarters, plus the dirigible's huge load-lifting capacity, makes this feasible—particularly with nuclear propulsion. Routine inspection and maintenance of dirigible and electronic gear can be done in flight. Major overhaul would be done at base, as with ships and airplanes.

A number of rigid airships could provide a relatively permanent electronic detection umbrella and could greatly reduce the need for radar-equipped patrol aircraft. Dirigibles would also cut down the number of ground radar stations in isolated regions, with their difficult and costly supply problems. And a centralized supply point could serve several airships over a widespread area.

If there is need for a rigid airship to operate at a fixed geographic point, it can "establish" itself there either by hovering or mooring and continue in operation as a temporary ground-based GCI station or EW outpost. Mooring towers and ground facilities for EW airship operations can be very simple. No expensive facilities are needed.

Despite its size, the rigid airship can be camouflaged, particularly if the camouflage is designed for one specific area. And the airship could carry parasite jet fighters or rockets and missiles. Ground stations, radar aircraft, and surface vessels are also subject to attack, perhaps more so.

If other nations had continued to build dirigibles, perhaps we would not have been so negligent in this field as we have been. But they stopped because the only lifting gas readily accessible to other nations is highly inflammable hydrogen. But the United States is the only nation in the world with a plentiful supply of natural helium, which is non-inflammable and non-explosive.

The USAF, charged with the air defense of the United States, should consider the dirigible for its Early Warning program. Research should begin and, if study bears out the apparent merits of the dirigible for EW purposes, the USAF should push for design and construction projects, operational and strategic studies, personnel training, ground-base and ship patrol re-evaluation, and so on. EW is so important that no device that can improve it should be neglected.

Edwin J. Kirschner
Washington, D. C.

LET'S HAVE YOUR JET BLAST

In "Jet Blasts" you can sound off on any subject you want. Each month we'll pick the letter or letters we feel will interest our readers most and pay $10 for each one printed. Please keep letters under 500 words.—The Editors.

What Can We Afford?

Much has been said and written regarding the introduction of business principles and administration into government and military organizations, but little has been done to implement the idea.

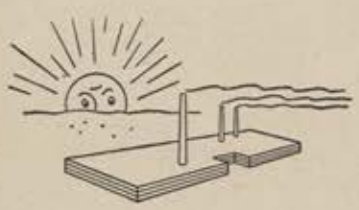
Business predicates its requirements for each of these factors on the basic question of need. The market for a product is determined, the facilities, equipment, personnel, and cost of production for a given amount is estimated. The funds are then procured and production is under way. Distribution then becomes a factor requiring constant attention. Assuming years of satisfactory operation at the end of each year, an estimate of the possible gross business for the ensuing year is made and on the basis of this estimate funds are allocated for raw materials, administration, planned rehabilitation, expansion, and advertising.

Government and military preplanning should be approached in much the same manner. An estimate of the country's worth and the value of the national product for an ensuing year should enable us to determine the funds required to meet government expenditures for similar factors as in business.

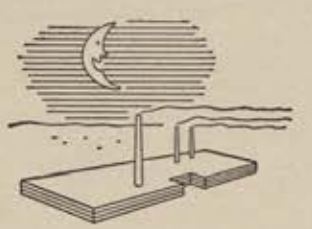
Assuming our national product for an ensuing year to be $400 billion, overall government appropriations might be set at ten percent maximum or $40 billion in time of peace. This distribution of this sum might be estimated on the basis of $24 billion (sixty percent) for government expenditures other than defense. This would provide $16 billion (forty percent) for defense. (This could provide us with defense forces of 2,500,000 based on a standard over-all cost of $8,000 per head per year.)

The division of the $16 billion among the defense agencies would depend up-

(Continued on page 55)



Time Fighters...



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Today, the record of AC's defense group speaks for itself. The quality and volume of "A" series Gun-Bomb-Rocket Sights — A-1A Bombing Navigational Computers — T-38 Skysweeper Fire Control Systems bear witness to that organization's efficiency.

If you have a problem in the field of complex, high-precision electro-mechanical devices, perhaps AC can be of assistance. Why not give us a call?

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FLINT, MICHIGAN

DEFENSE PRODUCTS of High Quality at Low Cost DELIVERED ON TIME

MISSILE BOOSTERS **by RMI**

From STAND-STILL *to SUPER-SONIC SPEED*

Rocket power provides the extra thrust needed to get heavy missiles under way.

RMI liquid propellant rocket engine boosters incorporate the most advanced design techniques.

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on the Joint Chiefs of Staff estimate of need. Let us assume that the Army's share of this sum was $5 billion, the Navy's $5 billion, and the Air Force's $6 billion.

In an emergency, the percentage of expenditures for over-all government should be increased to fifteen percent which, under the same assumption, would make $60 billion available, of which $35 billion, or fifty-eight percent, would be allocated for defense. Of this sum, the Army might be given $10 billion, the Navy $10 billion, and the Air Force $15 billion.

In the event of mobilization for war, the percentage for over-all government expenditures might be increased to $120 billion, or thirty percent, of which $100 billion, approximately eighty-three percent, would be allocated for defense.

It should be pointed out that, although it might be presumed that we could afford to spend any sum necessary for defense in case of war, the capability of industry to produce would govern, not dollars. Assuming further that a war might last several years, the limit of taxation is not an indefinable point.

It is believed that the assumption of these percentages for government would give stability to government, to taxation, and provide industry and the individual with increased buying power. Fluctuations in appropriations and taxation under this plan would vary with the national income.

Predicating Air Force appropriations in peacetime on the foregoing assumption that it would receive $6 billion, the question might arise as to what this should provide in the way of an Air Force structure.

The assumed appropriation might provide seventy wings of Regular Air Force with 600,000 military personnel and 250,000 civilian personnel.

The Reserve forces would consist of approximately one million Reservists which might provide fifty-seven wings of Ready Reserve, fifty-seven wings of Replacement Reserves (to be used as units or fillers as necessity dictated), and 800,000 to 900,000 support Specialist Reserves.

From the assumed appropriation, the cost of the Reserve Forces Program might be $600 millions per year for five years. This would provide facilities and equipment as well as operating expense, pay, and allowances, or ten percent of the total appropriation. After five years the requirement for facilities might be assumed to have been largely satisfied, which would drop the cost of the Reserve Forces Program to an assumed amount of $300 to $350 millions. The economy of this type of defense cost planning is obvious.

To justify the assumed expenditure for the Reserve Forces Program, facilities should be used to the practicable maximum. This might be accomplished through the establishment of a Reserve training program based on procuring 17-18-year-old individuals who would be taken into the Reserve, given basic training at Reserve Flying Wing Centers and be given basic instructions and specialist training for a period of two years. If required in the Air Force they would then be called for two years of active duty, after which they would return to a Ready Status or continue in the Standby Status. By giving this basic instruction in established facilities, the cost of the facility would be further justified.

The training of the Reservists for their period of obligation should be such that the Reservists would not only become of value to the services but would make them valuable to the civilian economy.

Generally speaking, our defense posture must be predicated on the three general situations which are likely to confront the nation. These situations are the peacetime, emergency, and full mobilization for war. The personnel, equipment, facilities, and training to meet these situations should be preplanned during peacetime. Modern warfare involves the entire economy. By preplanning, we can phase the requirements over a period of years, increasing the pace or decreasing it as necessity dictates.

Col. Lloyd E. Arnold
Washington, D. C.

(The preceding article represents the opinions of the author and not the official views of the USAF.)

Earthen Vessels

Recently an article was written by an Air Force officer telling why he was getting out of the service after fifteen years of active duty. This officer was honest and sincere. He put his finger on some vulnerable points in our nation's service which ought to be corrected.

One fact, however, with which we adults must reckon is that there is no such thing as perfection in life. This is true whether in the military or in civilian life. Mistakes are made on both sides of the fence. A great man, speaking of the human factor in experience, declared, "We have this treasure (human nature) in earthen vessels" (II Corinthians 4:7). How true! And earthen vessels are fragile, too. They are subject to being cracked and broken.

So it is with our mortal lives. We are earthen vessels which are subject to damage and error.

And yet, despite all our imperfections, we do a good job nevertheless. What we need is not to accentuate the negative aspects of life, but to concentrate on the positive side.

The US Air Force, like persons, has its shortcomings. But it has grown so fast that one wonders how it has been able to accomplish so much in such a short time.

In the Air Force Magazine for May 1954 there appeared an excellent article written by a lieutenant colonel who gave several reasons why he chose not to resign. His arguments are sound and they remind one of the Apostle Paul who said that in one of his missionary travels he ran into obstacles and difficulties. "Therefore," said the Apostle, "we decided to stay a long time."

There are two classes of people (some say there are three classes—the Workers, the Shirkers, and the Jerkers), those who are tired and ready to quit when the going gets rough and those who realize that problems can never be solved by running away from them.

As a Staff Chaplain in the US Air Force, I would like to appeal to all our service personnel to stand by and help us create the best and strongest Air Force possible. If things are difficult we should all work a little harder.

Chaplain (Maj.) Norris T. Morton
Edwards AFB, Calif.

Air Academy

Practically speaking, the airman of today should be officered by a college graduate or similarly educated leader. We stand very short right now on that point, and it may be a salient factor behind the public resistance to the military and their antagonism which takes the form of reduced budgets and relegation of the military to a second-class citizen status.

Who but the fifteen million World War II citizen soldiers and the several million Korean veterans could be influencing thought on the home front whenever the subject of the military arises? Old grudges and real or imagined mistreatment at the hands of the pros colors the thinking of this vast group of voters and taxpayers.

Couple this attitude to the poor educational record of the Air Force, where more enlisted men than officers had degrees in many spots during World War II, and you need go no further for the answer to present problems. Considering the number of college graduates and students who served with the old USAAF, it seems strange so few were retained and made Regulars. We can only surmise that the Regulars were afraid to keep them and stacked the cards, as usual, against the Reservists.

We now have several thousand college graduates as officers via the expedient of ROTC, not by far the best way of up-grading the educational level of the USAF. How many of these will be offered Regular rank? Or will they be unceremoniously booted when their immediate jobs are finished? It is not beyond reason that many wouldn't care to stay as officer associates with the currently under-educated corps. Remember, we are talking of the Air Force in terms of a profession. And the lure of a profession, for many, includes the guarantee of working with educational equals.

(Continued on following page)

JET BLASTS——CONTINUED

Unfortunately, too, USAF has pinned its hopes of obtaining a well-educated officer corps through the proposed Air Force Academy. I do not agree that one university is capable of producing the skills and talents required by so complex an organization as our Air Force.

To begin with, the other military academies can graduate only a handful of officers. Each one costs the taxpayer a lot of money. Because age limits, et cetera, bring a generally inexperienced candidate, and school "larning" isn't enough, many become quick casualties.

We can suppose only that the Air Academy will produce the same handful since the Air Force now is hard put to maintain on-the-job squadron and field officer education as explained by Brig. Gen. Dale Smith. (AIR FORCE, April 1954.)

Further, military academies by their very nature can produce only one type of officer. This narrowly educated, singled minded graduate is responsible for most of the things wrong with the older military establishments and the reason for the huge overhaul experienced after World War II. He functions well with a staff composed of "outsiders," *i.e.*, civilian officers who bring to the service their myriad of specialties required by modern war. And it seems he has a set of rules to discourage "outside" competition from this same staff.

Lots of drum and bugle corps stuff and "brace mister!" may be fun for adolescents who like uniforms. But it costs us a helluva lot of money, and after we've spent it we still have to go in and save the bacon when the whistle blows.

So let's do this if we are serious about providing the Air Force with a decently educated officer corps:

Open regular ranks to the present ROTC crop. We have 'em on hand, why not get the most out of them.

Open direct, regular rank to college graduates, preferably with prior service.

Pressure present Regulars to get college degrees or else.

Say this operation takes five years, three on the inside, barring war.

Then, put the Academy into high gear . . . we won't have acquired the desired number of college grad officers probably. But, admit officers only and give them either college bachelor credits and degree or, if already BAs, higher level education. Do not, ever, admit high school boys who happen to like uniforms or have political connections.

If the Academy is used in this way we will get our money's worth and a well-rounded officer, not a robot who has to draft the essential brains necessary to run a war.

And what happens to the present high school-type officer in our Air Force? Well, we do have selection boards, fitness reports and such. How many could remain if a serious effort were made to either qualify or replace them?

Edward J. Carlin, Jr.
Philadelphia, Pa.

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The new Lavoie Precision Crystal Oscillator oven is designed to serve as a plug-in expendable circuit element. It supplies a precise output frequency determined by the interior mounted temperature-controlled crystal. The unit is unusually compact with the vacuum tube and all circuit elements mounted inside the oven case. This design insures a degree of accuracy not normally obtained in a unit of comparable size. If you are designing and building airborne or transportable communications equipment, you will want to know more about this newest Lavoie development. Write for details.

PERFORMANCE CHART

Oscillators	#1	#2	#3	#4	#5
Frequency deviation when first turned on at room temp.	120 cycles	90 cycles	140 cycles	100 cycles	120 cycles
Warm-up time to 50 cycles deviation from room temp.	45 seconds	70 seconds	75 seconds	60 seconds	60 seconds
Frequency deviation at room temp. after warm-up	2.8 cycles	0.07 cycles	3.10 cycles	3.3 cycles	2.8 cycles
Frequency change at room temp. when output is loaded with 10 mmf capacitor	-2.5 cycles	-1.0 cycles	-0.5 cycles	-0.6 cycles	-0.8 cycles
Frequency change at + 55°C ambient	0.02 cycles	0.5 cycles	0.9 cycles	0.35 cycles	0.03 cycles
Frequency deviation when first turned on at + 55°C ambient	450 cycles	300 cycles	300 cycles	480 cycles	510 cycles
Warm-up time to 50 cycles deviation from + 55°C ambient	4 minutes	4 minutes	4½ minutes	4½ minutes	5 minutes

SPECIFICATIONS:

Frequency 500 kilocycles
Max. Deviation after 15 min. warm-up ±0.0012% (6 cycles at 500 kc)
Operating Temp. −55 to +80°C
Pressure 3 to 30 inches mercury
Vibration 10 to 55 cps (0.015 inches amplitude)
Shock 10 G
Humidity 30 days cycling at 100% RH at 50° C
Orientation Any position
Warmup ±0.01% (50 cps) after 3 minutes under any condition; after 1 minute at room temp.
Weight 9 ounces maximum
Connections Miniature 7 pin base
Supply voltages Heater: 6-12-28-110 volts, 30 watts Filament: 6.3 volts Plate: 75 volts, 3 ma max.
Load 100,000 ohm grid circuit, variation of 10 mmf shall not produce frequency charge in excess of allowable stability.
Life Not less than 500 hours without servicing; 2000 hours with reasonable servicing.

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AUGUST 19-20-21-22

Airpower Roundup!

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HEADQUARTERS . . . AFA Convention—Fontenelle Hotel.
AFA and Ladies Auxiliary—Paxton Hotel.

REGISTRATION FEES . . . AFA Members and All Ladies—
$15.00. Non-members (male)—$20.00.

FEE INCLUDES TICKET TO . . . Western Wing Ding . . .
Airpower Banquet . . . Brunch . . . Fashion Luncheon (ladies).

SYMPOSIUM LUNCHEON . . . Ticket not included in registration fee—$6.25 each — $50.00 tables for 8.

See page 67 for
Room Reservations

DON'T MISS 1954'S BIGGES

'54 Convention

Secretary Talbott

General Twining

Air Force Secretary Harold E. Talbott and Chief of Staff Gen. Nathan F. Twining are among the many top military and government leaders who will address the delegates and guests to AFA's eighth annual Convention.

THURSDAY, AUGUST 19

10:00 AM	AFA Directors Meeting	Fontenelle
12:30 PM	AFA Commanders Luncheon	Fontenelle
3:00 PM	Opening Business Session	Fontenelle
8:00 PM	Second Business Session	Fontenelle

SATURDAY, AUGUST 21

9:00 AM	Third Business Session	Fontenelle
12:00 N	Unit Reunion Luncheons	
2:00 PM	Final Business Session	Fontenelle
6:00 PM	Tour of Boys Town	
7:00 PM	Airpower—Awards Banquet	Boys Town

FRIDAY, AUGUST 20

9:15 AM	Airpower Symposium	Fontenelle
12:30 PM	Symposium Luncheon ($6.25)	Fontenelle
	Ladies Fashion Luncheon	Paxton
3:15 PM	SAC Briefings	Offutt AFB
7:00 PM	Reunion Cocktail Party	Peony Park
7:30 PM	Western Barbecue	Peony Park
9:00 PM	Airpower Ball	Peony Park
10:00 PM	Hollywood Wing Ding	Peony Park

SUNDAY, AUGUST 22

10:00 AM	Airpower Brunch	Fontenelle

NOTE: AFA Ladies Auxiliary business meetings at Paxton Hotel, 9:30 to 4:30, Friday and Saturday, August 20-21.

WESTERN WING DING . . . Eight-hour reunion at beautiful Peony Park . . . outdoor steak barbecue . . . music . . . dancing . . . swimming . . . refreshments . . . stars . . . stage show . . . Hollywood entertainment.

CHAPLAINS REUNION . . . Chaplain John C. W. Linsley, Hq., SAC, Offutt AFB, Nebr.

MEDICS REUNION . . . Brig. Gen. Lloyd E. Griffis, Hq., SAC, Offutt AFB, Nebr.

NIGHT FIGHTERS REUNION . . . Mr. Gil Nettleton, Northrop Aircraft Co., Hawthorne, Calif.

AIR COMMANDOS REUNION . . . Lt. Col. R. E. Moist, P. O. Box 72, Mitchel AFB, N. Y.

AIRPOWER SYMPOSIUM . . . Industry, government, and military discussions . . . briefings by General LeMay and Staff . . . SAC aerial demonstrations.

Convention Chairman Art Storz displays steak treats in store for everyone attending the Western Wing Ding, Aug. 20.

AIRPOWER MEETING

TECH TALK

Two Air Force scientists who started out to collect data for rectifiers have come up with a means to **convert light from the sun into electricity.** The two, Donald C. Reynolds and Lt. Col. Gerard M. Leies of Wright Air Development Center, Dayton, discovered that **cadmium sulfide,** a yellow powder used in making paint, can be processed into crystal form to permit direct conversion of light rays into electrical impulses. The amount of current is determined by the area of an electrode attached to the crystal. Their small pilot model generates enough current to run an electric clock. Like the Bell Telephone Company's **solar battery,** announced in April, which converts sunlight into electricity through silicon transistors, the Air Force generator can store up energy from the sun. ARDC says that a "wafer-thin" slab of the crystal four feet by fifteen on the roof of a house would supply enough current to run all the lights and appliances in the house, twenty-four hours a day.

May was the Navy's month. On May 18 one of its upper atmosphere research balloons, a plastic **Super Sky Hook** launched at Minneapolis, rose to more than 117,000 feet. This was at least a mile higher than the previous record. On May 24 at the White Sands, N. M., Proving Grounds, a **Navy Viking No. 11,** built by Martin, climbed to 158 miles at a maximum speed of 4,300 mph to set a new mark for a single-stage rocket (see cut, right). And the next day the Navy's **new blimp, the ZPG-2,** set an endurance record of 200 hours and four minutes, completing a training flight from Lakehurst, N. J., to Key West Fla., via the long route—Bermuda, Puerto Rico, and Miami.

The Korean air war taught the Air Force many things. One was that the AF's **new 20-mm. automatic gun** could more than hold its own against the more heavily-armed MIG-15 (two 23-mm. and a 37-mm. cannon). The new weapon, now being mass produced by Pontiac under an Army Ordnance contract for the AF, got a combat shakedown in Korea early last year. In short order the gun downed six MIGs, probably got three others, and damaged twelve, endearing itself to pilots who had long called for a weapon that fired as fast (1,200 rounds per minute) as .50-caliber machine guns but had **more punch.** The M39's five-chamber, revolver-type cylinder feeds, fires, and extracts ammunition faster than a reciprocrating, bolt-type mechanism. The Air Force has not yet said which planes besides the F-86 will sport the M39. It was developed for all modern aircraft, including **transonic and supersonic.**

Lt. Gen. Thomas S. Power, ARDC Commander, pushed the button that started the J-47 turbojet inside **test chamber T-1** at the **Arnold Engineering Development Center,** Tullahoma, Tenn., as the new facility was used for the first time (see cut, below, right). Two other closed AEDC test cells will go into operation later this year, while a fourth, an open test bed, has been in use for several months.

TECH NOTES . . . North American Aviation has delivered its **20,000th fighter** aircraft. It was a FJ-3 Fury Jet for the Navy. The company has now built more than 50,000 planes of all types. . . . A British company is developing a new **high-speed paint** for jet fighters and bombers that the company claims won't peel off at near-sonic speeds. The paint, or finish, is based on a resin able to withstand the friction caused by air rushing by at high speeds. . . . The Air Force has let **General Electric** announce that the company has developed one of the most powerful jet engines yet built—more than **15,000 pounds of thrust.** All other details are still under wraps. . . . A Royal Swedish Air Force **Saab-29 jet fighter** has set a new 500-km., closed-course speed record of 607 mph, topping by some seventeen mph the record Jacqueline Cochran set on May 23, 1953, at Edwards, Calif., in a Sabrejet. The **Swedish record** has yet to be certified by the **Federation Aeronautique Internationale.** . . . They're putting a high polish on the inboard surfaces of the jet pods of **Boeing B-47s** now so the pilot can use them as a mirror to check his landing gear position.—END

At left, Boeing's new all-jet tanker-transport, rolled out of the plant two months ahead of schedule. Behind it, the AF's present tanker-transport, the workhorse Boeing KC-97G.

Below, the Navy's Viking No. 11 test missile as it roars off the ground on its record 158-mile-high flight. The rocket transmits high-altitude data in flight to ground observers and recorders.

Final adjustments inside a jet test cell at Arnold Engineering Center.

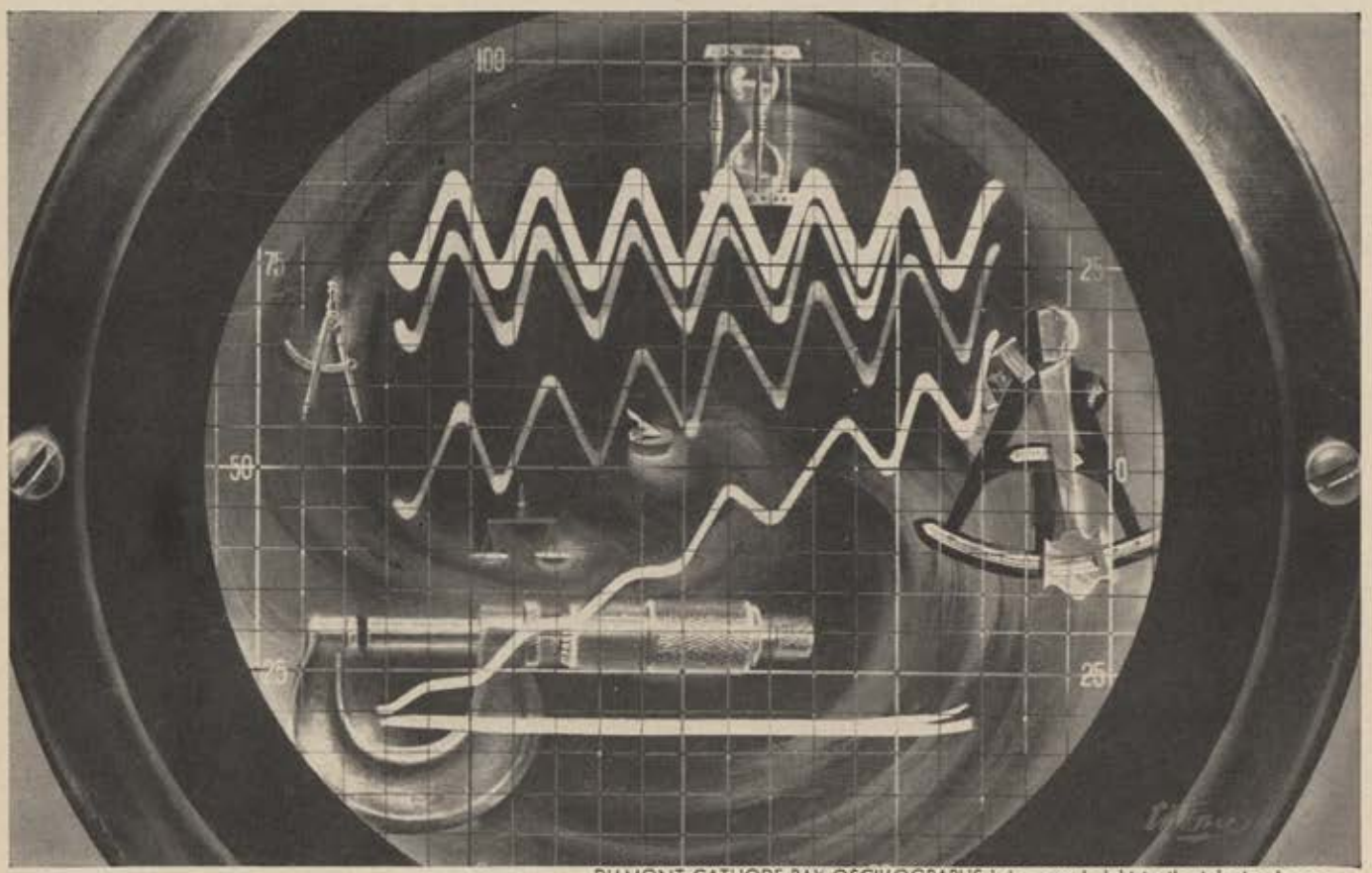
Above, the new model of the Aero Commander 560, with a swept tail.

The YARDSTICK

that will measure new futures for man

Truly *vision is the Du Mont dimension!* The economical cathode-ray oscillograph, pioneered by Du Mont in 1932, has brought new vision to thousands of projects for industry, science and national defense. Called "the X-ray of the engineering technician", it pictures such *invisible* things as atomic fission . . . the internal operation of engines and electronic circuits . . . the inner strength of metals under stress. Its oscillations are accurate to hundred-millionths of seconds and reveal smallest variations of materials, time, or motion!

Today this Du Mont cathode-ray oscillograph is essential to accurate automatic mass-production control. It is one of the most highly valued tools of nuclear research, medicine, acoustics, metallurgy, chemistry, automotive and aircraft engineering.



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Television and industrial cathode-ray tubes.

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Television pickup, transmitting and mobile communications equipment.

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A knotty problem, that! Your subscribers would protest loudly if they found the line constantly busy. And you could go broke, quickly, if you started installing long lines of extra poles and wire to handle 15c and 25c calls.

Many small American telephone companies solve this problem neatly with Stromberg-Carlson "Carrier" equipment. In simple language, Carrier equipment is an ingenious electronic device which—on *one* pair of wires (going and coming)—impresses electrical currents of different frequencies. Subscribers who dial or ask the operator for the nearby town automatically get a frequency that's open for use—and as many as twenty-four (or more) can all talk at once over the same wire!

Similar ingenious solutions to problems are part of our regular service to the armed forces of our country. If there is a Stromberg-Carlson label on some of *your* equipment, you can be sure you have the best!

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Sound and Public Address Systems

Office Intercom Equipment

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John R. Alison

Gen. George C. Kenney

AFA Nominees for 1955

Nominating Committee names John R. Alison of California as candidate for President. Incumbent George C. Kenney picked to succeed Kelly as Board Chairman

JOHN R. Alison, one-half of the famous team which ran the Air Commandos in Burma during World War II (Phil "Flip Corkin" Cochran was the other) and now a vice president of Northrop Aircraft, has been selected by AFA's Nominating Committee to head the Association during 1954-55. At the same meeting of the Committee in Washington, D. C., May 15, Gen. George C. Kenney, incumbent President, was nominated as Chairman of the Board of Directors, according to custom.

Johnny Alison grew up in Gainesville, Fla., and is a graduate of the University of Florida. He began World War II as a fighter pilot, did a special mission to Russia, eventually wound up teamed with Cochran. Their daring Air Commando operation in support of British Gen. Orde Wingate's guerrillas wrote the book for a new kind of war in the jungles of Burma.

Alison's postwar career includes a stint as Assistant Secretary of Commerce for Air and as president of the Transit Van Corporation of Redwood City, Calif., before he joined Northrop. He is currently serving on AFA's Board of Directors.

Gen. George C. Kenney, the nominee for Chairman of the Board, is concluding a well-traveled year as President, during which he met with AFA groups from one end of the country to the other. His aviation background, which is serving him in good stead during his present term of office, also eminently qualifies him for the new post to which he has just been nominated, to succeed Arthur F. Kelly.

An air veteran of two World Wars, he flew seventy-five missions in France, shot down two Germans, was shot down himself. During World War II he served in the Pacific, at war's close was Commanding General of the Far East Air Forces. After the war he headed the Strategic Air Command and later the Air University. General Kenney is President of the National Arthritis and Rheumatism Foundation. He became a Director of AFA in 1951, when he retired from the Air Force.

Nominated to the Board for the first time were Walter T. Bonney, Washington, D. C.; John J. Currie, N. J.; Merle S. Else, Minn.; Jack B. Gross, Penna.; George D. Hardy, Md.; John R. McLaughlin, N. J.; Clements McMullen, Tex.; Robert Proctor, Mass.; and Robert J. Smith, Tex. A complete list of all nominees begins on the next page. All nominations must be confirmed by delegates to AFA's Eighth Annual Convention in Omaha, in August.

AFA NOMINATING COMMITTEE'S SLATE FOR 1955

PRESIDENT

JOHN R. ALISON

Hawthorne, Calif.

Vice President, Northrop Aircraft; age 41; married. AFA record: member 7 years; Director. Military rank: Col.

SECRETARY

JULIAN B. ROSENTHAL

New York, N. Y.

Lawyer; age 45; married. AFA record: member 8 years; Assistant Secretary; National Secretary; National Constitution Committee chairman. Military rank: PFC.

CHAIRMAN OF THE BOARD

GEORGE C. KENNEY

Scarsdale, N. Y.

Foundation president; age 64; married. AFA record: member 8 years; Director; National President. Military rank: Gen.

TREASURER

SAMUEL M. HECHT

Baltimore, Md.

Department store president; age 46; married. AFA record: member 7 years; Squadron Treasurer; National Treasurer; 1953 National Convention co-chairman. Military rank: Capt.

REGIONAL VICE PRESIDENTS

NEW ENGLAND REGION

(Me., N. H., Vt., Mass., Conn., R. I.)

THOMAS C. STEBBINS

Worcester, Mass.

Textile worker; age 42; married. AFA record: member 7 years; Squadron, Wing Commander; Regional V-P. Military rank: S/Sgt.

NORTHEAST REGION

(N. Y., N. J., Penna.)

RANDALL LEOPOLD

Lewistown, Penna.

Automobile dealer; age 51; married. AFA record: Life Member; Squadron, Wing Commander; Regional V-P; National Wing Advisory Council chairman; National Committee member. Military rank: Maj.

CENTRAL EAST REGION

(Md., Del., D. C., Va., W. Va., Ky.)

WILLARD W. MILLIKAN

Alexandria, Va.

Aviation Sales; age 35; married. AFA record: member 7 years. Military rank: Col.

SOUTHEAST REGION

(N. C., S. C., Ga., Fla.)

JEROME A. WATERMAN

Tampa, Fla.

Department store president; age 70; unmarried. AFA record: Life Member; Regional V-P. Military rank: Lt. Col.

GREAT LAKES REGION

(Ill., Ind., Mich., Ohio, Wis.)

GLENN D. SANDERSON

Battle Creek, Mich.

Appliance dealer; age 38; married. AFA record: member 6 years; Squadron, Group, Wing Commander. Military rank: Sgt.

NORTH CENTRAL REGION

(Minn., N. D., S. D.)

EDWIN A. KUBE

Minneapolis, Minn.

Steamfitter; age 35; married. AFA record: member 7 years; Squadron, Wing Commander. Military rank: T/Sgt.

SOUTH CENTRAL REGION

(Tenn., Ark., Ala., La., Miss.)

FRANK T. McCOY, JR.

Nashville, Tenn.

Corporation officer; age 42; married. AFA record: member 3 years; Regional V-P; National Committee member; National Air Reserve Council chairman. Military rank: Brig. Gen.

MIDWEST REGION

(Mo., Kan., Iowa, Nebr.)

J. CHESLEY STEWART

St. Louis, Mo.

Airline executive; age 49; married. AFA record: member 7 years; Squadron Commander; Regional V-P. Military rank: Col.

SOUTHWEST REGION

(Tex., N. M., Okla.)

THOMAS D. CAMPBELL

Albuquerque, N. M.

Farming corporation President; age 72; married. AFA record: Life Member; Wing Commander; Regional V-P; National Committee member. Military rank: Brig. Gen.

ROCKY MOUNTAIN REGION

(Colo., Wyo., Utah)

W. THAYER TUTT

Colorado Springs, Colo.

Hotel and corporation executive; age 42; married. AFA record: member 4 years; Regional V-P; National Committee member. Military rank: Lt. Col.

NORTHWEST REGION

(Wash., Ore., Idaho, Mont.)

WINFIELD G. YOUNG

Seattle, Wash.

Aeronautical engineer; age 37; married. AFA record: member 7 years; Squadron, Wing Commander; National Committee member. Military rank: M/Sgt.

FAR WEST REGION

(Calif., Ariz., Nev.)

MICHEL PISANI

San Francisco, Calif.

Printing executive; age 31; married. AFA record: member 6 years; Squadron, Group, Wing Commander. Military rank: Lt.

PACIFIC OCEAN AREA REGION

(Areas in or bordered on east by Pacific)

ROY J. LEFFINGWELL

Honolulu, T. H.

Public relations director; age 46; married. AFA record: member 7 years; Squadron, Wing Commander; Regional V-P; National Committee member. Military rank: Col.

NATIONAL DIRECTORS

GEORGE A. ANDERL Oak Park, Ill. Sales manager; age 36; unmarried. AFA record: member 6 years; Squadron, Group, Wing Commander; Regional V-P. Military rank: Sgt.

WALTER T. BONNEY Washington, D. C. Government aviation executive; age 45; married. AFA record: member 4 years. Military rank: S/Sgt.

(Continued on page 67)

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Is the automobile customarily used in driving to or from work?_____

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How many operators under age 25?_____

Age of each:_____

Are any of the operators under 25 owners or principal operators of the automobile?_____

If any of the operators under 25 are owners, or principal operators, of the automobile,

(a) are all such operators married?_____

(b) do all such operators have legal custody of a child resident in the household?_____

Name & Rank_____

Military Address_____

If car not at above address, give location of car_____

AFA NOMINEES — CONTINUED

JOHN J. CURRIE Paterson, N. J. Trucking company owner; age 29; married. AFA record: member 8 years; Squadron, Wing Commander. Military rank: Flight Officer.

MERLE S. ELSE Minneapolis, Minn. Sales manager; age 36; married. AFA record: member 8 years; Squadron, Wing Commander; Director. Military rank: Lt. Col.

CORTEZ F. ENLOE, JR. New York, N. Y. Medical consultant; age 44; married. AFA record: member 8 years; Division President; Director; National Committee chairman. Military rank: Maj.

JACK B. GROSS Harrisburg, Penna. Auto dealer; age 43; unmarried. AFA record: member 8 years; Squadron, Wing Commander; National Committee member. Military rank: Maj.

GEORGE D. HARDY Hyattsville, Md. Sales director; age 30; married. AFA record: member 7 years; Squadron, Wing Commander; Regional V-P; National Committees; 1953 National Convention co-chairman. Military rank: Sgt.

JOHN P. HENEBRY Park Ridge, Ill. Aviation corporation president; age 36; married. AFA record: member 8 years; Director. Military rank: Brig. Gen.

CLEMENTS McMULLEN San Antonio, Tex. Civic director; age 62; married. AFA record: member 2 years. Military rank: Maj. Gen.

WILLIAM F. MULLALLY St. Louis, Mo. Pastor; age 64; unmarried. AFA record: member 5 years; Squadron officer; Division Director; Director. Military rank: Col.

ROBERT PROCTOR Boston, Mass. Lawyer; age 54; married. AFA record: member 8 years; Director; National Convention chairman. Military rank: Col.

ROBERT J. SMITH Dallas, Tex. Airline president; age 55; married. AFA record: member 2 years. Military rank: Brig. Gen.

THOMAS F. STACK San Francisco, Calif. Lawyer; age 34; unmarried. AFA record: member 8 years; Squadron, Wing Commander; Regional V-P; Director. Military rank: Lt.

T. F. WALKOWICZ New York, N. Y. Engineer; age 34; married. AFA record: member 8 years; Director. Military rank: Lt. Col.

ENNIS C. WHITEHEAD Newton, Kans. Aviation consultant; age 58; married. AFA record: member 8 years; Director. Military rank: Lt. Gen.

GILL ROBB WILSON New York, N. Y. Editor, publisher; age 60; married. AFA record: member 8 years; Squadron Commander; Director; National Convention chairman. Military rank: Capt.

MORRY WORSHILL Chicago, Ill. Pharmacist; age 41; unmarried. AFA record: member 8 years; Squadron officer; Wing Commander; Regional V-P; Director; National Wing Advisory Council chairman. Military rank: Sgt.

NOTE: The following are permanent Directors of AFA, because of previous service as National President or Chairman of the Board of Directors. They are "automatic" members and need not be renominated or reelected:

EDWARD P. CURTIS
JAMES H. DOOLITTLE
ROBERT S. JOHNSON
ARTHUR F. KELLY
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Two headquarters hotels have been reserved for AFA's 1954 meeting in Omaha. The Fontenelle is Convention Headquarters, and the Paxton is AFA Ladies Auxiliary Headquarters. Convention delegates and visitors will stay at both, as neither is large enough to house the entire Convention. Send your room request to the hotel of your choice. State whether you want air conditioning.

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Suites: 1 Bed Rm.: 16.00-17.00		2 Bed Rm.: 26.00-27.00	

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August 19-20-21-22, 1954

(Please Print)

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DEPARTURE DATE_____ HOUR_____

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CHOICE: HOTEL DESIRED

First_____

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TYPE ROOM DESIRED

☐ Single ☐ Double ☐ Twin
☐ Suite—Number of Bedrooms_____
Desired rate per day: $_____*
☐ Desire Air Conditioning

Kenney Hits Danger of Complacency

AFA PRESIDENT ADDRESSES THE AIRPOWER BANQUET AT ILLINOIS' WING CONVENTION

AFA members and guests at the fourth annual **Illinois Wing Convention** last month heard AFA President George C. Kenney warn against the dangers of public and official complacency during today's period of grave danger to the nation.

"The nation," he said, "is in serious danger of overselling itself on the power of our modern jet weapons—weapons which are unfortunately still on the drawing boards and a long way from production."

President Kenney was the principal speaker at the Airpower Luncheon, the feature event of the one-day meeting June 6 in Chicago's Hotel Sheraton.

Other honored guests at the luncheon included Maj. Gen. Glenn O. Barcus, Deputy Commander of the Air Training Command; Joseph K. McLaughlin, Illinois Aeronautics Director; Maj. Gen. B. E. Gates, Commander of Chanute AFB, Ill.; Maj. Gen. Charles L. Dasher, of the Fifth Army; Brig. Gen. Wilson V. Newhall, Commander of the Illinois Air National Guard; Col. William D. Greenfield, Commander of O'Hare AFB, Ill.; and Lt. Col. Donald Armstrong, Director of the Illinois Ground Observer Corps.

Colonel Armstrong accepted an AFA Illinois Wing award in behalf of the GOC. Other Wing awards went to John Carr, AFA Chicago Group Commander; Donald P. Spoerer, Illinois Wing Vice Commander who was also Convention Chairman; and to the University of Illinois AF-ROTC detachment for that unit's military proficiency.

At one of the business sessions Carr was elected Illinois Wing Commander for the coming year, replacing George Wilson in the post. Carr is manager of Chicago's Meigs Airport.

During the convention, two new Illinois AFA units received their charters. President Kenney presented one to the Ken Fogel Squadron. The Squadron is named for an Air Force intelligence officer who was on Kenney's staff in the Pacific during World War II. His widow was flown to Chicago from Florida for the chartering.

The other charter went to the Joliet Flight, newest such unit in AFA.

Out-of-state visitors included Mrs. Mary Jane Rosenqvist from Wisconsin, Wing Commander Glenn D. Sanderson from Michigan, and Gus Duda, representing National Headquarters.

AFA President Kenney was guest speaker at a recent dinner meeting of the **Mohawk Squadron, Kansas City.** He outlined for the 250 members and guests who were present the current threat to freedom posed by communism and said that adequate American airpower represented the solution. The Mohawk Squadron, chartered March 17, already lists 215 members on its rolls. The Commander is Otis Bryan, Merriam, Kansas.

More than 100 AFA members and guests attended the sixth annual **Pennsylvania Wing Convention,** held May 22 at State College with the Nittany Squadron as host. After addressing those at the Airpower Banquet, President Kenney was presented an album of photographs taken by Jim Keyes, one of his Fifth Air Force staff photographers during World War II.

Dr. Milton Eisenhower, President of Pennsylvania State College, was an honored guest. Wing awards went to Wing Auxiliary President Kathleen Murray and Clifford Zipf, Pittsburgh.

Randall Leopold, Regional Vice President, installed the new Wing officers who include Leonard Work, State Col-

(Continued on page 71)

SQUADRON OF THE MONTH

Santa Monica Area Squadron
Santa Monica, Calif.

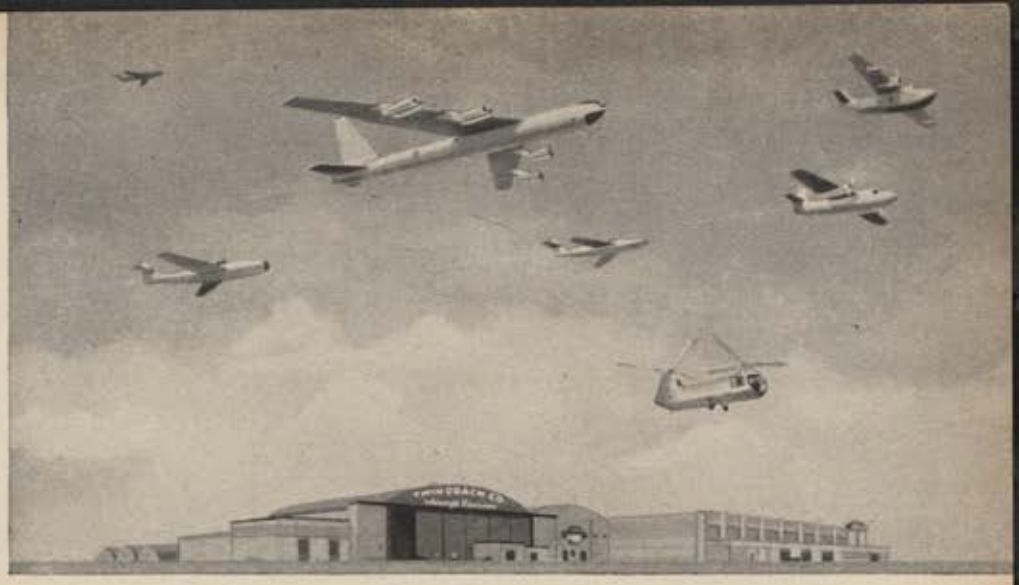
CITED FOR

its efforts in promoting and staging the 1954 California Wing Convention. The success of the Convention resulted from the achievements of the members of the Squadron. AFA salutes this outstanding effort.

Members of the Mifflin Co., Penna., Squadron with the Boy Scout troop they sponsor. Squadron Cmdr. Styron Reichenback is in the middle of the back row.

AFA Director Morry Worshill (seated in the foreground) joins representatives of other veterans' groups in planning a Civil Defense exhibit for the Chicago area.

Minneapolis and St. Paul AFA'ers turned out in force at the Installation Banquet of the Twin-Cities Squadron.



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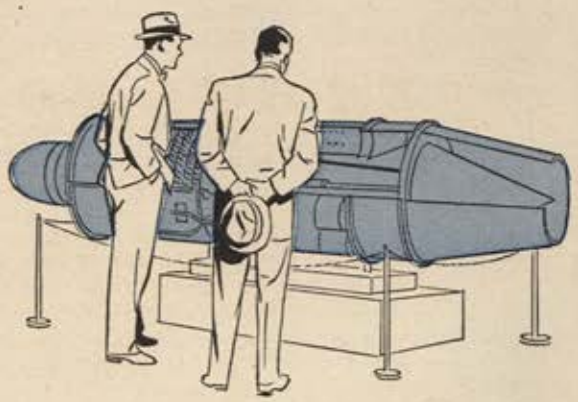

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lege, Commander; Prestie Headings, Lewistown, Vice Commander; Josephine Groesbeck, State College, Secretary; and Chester Richardson, Pittsburgh, Treasurer.

Retiring Commander Carl J. Long presided at all meetings at the Convention.

Gill Robb Wilson was Convention Chairman and Airpower Banquet toastmaster at the seventh annual **New York Wing Convention,** while his Manhattan Squadron served as host unit to some 150 state delegates and visitors.

Col. John R. Maney of the USAF Air War College was the main speaker at the Airpower Banquet, held in the Wing Club, in the Biltmore Hotel. At the banquet Wing awards went to Dr. Ronald Spaulding, aeronautics professor at New York University; newspaper publisher Frank Gannett; and Fred M. Glass, director of the New York Port Authority. Mrs. James H. Doolittle accepted the Wing's check for $100 on behalf of the Air Force Aid Society.

David S. Levison was reelected Wing Commander. The new Secretary is Ruth Stern, and Arthur Wegman is Treasurer. Henry C. Breen is Vice Commander for Lower New York and Harold Rosentrauch for Upper New York. The Wing presented a Life Membership in AFA to Lt. Henry Buttleman, New York's only Korean jet ace.

On Memorial Day, May 30, AFA conducted a **Memorial Service** in Arlington National Cemetery, Washington, D.C., at the gravesides of three of the Air Force's best known leaders, Gens. H. H. Arnold, Hoyt S. Vandenberg, and Muir S. Fairchild.

On behalf of the Capital Squadron, William Kraemer and Donald Steele placed a wreath on General Fairchild's grave. Lloyd Streifuss and Gerald Russell placed General Arnold's wreath on behalf of the District of Columbia Wing. At General Van's grave, George Hardy placed the wreath for AFA's officers, directors, and membership.

Chaplain (Maj. Gen.) Charles I. Carpenter, Chief of Air Force Chaplains, led the services. Mrs. Carl A. Spaatz and Mrs. Muir Fairchild were among the guests. Ceremonial troops from Bolling AFB and a fly-over formation of F-86 Sabrejets from Andrews AFB added to the solemnity of the day.

George Anderl, Vice President of AFA's Great Lakes Region, has had a busy sixty days in the service of AFA. Beside his regular Squadron and Wing meetings, he attended eleven special meetings and banquets and was the main speaker at several. One, at Elmwood Park, Ill., brought together 350 people from twenty communities in the

(Continued on following page)

David Levison, reelected New York Wing Commander, here is flanked by Ralph Whitener, left, from Headquarters, and Julian Rosenthal, National Secretary.

AFA President Kenney and Otis F. Bryan, Mohawk Sqdn. Cmdr., at dinner meeting in Kansas City, May 5.

New York Explorer Scouts visit Idlewild Airport under auspices of Queens Squadron, sponsors of the troop. Commander Fred Schwarz is at the far right.

AFA NEWS——CONTINUED

area. Mayor Vernon Reich of Forest Park was the Toastmaster.

In May Anderl attended a Regional Conference in Mishawaka, Ind. There he appointed Irvin F. Duddleson of South Bend as Indiana Wing Commander, replacing Bob Logan of Muncie. Duddleson is a past Commander of the South Bend Squadron.

Delegates to the recent **Ohio Wing Convention,** held in Cleveland, elected Frederic P. Goulston their new Commander. He had been Dayton Squadron Commander. Other officers are Mary Gill Rice, Vice Commander; Kenneth Vetter, Secretary; and Robert Cranston, Treasurer.

Norman Miller of Dayton is the retiring Commander. Regional Vice President George Anderl was among the honored guests at the convention.

AFA's **newest Flight** is in Joliet, Ill. The charter was presented at the Illinois Wing Convention in Chicago, June 6 (see above). William B. Weigerding, 109 Nobes Ave., is Commander. Other new officers are James G. Passas, Vice Commander, and Alec P. Carr, Secretary-Treasurer.

Another new Squadron joins the roster of New York units with the approval of a Charter for the Metropolitan Squadron of New York City. Wing Commander David Levison presented this Charter at that state's Wing Convention on May 22. The Commander is Anne Galvin, 7 Peter Cooper Road, New York. William Stein is Vice Commander; Louis Warmbrand, Secretary; and Thomas Vought, Treasurer. Counciknen include Emerson Cohen, Marshall Deutsch, Norbert Carolin, and Anthony Barone.

The District of Columbia's **Capital Squadron,** at a recent meeting, sponsored twenty-one charter members of the American University chapter of Alpha Eta Rho, international aviation fraternity. The group heard ANG speedster Col. Willard Millikan describe his record-setting flight across the country in an F-86. William F. Kraemer is the Squadron Commander.

CROSS COUNTRY . . . President of the new **Auxiliary** unit in **Fresno, Calif.,** is Mrs. Helen Willms, 1229 Linden Ave., Fresno. Another new Auxiliary unit is **Chicago's Squadron 101,** headed by Mrs. Hazel Sarnecki . . . **William R. Krause** of Phoenix, Ariz., has arranged to have AFA listed in the local telephone directory . . . Addressing the Spokane Chamber of Commerce, AFA Board Chairman **Arthur F. Kelly** warned the Russians may be ahead of the US in the development of intercontinental missiles . . . **Chicago Squadron 41** has inaugurated the William Schanken Memorial Award, to be presented for service to aviation. It's named for a Squadron member who died in February in an air crash.—END

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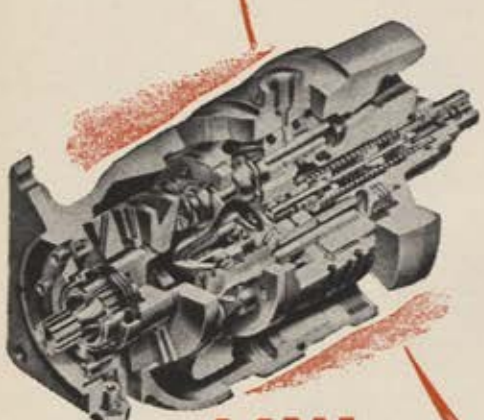

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Company field representatives like to talk with pilots immediately after a flight. At left, North American reps huddle with F-86 pilot on the flight line at Eglin AFB, Fla.

Our Tech Reps

An ingenious Bell tech rep devised an improved litter in Korea for 'copter evacs.

Global Trouble Shooters

By Flint O. DuPre

WHEREVER U.S. Air Force planes fly—which is quite a few places these days—you can always find some technical service representatives on hand.

In his first sixteen months as Secretary of the Air Force, Harold E. Talbott flew more than 160,000 miles and visited more than 175 bases in the US and overseas. In his travels, more than six times around the world, he was never more than a few minutes away from a tech rep, one of the trouble-shooting adjuncts of the armed forces.

Returning from a recent trip to the Pacific, the Far East, and Alaska, Roger Lewis, Assistant Secretary of the Air Force for Materiel, said he was particularly impressed by the degree of teamwork in the field between the representatives of the manufacturers who produce weapons and other equipment, and the Air Force people who use them.

Mr. Lewis said he found, at combat bases in Korea as well as at rear bases in Japan, that the technical representatives of airframe, engine, and accessory manufacturers "are worth their weight in gold," adding, "Although they have the simulated rank and privileges of officers, you will most often find them doing the dirty work shoulder-to-shoulder with mechanics. They provide a valuable link in the transmission of late information from a factory to the field and important suggestions and criticisms aimed at producing improvement from the field to the factory."

The tech rep must be able to remove the bugs from a jet engine with one hand and write a book with the other. One day he may have a comfortable work shop at a modern air base in the ZI. A few days later his shop may be an igloo. So the tech rep must have a good disposition and be able to adjust to new situations. If a piece of equipment won't work, he has to find out why and set down the reasons, in plain language, along with what to do about it. He must be able to provide on-the-job training and instruction to men of the armed services.

His contributions sometimes mean the difference between success and failure of new aircraft and equipment. Tech reps track a new plane through its various development stages, and they follow the planes to remote bases to watch them operate under the conditions for which they were designed. Tech reps are in Thule, with the Lockheed F-94 Starfire; in Africa with SAC B-36s and B-47s, and wherever else new planes move for operational assignment.

C. George Pierce, a Republic Aviation tech rep, went with the sweptwing F model of the F-84 to Alaska for six weeks of tests under extreme conditions. His periodic reports on performance near the Arctic Circle recommended slight modifications and noted minor discrepancies which "didn't interfere with the plane's operations at any time." His reports, and others sent by military personnel to Wright Air Development Center, Dayton, Ohio, mean the Air Force will probably send more Thunderstreaks to help defend North America against enemy air attack from over the North Pole.

Another case was in Korea, during the early days of the fighting there, when Sperry field engineers Bill Lentz and Vince Costello took the company's "triple threat" gunsight into its first combat test. Costello set up rear echelon classes for pilots and maintenance men in Japan, while Lentz organized repair groups and tackled the job of training specialists on-the-job in Korea. There, gregarious, talkative Lentz often stayed up till 3:00 in the morning writing comprehensive reports on the way the gunsight was working in Korea. Meanwhile, his partner was carrying on the training program with similar long hours in Japan. Both received commendations from the Air Force, and their contributions helped the USAF wrest control of the skies over Korea from the Red air force.

It was also in Korea during those early days that Lou Boone, Bell Aircraft's first service rep assigned there, turned inventor. A major problem during the evacuation of wounded was protecting battle casualties from the extreme weather. Boone and the CO of the Army's 2d Helicopter Detachment fashioned a capsule-like covered litter from steel tubing and doped airplane cloth. From this crude but effective design came the present Bell litter. Boone had earlier helped set up the Army's first 'copter operations in Korea. By the end of the war Bell Helicopters had accounted for 18,000 of the 25,000 wounded carried to medical aid by rotorcraft.

And when, as a result of peacetime programming, North American's Jack Waite ran headlong into a spare parts problem for Sabrejets in Korea, his company promptly sent out a man to deal only with supply headaches. As a result, many F-86s that would otherwise have been grounded for parts were kept in commission. Before the war ended, all other major airframe companies, plus two engine companies, had supply reps in Korea.

Tech reps are in the act almost from the birth of a new airplane. Take two Martin representatives, for example. Charlie Clark with twelve years' service, including three in the European Theater during World War II, is in charge of the Martin B-57 Canberra bomber, and Earl (Texas) Tucker, a forty-six-year old rep with the same length of experience, is senior B-57 instructor.

The World War II Martin Marauder was his baby. Clark repaired Marauders with string and bailing wire, and in some cases spliced nose sections to tail sections to make one good plane out of two battle-damaged craft. He once prevented a costly delay when forty-three Marauders were warming up on an English airstrip for a strike against Germany and were blocked when the lead plane blew a nose gear tire on the single lane taxi-strip. If the other planes shut off their engines while waiting for jacks to be moved out, they would have to be re-started by auxiliary power units. This would consume time. If they didn't shut down they would use too much fuel. Clark solved the problem without fanfare. He threw a spare nose wheel in his car, drove to the disabled plane and asked the crew to move back into the tail section. This shift of weight enabled two other men to hold the nose up while Clark quickly changed the wheel. The

(Continued on page 77)

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UNITED AIR LINES

Boeing's Joe Schwin shows off his wrench to then Air Force generals Joseph T. McNarney and K. B. Wolfe. In the background, the XB-47.

Foul weather and a stubborn enemy made the going tough in Korea. Above, North American tech rep Bill Grover checks a damaged Sabre.

Assignment in South America—Bell service rep Bill Koerner on an assembly job for one of the Colombian Air Force's helicopters.

TECH REPS—CONTINUED

Marauders were on time for their date in Hitler's homeland.

There is friendly rivalry in tech rep business, especially when brothers are involved—and twins, at that—one representing the Air Force, and the other the Navy.

Coley and Carl Wright started together with Curtiss-Wright years ago, but now represent opposite poles in the flying business, militarily speaking. Carl just returned from a year's trip around the world, servicing and watching McDonnell F2H-3 Banshees operate from the decks of US aircraft carriers. According to his report, all went well at such places as Gibraltar, Athens, Ceylon, Sumatra, Hong Kong, and the Philippines—until he reached Japan.

There, at a southern base being used by the USAF, he ran into twin brother, who's a field rep for North American Aviation and an outspoken authority on the merits of the F-86 Sabrejet. "The typhoon I ran into at Manila was mild," Carl says, "compared to the battle Coley and I got in over which of our planes is better."

Since tech reps are global, they sometimes face a language barrier. Wade Epperson, who also works on the Martin B-57 as a senior representative, was in Casablanca in 1939, in the days when airplanes were boxed and shipped in sections overseas. He was assigned to instruct the French in how to reassemble and prepare planes for combat.

Epperson knew no French and had no time to learn. But he got French electricians to teach him the names of all the tools in his kit. With this basic vocabulary he taught the electricians the entire system and in six months "graduated" his students so they could train others.

Some tech reps become legends. Boeing had one in Joe Schwin, who died in 1950 at the age of forty-one. Those who knew him say his contributions to aviation are countless. He'll probably be remembered as long as mechanics gather for bull sessions for the "Joe Schwin wrench." One morning at Larson AFB, Wash., when Boeing's B-47 had an X in front of the B, Schwin saw a group of mechanics knocking themselves out trying to remove a generator from the all-jet bomber. They fitted the crowfoot-type wrench designed for the task blindly to unseen nuts, turned the maximum thirty degrees, then removed the wrench, and fished for the nut once more.

Joe Schwin shuddered. He walked back to his work bench. Next morning he casually strolled in with a weird gadget made of pipes with which he removed the generator in a matter of minutes. The long handle and gears of his new wrench let it turn easily without stopping. Schwin had put it together out of scrap and had heat-treated it. The wrench has been accepted by the Air Materiel Command for use on all AF planes powered by the General Electric J-47 engine.

Tech rep business goes pretty far back, but not quite to Kitty Hawk. As a profession it has grown with the aviation industry, especially in the years during and since World War II. One company, Douglas, maintains a total field force of 135 technicians scattered throughout the world, backed up by home teams at the three California divisions, totalling about 180 people. Douglas tech reps travel roughly two million miles each year and visit some 135 different commercial and military locations. Douglas experts on corrosion, tank sealing, overhaul damage repair, and other subjects send in about 60,000 pieces of mail each year. Some of the other large aircraft companies are equally well represented.

Perhaps the most famous aviator in history, Charles A. Lindbergh was a tech rep for United Aircraft in the Pacific during World War II. He flew Chance Vought

(Continued on following page)

TECH REPS — CONTINUED

Corsairs for the Navy, including important strikes on Wotje Island, and sent back performance reports on the plane and the Pratt & Whitney R-2800 engine. A civilian with the Air Force in New Guinea, Lindbergh flew Lockheed P-38s, and was accepted as just another tech rep who happened to be a pilot as well. After combat missions, mechanics checking planes found that Lindbergh's had more fuel left than any of the other ships in the flight. This happened regularly. Word went up through channels until it reached General MacArthur, who requested that Lindbergh move from group to group to instruct in fuel conservation. His work lengthened the range and increased the usefulness of the P-38.

Tech reps in line of duty meet all sorts of people. Pratt & Whitney's Thomas Flatley was lending a hand to mechanics at the maintenance base of the Peruvian Air Force at Lima, when a Peruvian general wandered in among the stripped-down engines. Flatley asked if he could be of service. The general said he would appreciate a lift into town as he had to attend a cabinet meeting. Flatley got a look into the general's briefcase and saw among the official papers two weapons, a small pearl-handled automatic and a wicked-looking .45 revolver. His mouth flew open. The general noted his surprise and snapped shut the briefcase, saying, "My boy, one can never be too careful at these cabinet meetings."

Global in movement, tech reps tell plenty of stories about money, such as paying $90,000 (Chinese) for a breakfast in Shanghai, $2.00 for one egg in North Africa, or $6.00 for a haircut in Alaska. They're also often in financial hassles with their front offices. Martin's Tommy Walter was on a Pacific Island during World War II where he couldn't spend a cent, though on full expense account. Hence he had no accounting to make. Yet one day he was amazed to receive a form letter from the treasurer of the company requesting him to keep his expenses down to $9.00 a day. Tommy promised to try.

How do you become a tech rep? The companies are pretty choosy. Northrop, for example, accepts only one out of every thirty applicants for the highly specialized work. This may account for the high *esprit de corps* among tech reps, for to date only one Northrop tech rep has resigned his job—and he left to join the Air Force. The average Northrop tech rep was with the company six years before taking the one-year course preparing him for field work.

Tech reps are fast becoming teachers as well as writers. This is a growing facet of their all-around versatility, for most of the major airframe, engine, and accessory companies now have their technical experts teaching military and civilian mechanics in use of equipment.

Beechcraft is a leader in this field, particularly in connection with the A-4 generator which is used to start many USAF jets and the T-34 primary trainer. Men like Paul Hagen, M. C. MacKenzie, C. E. Cromwell, W. J. Smith, W. P. Peay, and R. J. DeBacker conduct regular classes for enlisted men and officers. Their assignments take them almost everywhere in the world.

The cumulative experience of these tech reps represents an aviation service that is priceless. Their technical know-how is an important factor in America's present-day military concept of growing to power in order to be ready for anything the future may hold.—End

Mr. DuPre's byline last appeared in Air Force *in November ("Night Fighters in MIG Alley"). Earlier he wrote about the Air Rescue Service (September '53) and American generals who had worked with the Russians in WW II (July '53).*

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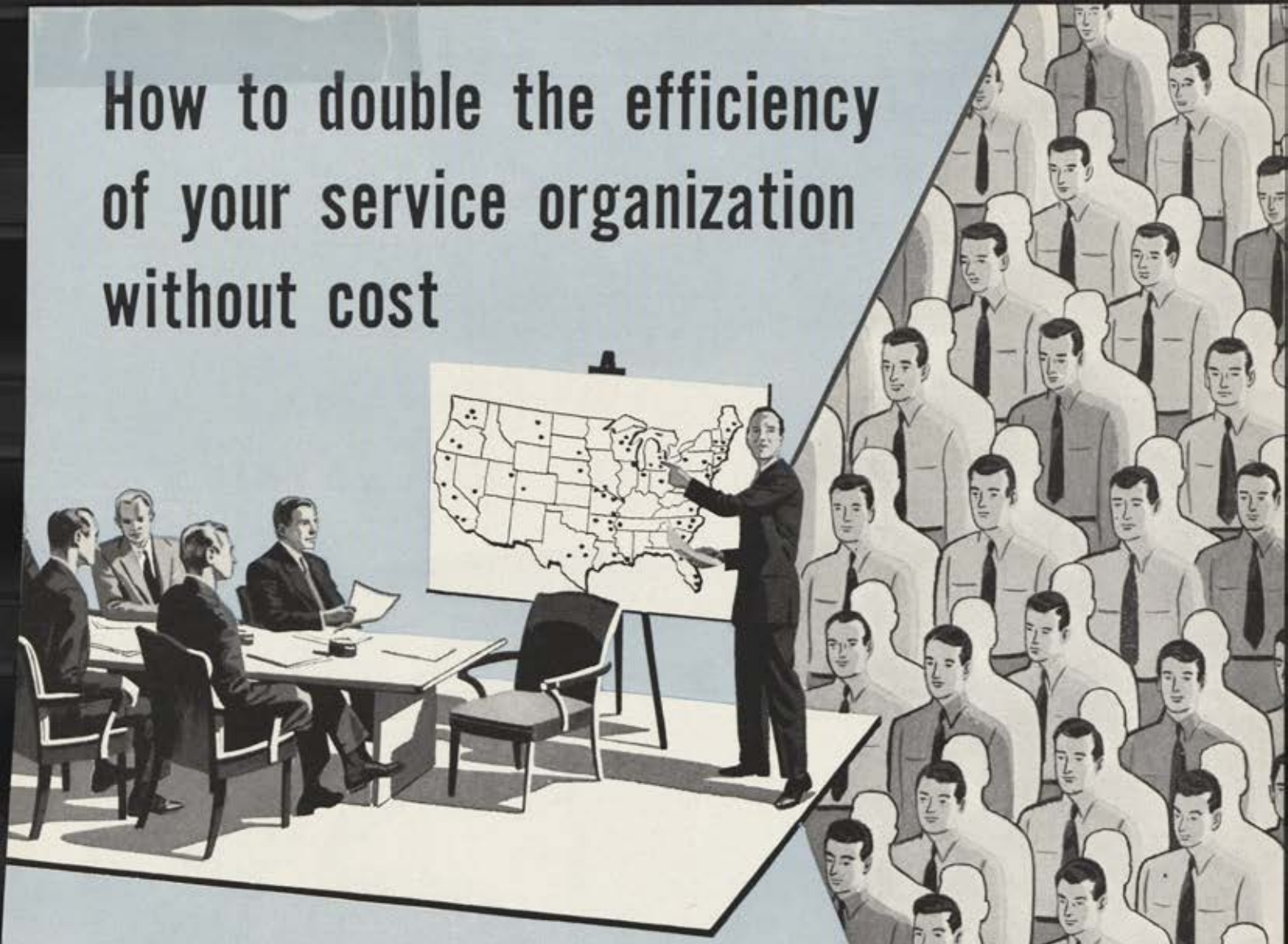

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